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Memorandum

U.S. Department of Transportation
National Highway Traffic Safety Administration

NHTSA-02-12231-33

Subject: Attorney General's Finding and Supporting Record on the effectiveness of Parts Marking requirement

Date: NOV 4 2003

From: Stephen Wood
Assistant Chief Counsel
for Vehicle Safety Standards and Harmonization

Reply to Attn. of:

To: Docket Management

Please add the following documents to Docket No. NHTSA-2002-12231. The heading for this docket submission should be "U.S. DOJ – Attorney General's Finding and Record." If you have any further questions, please contact George Feygin of my staff (202) 366-5834.

Attachment

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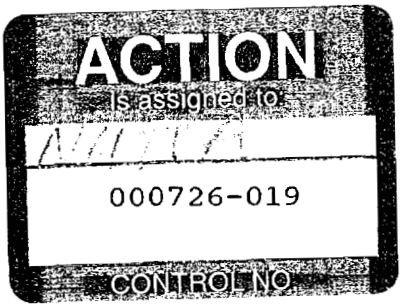
Office of the Attorney General
Washington, D.C. 20530

July 21, 2000



The Honorable Rodney E. Slater
Secretary of Transportation
Washington, DC 20590

Dear Secretary Slater:

The purpose of this letter is to fulfill the requirement of the Anti-Car Theft Act of 1992 that I report to you on the effectiveness of expanding the auto parts marking requirement. After conducting an initial review of the effectiveness of the vehicle theft prevention standard as required by the Act, I have determined that the available evidence warrants application of the vehicle theft prevention standard to the remaining motor vehicle lines. That is, the evidence does not support a finding that requiring motor vehicle manufacturers to mark major parts in all motor vehicle lines will not substantially inhibit chop shop operations and motor vehicle thefts. Therefore, the parts marking requirement should be expanded. By this letter, I am submitting to you this finding, along with the record upon which it is based.

The Initial Report

The Anti-Car Theft Act of 1992 requires the Secretary of Transportation (Secretary) to prescribe a vehicle theft prevention standard governing the marking of covered major parts installed by manufacturers in passenger motor vehicles. The current vehicle-theft prevention standard requires manufacturers to mark covered major parts in not more than 50 percent of the motor vehicle lines not required to be marked as "high theft lines" (except light duty trucks). Under the Act, the Secretary is required to apply the theft standard to the remaining motor vehicle lines:

> unless the Attorney General finds . . . that applying the [vehicle theft prevention standard] to the remaining lines of passenger motor vehicles (except

light duty trucks) not covered by that standard would not substantially inhibit chop shop operations and motor vehicle thefts.

The Act requires this initial finding to be based on information provided to you under 49 U.S.C. § 33112, and on other information developed by the Department of Justice (DOJ) after providing notice and an opportunity for a public hearing. The Department of Justice, through the National Institute of Justice (NIJ), contracted with Abt Associates to complete a cross-sectional time series analysis of auto theft data provided to you under § 33112. Under an agreement reached between our agencies, the National Highway Traffic Safety Administration (NHTSA) in May 1999, shared § 33112 data with NIJ in return for use of a law enforcement survey conducted by Abt Associates and commissioned by NIJ. Abt Associates used that data as the basis for a cross-sectional time series analysis, which it finalized in August 1999.

I have considered the § 33112 data as required by the Act and find it to support the expansion of the parts marking requirement. Abt Associates estimates that parts marking costs about $50,000 per year per 100,000 vehicles. A conservative estimate of the cost to the average victim of a stolen vehicle is $6,000. As a result, parts marking would be cost effective with a reduction of slightly more than 8 car thefts per 100,000 vehicles. The cross-sectional time series analysis prepared by Abt Associates estimates that between 33 and 158 fewer cars are stolen per 100,000 marked cars as a result of parts marking. Thus, on the whole, parts marking appears to be a cost effective method of reducing auto theft. It is also important to note that this calculation does not include the cost to law enforcement of investigating auto theft, which further increases the benefit in reducing auto theft.

Pursuant to the statutory mandate that the finding be based on "other information the Attorney General develops after providing notice and an opportunity for a public hearing," 49 U.S.C. § 33103(c), the Department of Justice offered an opportunity for public comment by publishing "Auto Theft and Recovery; Request for Comments" in the Federal Register at 63 Fed. Reg. 48758 (1998). The notice requested comments on the effectiveness of expanding the motor vehicle theft prevention standard, among other things.

Included in the notice and request for comment were the findings of the law enforcement survey conducted by Abt Associates. Having considered the survey and the comments received, I find that the survey supports the expansion of parts marking. The survey was designed to obtain the views of auto theft investigators on the effectiveness of marking major auto parts in reducing auto theft and chop shop operations. The responses of law enforcement personnel surveyed support the marking of auto parts and the extension of parts marking to the remaining motor vehicle lines.

All but one of the 47 investigators surveyed by Abt Associates believed that auto parts marking should be extended to all automobile lines and to all types of noncommercial vehicles, especially to pickup trucks. The majority of the investigators surveyed indicated that marking vehicle parts aids in identifying and arresting those involved in trafficking in stolen vehicles and stolen parts. Specifically, 75 percent of the auto theft investigators from big cities surveyed felt that parts marking is useful or very useful in arresting chop shop owners and operators and those who deal in stolen vehicles.

Investigators identified four ways in which the marking of auto parts provides assistance. First, when a car is stolen and its Vehicle Identification Number (VIN) markings are removed by thieves, as long as one part remains with its markings intact, investigators can trace the car to its owner, prove it was stolen, and make an arrest. Second, auto theft investigators in many jurisdictions have been given the authority to seize parts or vehicles when markings have been damaged or removed. Third, investigators in most jurisdictions treat the absence of intact markings--through removal, counterfeiting, or destruction--as a "red flag" indicating a need for further investigation. Fourth, in those jurisdictions requiring inspections of restored cars before they can be retitled, parts marking assists officers in identifying vehicles that have been reassembled using stolen parts.

Marking parts also aids in prosecuting chop shop owners and dealers in stolen vehicles and parts, and is a significant deterrent to the operation of chop shops. Officials reported that honest salvage yards are requiring that the parts they purchase bear proper markings and be accompanied by appropriate paperwork, thus helping to limit the market for stolen parts. While only

about half of the investigators reported that labels deter auto theft, the shrinking domestic market for stolen auto parts, the ease with which marked stolen parts can be identified, and the corresponding ease with which thieves can be prosecuted, all contribute to reducing auto thefts for profit.

Automobile industry comments generally opposed expansion of parts marking. Industry argued that the statistical evidence outlined in the DOJ Notice did not conclusively support expansion. One industry group argued that the opinions of law enforcement officials were not relevant. I disagree. The opinions of those who investigate and prosecute these crimes are directly relevant to the question whether expanding the parts marking requirement will substantially inhibit chop shop operations and motor vehicle thefts.

On the basis of all the available evidence, I find that parts marking is an effective deterrent to chop shop operations and auto theft. The evidence does not support a conclusion that applying the auto theft prevention standard to the remaining lines of passenger motor vehicles will not substantially inhibit chop shop operations and motor vehicle thefts. Accordingly, please expand the motor vehicle theft prevention standard as required by 49 U.S.C. § 33103.

Additional Issues

In addition to this initial finding, the Act provides that "[t]he Attorney General shall consider and include in the record additional costs, effectiveness, competition and available alternative factors." 49 U.S.C. §33103(c). In its notice, the Department requested comment on these four areas, which are considered below.

1. Cost

Congress has prescribed cost limitations on the marking of auto parts, setting a statutory limit of $22 per vehicle (in 1995 dollars) under § 33105. In its June 26, 1997 Federal Register Notice, NHTSA estimated the cost to the consumer of parts marking to be $4.92 per car (in 1995 dollars), an amount that is well within the statutory limit. 62 Fed. Reg. 34494, 34495 (1997). In its calculations and analysis, DOJ relied on the NHTSA estimate.

DOJ requested comments on the cost of marking parts. One automaker responded to this request and argued that its actual cost exceeded the NHTSA estimate. The automaker argued that the estimate failed to take into account the higher costs incurred by a small volume manufacturer, or those of a manufacturer building cars on the same assembly line for the U.S. market as well as overseas markets.

Two manufacturers responded to the Department of Transportation (DOT) Report, arguing that the cost to them of marking parts exceeds the estimate given by DOT. In response, DOT pointed out that its calculation was the result of estimation by two different sources using accepted procedures for estimation. DOT's cost estimates included overhead costs and took into account profit while properly excluding the cost of marking engines and transmissions, which were marked prior to the 1984 Act and which are not included in the limit set by Congress. Moreover, although these two companies argued that their cost of marking parts exceeded the DOT estimate, neither company estimated their cost at levels that would exceed the statutory limit.

2. Effectiveness

Currently, manufacturers comply with the requirement for marking auto parts through use of a label which is placed on the components the statute requires be marked. DOT regulations, set forth at 49 C.F.R. Part 541, require the markings to be affixed with labels that are indelibly marked and which cannot be removed without being destroyed. The regulation requires that the labels leave a residue if removed. In its 1998 Final Report, DOT indicated that it was considering issuing an Advance Notice of Proposed Rulemaking, to solicit comments on changing the standard to a more permanent marking method. The Report indicated that thieves had learned how to remove the current labels completely, without leaving the "footprint" required by DOT's regulations. The investigators surveyed overwhelmingly supported more permanent markings, as did those who commented in response to the DOJ Notice and those insurance and law enforcement investigators who responded to DOT's June 26, 1997 Notice. In fact, investigators identified the lack of permanence as the most significant obstacle to increasing the effective use of markings.

Based on the available evidence, I have concluded that permanence is at the heart of any effective marking system, and therefore I urge DOT to require permanent, non-removable markings.

3. Available Alternatives

The Act requires the Attorney General to consider "available alternatives." Potential alternatives to parts marking include anti-theft devices. Abt Associates was unable to determine whether anti-theft devices were an effective alternative to parts marking. In its June 26, 1997 Notice, NHTSA stated that anti-theft devices are not a suitable replacement for parts marking, because parts marking and anti-theft devices are complements, rather than substitutes. The NHTSA report concluded that anti-theft devices and parts marking address different problems. Anti-theft devices do a better job of deterring amateur rather than professional thieves. Anti-theft devices are also often installed in expensive vehicles, which are targeted by professional thieves because of their demand and resale value without regard to whether they are equipped with such a device.

DOJ requested comments on available alternatives. Several auto companies and industry groups responded to this request. Comments from the auto industry argued that anti-theft devices are preferable to marking auto parts. Industry believes consumers desire anti-theft devices, and also believes these devices are effective. One label manufacturer argued that parts marking and anti-theft devices both contribute to theft deterrence. Law enforcement comments reflect the view of NHTSA that anti-theft devices should be used together with parts marking, not in place of it. Investigators generally believed that anti-theft devices do not deter professional thieves. Moreover, when a vehicle is recovered which may have been stolen, anti-theft devices do not provide investigators with the same capability of determining whether parts have been stolen, or enable them to trace parts back to the rightful owner.

Based on all the available evidence, I agree with NHTSA that anti-theft devices are one segment of a combined effort to reduce auto theft and do not act as a replacement for parts marking.

4. Competition

DOJ requested comment on the effect of parts marking on competition. One comment was received on this subject. One trade group representing large auto manufacturers argued that the exemptions available on a per-year basis would favor small companies which would be able to gain exemptions for their entire fleet of car lines sooner, because they had fewer lines to exempt. After considering the available evidence, I have determined that expanding the parts marking requirement would not harm competition. Even at the statutory maximum of $22 per car (in 1995 Dollars), the cost of marking auto parts is so small when compared to the cost of a vehicle that any effect on competition would be slight.

Thank you for your attention to this matter. If you or a member of your staff wish to discuss this matter further, please contact Richard M. Rogers, Senior Counsel to the Assistant Attorney General, Criminal Division, U.S. Department of Justice, at (202) 514-8324.

Sincerely,

Janet Reno

Enclosure

Summary of Public Comments Received in
Response to DOJ Publication:
Auto Theft and Recovery; Request for Comments
63 F.R. 48758

Volkswagen (Volkswagen AG, Audi AG, and Volkswagen of America)

A. Findings of NHTSA report are not sufficient to support a finding that parts marking "substantially" inhibits chop shop operations. Instead, NHTSA study reveals that parts marking has no verifiable effect on motor vehicle theft.

B. NHTSA conclusion that parts marking is a deterrent is merely a guess, insofar as that conclusion is based on insurance claim data.

C. The views of law enforcement are irrelevant to the finding to be made by the Attorney General, because the finding focuses on "inhibiting" theft, not arrests and prosecutions of thieves. Successful prosecutions, and the increase in prosecutions, depend on resources and priorities within law enforcement bodies, not parts marking.

D. NHTSA's assumption that a 2% theft reduction would justify the cost of parts marking is incorrect. Six dollars per car is more accurate than the $3 per car average used by the FBI.

E. Cost may exceed the statutory minimum because the cost of marking replacement parts is not factored in.

Volvo Cars of North America and Volvo Car Corporation

A. The Anti-Car Theft Act is aimed primarily at high theft vehicle lines. Volvo's are low theft, so the law was not intended to apply to Volvos.

B. Volvo should be exempted because of the existence of anti-theft devices, and because vehicle image also contributes to Volvo's low theft status.

C. Insurance data supports no marking for low theft cars with anti-theft devices. The survey of investigators shows that they did not all agree that parts marking was an effective deterrent to auto theft.

D. Request for comment may be premature because DOJ report on

cross-sectional time series analysis mentioned in notice requesting comment was not available at closing of comment period.

E. NHTSA study fails to show positive effects of parts marking, but clearly indicates effectiveness of anti-theft devices.

National Automobile Dealers Association

A. NADA would like to reduce auto theft. Theft rates have declined in the 1990's, but it is impossible to state the effect of parts marking.

B. Anti-theft devices reduce theft, and are made more popular by discounts on insurance rates offered by insurers or where mandated by state law.

C. Direct effectiveness of parts marking is difficult to identify.

Mercedes Benz of North America, Inc. & Daimler-Benz, AG

A. Modern immobilization systems, which are standard on all Mercedes vehicle lines in the United States, provide superior protection against theft. Mercedes sees no benefit to its customers from parts marking.

American Automobile Manufacturer's Association (Chrysler Corporation, Ford Motor Company and General Motors Corp.)

A. The Attorney General should find no basis to believe parts marking will substantially inhibit chop shops and auto theft.

B. While the Attorney General must find the future effects of expanding parts marking, this finding is to be based on whether parts marking has been effective in the past.

C. Requests an opportunity to review and comment on DOJ study when it is completed.

D. Law and legislative history show the finding is to be based on statistical data. Thus, the opinions of law enforcement personnel are immaterial to the finding.

E. NHTSA report shows anti-theft devices reduce theft, while parts marking does not.

F. Actual cost/benefit analysis is two to three times higher than NHTSA suggests, increasing the reduction in theft necessary to make parts marking cost effective.

G. Competition – Parts marking unfairly affects large domestic manufacturers who have more lines of vehicles. At one exemption per year, a small foreign manufacturer will be exempt from marking parts in just a few years, while it will take a large domestic manufacturer 30 years to exempt all vehicle lines.

H. Available Alternatives – Legislation should be passed providing stiffer penalties, support for state investigations, establishment of, or further funding to, existing Anti-Car Theft Committees, title information systems, and regulations for junk yards.

Association of International Automobile Manufacturers

A. Parts marking could deter only thefts of vehicles or parts for resale, not theft for other purposes such as joy riding. The average rate of unrecovered vehicles for the years 1987 to 1995 shows a slight upward trend which indicates parts marking has not been effective as it can be inferred from the fact that these vehicles were not recovered that they were probably stolen for their parts or resale.

B. Views of law enforcement are not relevant to the finding by Congress, which focused on theft deterrence, not arrest and prosecution of thieves.

Texas Association of Vehicle Theft Investigators

A. Parts marking is an extremely valuable tool in the fight against auto theft, and the requirement should extend to light trucks and SUV's.

Tarrant County Auto Theft Task Force

A. Parts labeling could be an effective tool in combating vehicle theft.

B. Parts should be marked permanently, it should be a felony to remove them, and the parts marking requirement should include light trucks.

Texas Department of Public Safety

A. Anti-theft stickers are a great benefit in recovery of stolen vehicles. Stickers are useful even if removed, because removed stickers give rise to probable cause to seize and investigate further.

CONTENTS

Attachments

Title 49, United States Code §§ 33101-33108, 3312 **1**

Abt Associates Inc., *An Evaluation of the Effectiveness of Automobile Parts Marking on Preventing Theft,* (June 9, 1997). **2**

Department of Justice Notice, Auto Theft and Recovery's Request for Comments, 63 Fed. Reg. 48758 (1998). **3**

Letter from Warren G. La Heist, Office of Regulatory Analysis and Evaluation, Plans and Policy, National Highway Traffic Safety Administration, U.S. Department of Transportation, to Adrien Silas, Office of Legislative Affairs, U.S. Department of Justice (Jan. 21, 1998). **4**

Memorandum from William Rhodes and Quentin McMullen, Abt Associates Inc., to Nancy LaVigne, National Institute of Justice, U.S. Department of Justice (November 13, 1998). **5**

National Highway Traffic Safety Administration, *Auto Theft and Recovery; Effects of the Anti-Car Theft Act of 1992 and the Motor Vehicle Theft Law Enforcement Act of 1984, Report to the Congress* (July 1998). **6**

Memorandum from Nancy LaVigne, National Institute of Justice, Office of Justice Programs, U.S. Department of Justice, to Chuck Kahane, Chief, Evaluative Division, National Highway traffic Safety Association (March 4, 1999). **7**

Letter from Warren G. LaHeish, Office of Regulatory Analysis and Evaluation, Plans and Policy, National Highway Traffic Safety Association, U.S. Department of Transportation, to Nancy LaVigne, National Institute of Justice, Office of Justice Programs, U.S. Department of Justice (April 12, 1999). **8**

Abt Associates Inc., *Opinions of 4+ Auto Theft Investigators Regarding Automobile Component Parts Anti-Theft Labels* (December 30, 1996). **9**

National Highway Traffic Safety Association, U.S. Department of Transportation, Auto theft and Recovery; Preliminary Report on the Effects of the Anti-Car Theft Act of 1992 and the Motor Vehicle Theft Law Enforcement Act of 1984, 62 Fed. Reg. 34494 (1997). **10**

Federal Motor Vehicle Theft Prevention Standard, 49 C.F.R. Part 541 (1998). **11**

Comments received in response to Department of Justice Notice, Auto Theft and Recovery; Request for Comments, 63 Fed. Reg. 49759 (1998). **12**

13

14

15

OneStep® INDEX SYSTEM

HISTORICAL AND STATUTORY NOTES

Revision Notes and Legislative Reports
1994 Acts.

Revised Section	Source (U.S. Code)	Source (Statutes at Large)
32918	15:2009.	Oct. 20, 1972, Pub.L. 92–513, 86 Stat. 947, § 509; added Dec. 22, 1975, Pub.L. 94–163, § 301, 89 Stat. 914.

In subsection (a), the word "prescribed" is substituted for "established" for consistency. House Report No. 103–180.

House Report No. 103–831, see 1994 U.S. Code Cong. and Adm. News, p. 3579.

Amendments

1994 Amendments. Pub.L. 103–429 renumbered section 32918 of this title as this section.

LIBRARY REFERENCES

American Digest System

Consumer protection; motor vehicle sales and service, see Consumer Protection ⇐9.

Federal supremacy and preemption; motor vehicles, see States ⇐18.61.

Encyclopedias

Concurrent or conflicting state and federal legislation, see C.J.S. States § 24.

Consumer protection; motor vehicle sale or lease, see C.J.S. Credit Reporting Agencies; Consumer Protection § 52.

WESTLAW ELECTRONIC RESEARCH

Consumer protection cases: 92Hk[add key number].
States cases: 360k[add key number].
See, also, WESTLAW guide following the Explanation pages of this volume.

CHAPTER 331—THEFT PREVENTION

Sec.

33101. Definitions.
33102. Theft prevention standard for high theft lines.
33103. Theft prevention standard for other lines.
33104. Designation of high theft vehicle lines and parts.
33105. Cost limitations.
33106. Exemption for passenger motor vehicles equipped with anti-theft devices.
33107. Voluntary vehicle identification standards.
33108. Monitoring compliance of manufacturers.
33109. National Stolen Passenger Motor Vehicle Information System.
33110. Verifications involving junk and salvage motor vehicles.
33111. Verifications involving motor vehicle major parts.
33112. Insurance reports and information.
33113. Theft reports.
33114. Prohibited acts.
33115. Civil penalties and enforcement.
33116. Confidentiality of information.
33117. Judicial review.
33118. Preemption of State and local law.

CROSS REFERENCES

Transfer of motor vehicles by auction as requiring auction company to maintain vehicle identification number required under this chapter, see 49 USCA § 32705.

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§ 33101. Definitions

In this chapter—

(1) "chop shop" means a building, lot, facility, or other structure or premise at which at least one person engages in receiving, concealing, destroying, disassembling, dismantling, reassem-

bling, or storing a passenger motor vehicle or passenger motor vehicle part that has been unlawfully obtained—

(A) to alter, counterfeit, deface, destroy, disguise, falsify, forge, obliterate, or remove the identity of the vehicle or part, including the vehicle identification number or a derivative of that number; and

(B) to distribute, sell, or dispose of the vehicle or part in interstate or foreign commerce.

(2) "covered major part" means a major part selected under section 33104 of this title for coverage by the vehicle theft prevention standard prescribed under section 33102 or 33103 of this title.

(3) "existing line" means a line introduced into commerce before January 1, 1990.

(4) "first purchaser" means the person making the first purchase other than for resale.

(5) "line" means a name that a manufacturer of motor vehicles applies to a group of motor vehicle models of the same make that have the same body or chassis, or otherwise are similar in construction or design.

(6) "major part" means—

(A) the engine;

(B) the transmission;

(C) each door to the passenger compartment;

(D) the hood;

(E) the grille;

(F) each bumper;

(G) each front fender;

(H) the deck lid, tailgate, or hatchback;

(I) each rear quarter panel;

(J) the trunk floor pan;

(K) the frame or, for a unitized body, the supporting structure serving as the frame; and

(L) any other part of a passenger motor vehicle that the Secretary of Transportation by regulation specifies as comparable in design or function to any of the parts listed in subclauses (A)–(K) of this clause.

(7) "major replacement part" means a major part that is—

(A) an original major part in or on a completed motor vehicle and customized or modified after manufacture of the vehicle but before the time of its delivery to the first purchaser; or

(B) not installed in or on a motor vehicle at the time of its delivery to the first purchaser and the equitable or legal title to the vehicle has not been transferred to a first purchaser.

(8) "model year" has the same meaning given that term in section 32901(a) of this title.

(9) "new line" means a line introduced into commerce after December 31, 1989.

(10) "passenger motor vehicle" includes a multipurpose passenger vehicle or light duty truck when that vehicle or truck is rated at not more than 6,000 pounds gross vehicle weight.

(11) "vehicle theft prevention standard" means a minimum performance standard for identifying major parts of new motor vehicles and major replacement parts by inscribing or affixing numbers or symbols on those parts.

(Added Pub.L. 103–272, § 1(e), July 5, 1994, 108 Stat. 1076, and amended Pub.L. 103–429, § 6(44), Oct. 31, 1994, 108 Stat. 4383.)

HISTORICAL AND STATUTORY NOTES

Revision Notes and Legislative Reports 1994 Acts.

Revised Section	Source (U.S. Code)	Source (Statutes at Large)
33101(1)	15:2021(11).	Oct. 20, 1972, Pub.L. 92–513, 86 Stat. 947, § 601(11); added Oct. 25, 1992, Pub.L. 102–519, § 301(b), 106 Stat. 3394.
33101(2)	15:2021(6).	Oct. 20, 1972, Pub.L. 92–513, 86 Stat. 947, § 601(2)–(7), (9), (10); added Oct. 25, 1984, Pub.L. 98–547, § 101(a), 98 Stat. 2755, 2756.
33101(3)	15:2021(3).	
33101(4)	15:2021(5).	
33101(5)	15:2021(2).	
33101(6)	15:2021(7).	
33101(7)	15:2021(8).	Oct. 20, 1972, Pub.L. 92–513, 86 Stat. 947, § 601(1), (8); added Oct. 25, 1984, Pub.L. 98–547, § 101(a), 98 Stat. 2755; restated Oct. 25, 1992, Pub.L. 102–519, § 301(a), (c), 106 Stat. 3393, 3394.
33101(8)	15:2021(9).	
33101(9)	15:2021(4).	
33101(10)	15:2021(1).	
33101(11)	15:2021(10).	

In clause (2), the words "section 33102(c)(1)" are substituted for "section 2022(d)(1)(B)" to correct an erroneous cross-reference. Section 302(1) of the Act of October 25, 1992 (Public Law 102–519, 106 Stat. 3394), restated section 602(d)(1)(A) and (B) of the Motor Vehicle Information and Cost Savings Act (Public Law 92–513, 86 Stat. 947) as section 602(d)(1) without making a corresponding change in the cross-reference restated in this section.

In clause (3), the words "before January 1, 1990" are substituted for "before

the beginning of the 2-year period specified in section 2023(a)(1)(A) of this title" for clarity. See the revision notes for section 33104 of the revised title.

In clause (5), the words "of motor vehicles" are added for consistency in this chapter.

Clause (6)(I) is substituted for "rear quarter panels" for clarity and consistency.

In clause (7)(A), the word "completed" is omitted as unnecessary because of the restatement.

In clause (9), the words "after December 31, 1989" are substituted for "on or after the beginning of the 2-year period specified in section 2023(a)(1)(A) of this title" for clarity and consistency. House Report No. 103–180.

This [amendment by section 6(44)(A) of Pub.L. 103–429] corrects a cross-reference in 49:33101(2) by eliminating the reference to 49:33102(c)(1). Section 302(1) of the Anti Car Theft Act of 1992 (Public Law 102–519, 106 Stat. 3394) restated section 602(d)(1)(A) and (B) of the Motor Vehicle Information and Cost Savings Act (Public Law 92–513, 86 Stat. 947) as section 602(d)(1) without making a change in the cross-reference in section 601(6) to section 602(d)(1)(B).

This [amendment by section 6(44)(B) of Pub.L. 103–429] makes a conforming amendment for consistency with the style of title 49. House Report No. 103–831.

Amendments

1994 Amendments. Par. (2). Pub.L. 103–429, § 6(44), added "of this title" following "prescribed under section 33102 or 33103", and substituted "selected under section 33104" for "selected under sections 33102(c)(1) and 33104".

Effective Dates

1994 Acts. Amendment by Pub.L. 103–429 effective July 5, 1994, see section 9 of Pub.L. 103–429, set out as a note under section 321 of this title.

CROSS REFERENCES

Information, standards, and requirements provisions definitions applicable except as provided in this section, see 49 USCA § 32101.

LIBRARY REFERENCES

American Digest System

Consumer protection; motor vehicle sales and service, see Consumer Protection ⇐9.

Encyclopedias

Consumer protection; motor vehicle sale or lease, see C.J.S. Credit Reporting Agencies; Consumer Protection § 52.

WESTLAW ELECTRONIC RESEARCH

Consumer protection cases: 92Hk[add key number].
See, also, WESTLAW guide following the Explanation pages of this volume.

§ 33102. Theft prevention standard for high theft lines

(a) General.—(1) The Secretary of Transportation by regulation shall prescribe a vehicle theft prevention standard that conforms to the requirements of this chapter. The standard shall apply to—

(A) covered major parts that manufacturers install in passenger motor vehicles in lines designated under section 33104 of this title as high theft lines; and

(B) major replacement parts for the major parts described in clause (A) of this paragraph.

(2) The standard may apply only to—

(A) major parts that manufacturers install in passenger motor vehicles having a model year designation later than the calendar year in which the standard takes effect; and

(B) major replacement parts manufactured after the standard takes effect.

(b) Standard requirements.—The standard shall be practicable and provide relevant objective criteria.

(c) Limitations on major part and replacement part standards.—(1) For a major part installed by the manufacturer of the motor vehicle, the standard may not require a part to have more than one identification.

(2) For a major replacement part, the standard may not require—

(A) identification of a part not designed as a replacement for a major part required to be identified under the standard; or

(B) the inscribing or affixing of identification except a symbol identifying the manufacturer and a common symbol identifying the part as a major replacement part.

(d) Records and reports.—This chapter does not authorize the Secretary to require a person to keep records or make reports, except as provided in sections 33104(c), 33106(c), 33108(a), and 33112 of this title.

(Added Pub.L. 103–272, § 1(e), July 5, 1994, 108 Stat. 1077.)

HISTORICAL AND STATUTORY NOTES

Revision Notes and Legislative Reports
1994 Acts.

Revised Section	Source (U.S. Code)	Source (Statutes at Large)
33102(a)(1)	15:2022(a).	Oct. 20, 1972, Pub.L. 92–513, 86 Stat. 947, § 602(a), (b), (c)(1)–(3), (5), (d)(2); added Oct. 25, 1984, Pub.L. 98–547, § 101(a), 98 Stat. 2756.
33102(a)(2)	15:2022(c)(1)–(3), (5).	
33102(b)	15:2022(b).	
33102(c)	15:2022(d)(1).	Oct. 20, 1972, Pub.L. 92–513, 86 Stat. 947, § 602(d)(1); added Oct. 25, 1984, Pub.L. 98–547, § 101(a), 98 Stat. 2756; restated Oct. 25, 1992, Pub.L. 102–519, § 302(1), 106 Stat. 3394.
33102(d)	15:2022(e).	Oct. 20, 1972, Pub.L. 92–513, 86 Stat. 947, § 602(e); added Oct. 25, 1984, Pub.L. 98–547, § 101(a), 98 Stat. 2756; Oct. 25, 1992, Pub.L. 102–519, § 306(a), 106 Stat. 3397.

In subsection (a)(1), before clause (A), the words "in accordance with this section" are omitted as surplus.

In subsection (a)(2), the text of 15:2022(c)(1)–(3) is omitted as obsolete because the standard has already been prescribed. See 49 C.F.R. part 541. House Report No. 103–180.

LIBRARY REFERENCES

American Digest System

Consumer protection; motor vehicle sales and service, see Consumer Protection ⇐9.

Encyclopedias

Consumer protection; motor vehicle sale or lease, see C.J.S. Credit Reporting Agencies; Consumer Protection § 52.

WESTLAW ELECTRONIC RESEARCH

Consumer protection cases: 92Hk[add key number].
See, also, WESTLAW guide following the Explanation pages of this volume.

§ 33103. Theft prevention standard for other lines

(a) General.—Not later than October 25, 1994, the Secretary of Transportation shall prescribe a vehicle theft standard that conforms to the requirements of this chapter for covered major parts that manufacturers install in passenger motor vehicles (except light duty trucks) in not more than 50 percent of the lines not designated under section 33104 of this title as high theft lines.

(b) Extension of application.—(1) Not later than 3 years after the standard is prescribed under subsection (a) of this section and based on the finding of the Attorney General under subsection (c) of this section to apply the standard, the Secretary shall apply that standard to covered major parts and major replacement parts for covered parts that manufacturers install in the lines of passenger motor vehicles (except light duty trucks)—

(A) not designated under section 33104 of this title as high theft lines; and

(B) not covered by the standard prescribed under subsection (a) of this section.

(2) The Secretary shall include as part of the regulatory proceeding under this subsection the finding of, and the record developed by, the Attorney General under subsection (c) of this section.

(c) Initial review of effectiveness.—Before the Secretary begins a regulatory proceeding under subsection (b) of this section, the Attorney General shall make a finding that the Secretary shall apply the standard prescribed under subsection (a) of this section unless the Attorney General finds, based on information collected and analyzed under section 33112 of this title and other information the Attorney

General develops after providing notice and an opportunity for a public hearing, that applying the standard prescribed in subsection (a) to the remaining lines of passenger motor vehicles (except light duty trucks) not covered by that standard would not substantially inhibit chop shop operations and motor vehicle thefts. The Attorney General also shall consider and include in the record additional costs, effectiveness, competition, and available alternative factors. The Attorney General shall submit to the Secretary the finding and record on which the finding is based.

(d) Long range review of effectiveness.—(1) Not later than December 31, 1999, the Attorney General shall make separate findings, after notice and an opportunity for a public hearing, on the following:

(A) whether the application of the standard under subsection (a) or (b) of this subsection, or both, have been effective in substantially inhibiting the operation of chop shops and motor vehicle theft.

(B) whether the anti-theft devices for which the Secretary has granted exemptions under section 33106 of this title are an effective substitute for parts marking in substantially inhibiting motor vehicle theft.

(2)(A) In making the finding under paragraph (1)(A) of this subsection, the Attorney General shall—

(i) consider the additional cost, competition, and available alternatives;

(ii) base that finding on information collected and analyzed under section 33112 of this title;

(iii) consider the effectiveness, the extent of use, and the extent to which civil and criminal penalties under section 33115(b) of this title and section 2322 of title 18 on chop shops have been effective in substantially inhibiting operation of chop shops and motor vehicle theft;

(iv) base that finding on the 3–year and 5–year reports issued by the Secretary under section 33113 of this title; and

(v) base that finding on other information the Attorney General develops and includes in the public record.

(B) The Attorney General shall submit a finding under paragraph (1)(A) of this subsection promptly to the Secretary. If the Attorney General finds that the application of the standard under subsection (a) or (b) of this section, or both, has not been effective, the Secretary shall issue, not later than 180 days after receiving that finding, an order terminating the standard the Attorney General found was

ineffective. The termination is effective for the model year beginning after the order is issued.

(3) In making a finding under paragraph (1)(B) of this subsection, the Secretary shall consider the additional cost, competition, and available alternatives. If the Attorney General finds that the anti-theft devices are an effective substitute, the Secretary shall continue to grant exemptions under section 33106 of this title for the model years after model year 2000 at one of the following levels that the Attorney General decides: at the level authorized before October 25, 1992, or at the level provided in section 33106(b)(2)(C) of this title for model year 2000.

(e) Effective date of standard.—A standard prescribed under this section takes effect at least 6 months after the date the standard is prescribed, except that the Secretary may prescribe an earlier effective date if the Secretary—

(1) decides with good cause that the earlier date is in the public interest; and

(2) publishes the reasons for the decision.

(f) Notification of Congress.—The Secretary and the Attorney General shall inform the appropriate legislative committees of Congress with jurisdiction over this part and section 2322 of title 18 of actions taken or planned under this section.

(Added Pub.L. 103–272, § 1(e), July 5, 1994, 108 Stat. 1078.)

HISTORICAL AND STATUTORY NOTES

Revision Notes and Legislative Reports 1994 Acts.

Revised Section	Source (U.S. Code)	Source (Statutes at Large)
33103(a)	15:2022(f)(1) (1st sentence).	Oct. 20, 1972, Pub.L. 92–513, 86 Stat. 947, § 602(f); added Oct. 25, 1992, Pub.L. 102–519, § 302(2), 106 Stat. 3394.
33103(b)	15:2022(f)(2) (1st, 2d sentences), (3) (last sentence).	
33103(c)	15:2022(f)(3) (1st–3d sentences).	
33103(d)	15:2022(f)(4), (5).	
33103(e)	15:2022(c)(4).	Oct. 20, 1972, Pub.L. 92–513, 86 Stat. 947, § 602(c)(4); added Oct. 25, 1984, Pub.L. 98–547, § 101(a), 98 Stat. 2756.
	15:2022(f)(1) (last sentence), (2) (last sentence).	
33103(f)	15:2022(f)(6).	

In subsection (a), the words "foreign and domestic" are omitted as unnecessary. The words "as high theft lines" are added for clarity.

In subsection (b)(1), the words "to apply the standard" are added for clarity. The words "shall apply that standard to covered major parts and major replacement parts for covered parts that manufacturers install in the lines of passenger motor vehicles (except light duty trucks) ... not designated under section 33104 of this title as high theft lines; and ... not covered by the standard prescribed under subsection (a) of this section" are substituted for "the Secretary ... shall designate all the remaining such lines of such passenger motor vehicles (other than light-duty trucks) and apply such standard to such lines in conformance with the requirements of this subchapter" for clarity and because of the restatement.

In subsection (b)(2), the words "The Secretary shall include as part of the regulatory proceeding under this subsection ... developed by the Attorney General under subsection (c) of this section" are substituted for "shall be a part of the Secretary's rulemaking record" for clarity.

In subsection (c), the words "Before the Secretary begins a regulatory proceeding under subsection (b) of this section" are substituted for "prior to the Secretary's initiation and promulgation of a rule" for clarity. The words "applying the standard prescribed in subsection (a) to the remaining lines of passenger motor vehicles (except light duty trucks) not covered by that standard" are substituted for "requiring such additional parts marking for all of the applicable passenger motor vehicles" for clarity and because of the restatement.

In subsection (d)(1)(A), the words "whether the application of the standard under subsection (a) or (b) of this subsection, or both" are substituted for "whether one or both rules promulgated under this subsection" for clarity.

In subsection (d)(2)(A)(iii), the words "civil ... penalties under section 33115(b) of this title" are substituted for "civil ... penalties under section 2027(b) of this title" to correct an erroneous cross-reference.

In subsection (d)(3), the words "for the model years after model year 2000" are substituted for "Nothing in this paragraph affects exemptions granted in model year 2000 or earlier to any manufacturer" to eliminate unnecessary words. The words "at one of the following levels that the Attorney General decides" are substituted for "as determined by the Attorney General" for clarity.

In subsection (e), the text of 15:2022(c)(4)(related to the standard under 15:2022(c)(1)) is omitted as obsolete because the standard under 15:2022(c)(1) has already been prescribed. See 49 C.F.R. 541. House Report No. 103–180.

LIBRARY REFERENCES

American Digest System

Consumer protection; motor vehicle sales and service, see Consumer Protection ⇐9.

Encyclopedias

Consumer protection; motor vehicle sale or lease, see C.J.S. Credit Reporting Agencies; Consumer Protection § 52.

WESTLAW ELECTRONIC RESEARCH

Consumer protection cases: 92Hk[add key number].
See, also, WESTLAW guide following the Explanation pages of this volume.

§ 33104. Designation of high theft vehicle lines and parts

(a) Designation, nonapplication, selection, and procedures.—(1) For purposes of the standard under section 33102 of this title, the following are high theft lines:

(A) a passenger motor vehicle line determined under subsection (b) of this section to have had a new passenger motor vehicle theft rate in the 2-year period covering calendar years 1990 and 1991 greater than the median theft rate for all new passenger motor vehicle thefts in that 2-year period.

(B) a passenger motor vehicle line initially introduced into commerce in the United States after December 31, 1989, that is selected under paragraph (3) of this subsection as likely to have a theft rate greater than the median theft rate referred to in clause (A) of this paragraph.

(C) subject to paragraph (2) of this subsection, a passenger motor vehicle line having (for existing lines) or likely to have (for new lines) a theft rate below the median theft rate referred to in clause (A) of this paragraph, if the major parts in the vehicles are selected under paragraph (3) of this subsection as interchangeable with the majority of the major parts that are subject to the standard and are contained in the motor vehicles of a line described in clause (A) or (B) of this paragraph.

(2) The standard may not apply to any major part of a line described in paragraph (1)(C) of this subsection if all the passenger motor vehicles of lines that are, or are likely to be, below the median theft rate, and that contain parts interchangeable with the major parts of the line involved, account (for existing lines), or the Secretary of Transportation determines they are likely to account (for new lines), for more than 90 percent of the total annual production of all lines of that manufacturer containing those interchangeable parts.

(3) The lines, and the major parts of the passenger motor vehicles in those lines, that are to be subject to the standard may be selected by agreement between the manufacturer and the Secretary. If the manufacturer and the Secretary disagree on the selection, the Secretary shall select the lines and parts, after notice to the manufacturer and opportunity for written comment, and subject to the confidentiality requirements of this chapter.

(4) To the maximum extent practicable, the Secretary shall prescribe reasonable procedures designed to ensure that a selection under paragraph (3) of this subsection is made at least 6 months before the first applicable model year beginning after the selection.

(5) A manufacturer may not be required to comply with the standard under a selection under paragraph (3) of this subsection for a model year beginning earlier than 6 months after the date of the selection.

(6) A passenger motor vehicle line subject on October 25, 1992, to parts marking requirements under sections 602 and 603 of the Motor

Vehicle Information and Cost Savings Act (Public Law 92–513, 86 Stat. 947), as added by section 101(a) of the Motor Vehicle Theft Law Enforcement Act of 1984 (Public Law 98–547, 98 Stat. 2756), continues to be subject to the requirements of this section and section 33102 of this title unless the line is exempted under section 33106 of this title.

(b) Determining theft rate for passenger vehicles.—(1) In this subsection, "new passenger motor vehicle thefts", when used in reference to a calendar year, means thefts in the United States in that year of passenger motor vehicles with the same model-year designation as that calendar year.

(2) Under subsection (a) of this section, the theft rate for passenger motor vehicles of a line shall be determined by a fraction—

(A) the numerator of which is the number of new passenger motor vehicle thefts for that line during the 2-year period referred to in subsection (a)(1)(A) of this section; and

(B) the denominator of which is the sum of the respective production volumes of all passenger motor vehicles of that line (as reported to the Administrator of the Environmental Protection Agency under chapter 329 of this title) that are of model years 1990 and 1991 and are distributed for sale in commerce in the United States.

(3) Under subsection (a) of this section, the median theft rate for all new passenger motor vehicle thefts during that 2-year period is the theft rate midway between the highest and the lowest theft rates determined under paragraph (2) of this subsection. If there is an even number of theft rates determined under paragraph (2), the median theft rate is the arithmetic average of the 2 adjoining theft rates midway between the highest and the lowest of those theft rates.

(4) In consultation with the Director of the Federal Bureau of Investigation, the Secretary periodically shall obtain from the most reliable source accurate and timely theft and recovery information and publish the information for review and comment. To the greatest extent possible, the Secretary shall use theft information reported by United States Government, State, and local police. After publication and opportunity for comment, the Secretary shall use the theft information to determine the median theft rate under this subsection. The Secretary and the Director shall take any necessary actions to improve the accuracy, reliability, and timeliness of the information, including ensuring that vehicles represented as stolen are really stolen.

(5) The Secretary periodically (but not more often than once every 2 years) may redetermine and prescribe by regulation the median theft rate under this subsection.

(c) Providing information.—The Secretary by regulation shall require each manufacturer to provide information necessary to select under subsection (a)(3) of this section the high theft lines and the major parts to be subject to the standard.

(d) Application.—Except as provided in section 33106 of this title, the Secretary may not make the standard inapplicable to a line that has been subject to the standard.

(Added Pub.L. 103–272, § 1(e), July 5, 1994, 108 Stat. 1079.)

HISTORICAL AND STATUTORY NOTES

Revision Notes and Legislative Reports
1994 Acts.

Revised Section	Source (U.S. Code)	Source (Statutes at Large)
33104(a)	15:2023(a)(1)–(4).	Oct. 20, 1972, Pub.L. 92–513, 86 Stat. 947, § 603(a)(1)–(4), (b)–(d); added Oct. 25, 1984, Pub.L. 98–547, § 101(a), 98 Stat. 2757; Oct. 25, 1992, Pub.L. 102–519, § 303(1)–(3), (5), 106 Stat. 3396.
	15:2023(a)(5).	Oct. 20, 1972, Pub.L. 92–513, 86 Stat. 947, §§ 602(g), 603(a)(5); added Oct. 25, 1992, Pub.L. 102–519, §§ 302(2), 303(4), 106 Stat. 3395, 3396.
33104(b)	15:2022(g). 15:2023(b).	
33104(c)	15:2023(c).	
33104(d)	15:2023(d).	

In subsection (a)(1)(A), the words "the 2–year period covering calendar years 1990 and 1991" are substituted for "the 2 calendar years immediately preceding the year in which the Anti Car Theft Act of 1992 is enacted" because that Act was enacted on October 25, 1992. The substitution also makes it clear that the 2–year period is to be treated as a single period.

In subsection (a)(1)(B), the words "after December 31, 1989," are substituted for "after the beginning of the 2–year period specified in subparagraph (A)" for consistency with clause (A).

In subsection (a)(6), the word "passenger" is added because the source provisions in the revised chapter apply to passenger motor vehicles.

In subsection (b)(2)(B), the words "Administrator of the" are added for clarity and consistency because of section 1(b) of Reorganization Plan No. 3 of 1970 (eff. Dec. 2, 1970, 84 Stat. 2086). The words "model years 1983 and 1984" are substituted for "the 2 model years having the same model-year designations as the 2 calendar years specified in subsection (a)(1)(A) of this section" because the particular years are now known.

In subsection (b)(4), the words "Immediately upon enactment of this subchapter" are omitted as executed. The words "or sources" are omitted because of 1:1. House Report No. 103–180.

References in Text

Sections 602 and 603 of the Motor Vehicle Information and Cost Savings Act, referred to in subsec. (a)(6), are sections 602 and 603 of Pub.L. 92–513, which were classified to sections 2022 and 2023 respectively, of Title 15, Commerce and Trade, and were repealed and reenacted as sections 33102 to 33104 of this title by Pub.L. 103–272, §§ 1(e), 7(b), July 5, 1994, 108 Stat. 1077, 1379.

LIBRARY REFERENCES

American Digest System

Consumer protection; motor vehicle sales and service, see Consumer Protection ⇐9.

Encyclopedias

Consumer protection; motor vehicle sale or lease, see C.J.S. Credit Reporting Agencies; Consumer Protection § 52.

WESTLAW ELECTRONIC RESEARCH

Consumer protection cases: 92Hk[add key number].
See, also, WESTLAW guide following the Explanation pages of this volume.

§ 33105. Cost limitations

(a) Maximum manufacturer costs.—A standard under section 33102 or 33103 of this title may not impose—

(1) on a manufacturer of motor vehicles, compliance costs of more than $15 a motor vehicle; or

(2) on a manufacturer of major replacement parts, compliance costs for each part of more than the reasonable amount (but less than $15) that the Secretary of Transportation specifies in the standard.

(b) Costs involved in engines and transmissions.—For a manufacturer engaged in identifying engines or transmissions on October 25, 1984, in a way that substantially complies with the standard—

(1) the costs of identifying engines and transmissions may not be considered in calculating the manufacturer's costs under subsection (a) of this section; and

(2) the manufacturer may not be required under the standard to conform to any identification system for engines and transmissions that imposes greater costs on the manufacturer than are incurred under the identification system used by the manufacturer on October 25, 1984.

(c) Cost adjustments.—(1) In this subsection—

(A) "base period" means calendar year 1984.

(B) "price index" means the average over a calendar year of the Consumer Price Index (all items—United States city average) published monthly by the Secretary of Labor.

(2) At the beginning of each calendar year, as necessary data become available from the Bureau of Labor Statistics, the Secretary of Labor shall certify to the Secretary of Transportation and publish

in the Federal Register the percentage difference between the price index for the 12 months before the beginning of the calendar year and the price index for the base period. For model years beginning in that calendar year, the amounts specified in subsection (a) of this section shall be adjusted by the percentage difference.

(Added Pub.L. 103-272, § 1(e), July 5, 1994, 108 Stat. 1081.)

HISTORICAL AND STATUTORY NOTES

Revision Notes and Legislative Reports 1994 Acts.

Revised Section	Source (U.S. Code)	Source (Statutes at Large)
33105	15:2024.	Oct. 20, 1972, Pub.L. 92-513, 86 Stat. 947, § 604; added Oct. 25, 1984, Pub.L. 98-547, § 101(a), 98 Stat. 2758.

In subsection (a)(1) and (2), the words "compliance costs" are substituted for "costs ... to comply with such standard" to eliminate unnecessary words. In clause (2), the words "reasonable amount (but less than $15)" are substituted for "reasonable lesser amount" for clarity.

In subsection (c)(2), the words "commencing on or after January 1, 1985" are omitted as obsolete. House Report No. 103-180.

LIBRARY REFERENCES

American Digest System

Consumer protection; motor vehicle sales and service, see Consumer Protection ⇐9.

Encyclopedias

Consumer protection; motor vehicle sale or lease, see C.J.S. Credit Reporting Agencies; Consumer Protection § 52.

WESTLAW ELECTRONIC RESEARCH

Consumer protection cases: 92Hk[add key number].
See, also, WESTLAW guide following the Explanation pages of this volume.

§ 33106. Exemption for passenger motor vehicles equipped with anti-theft devices

(a) Definitions.—In this section—

(1) "anti-theft device" means a device to reduce or deter theft that—

(A) is in addition to the theft-deterrent devices required by motor vehicle safety standard numbered 114 in section 571.114 of title 49, Code of Federal Regulations;

(B) the manufacturer believes will be effective in reducing or deterring theft of motor vehicles; and

(C) does not use a signaling device reserved by State law for use on police, emergency, or official vehicles, or on schoolbuses.

(2) "standard equipment" means equipment already installed in a motor vehicle when it is delivered from the manufacturer and not an accessory or other item that the first purchaser customarily has the option to have installed.

(b) Granting exemptions and limitations.—(1) A manufacturer may petition the Secretary of Transportation for an exemption from a requirement of a standard prescribed under section 33102 or 33103 of this title for a line of passenger motor vehicles equipped as standard equipment with an anti-theft device that the Secretary decides is likely to be as effective in reducing and deterring motor vehicle theft as compliance with the standard.

(2) The Secretary may grant an exemption—

(A) for model year 1987, for not more than 2 lines of a manufacturer;

(B) for each of the model years 1988-1996, for not more than 2 additional lines of a manufacturer;

(C) for each of the model years 1997-2000, for not more than one additional line of a manufacturer; and

(D) for each of the model years after model year 2000, for the number of lines that the Attorney General decides under section 33103(d)(3) of this title.

(3) An additional exemption granted under paragraph (2)(B) or (C) of this subsection does not affect an exemption previously granted.

(c) Petitioning procedure.—A petition must be filed not later than 8 months before the start of production for the first model year covered by the petition. The petition must include—

(1) a detailed description of the device;

(2) the reasons for the manufacturer's conclusion that the device will be effective in reducing and deterring theft of motor vehicles; and

(3) additional information the Secretary reasonably may require to make the decision described in subsection (b)(1) of this section.

(d) Decisions and approvals.—The Secretary shall make a decision about a petition filed under this section not later than 120 days after the date the petition is filed. A decision approving a petition must be based on substantial evidence. The Secretary may approve a petition in whole or in part. If the Secretary does not make a decision within the 120-day period, the petition shall be deemed to be approved and the manufacturer shall be exempt from the standard for the line covered by the petition for the subsequent model year.

(e) Rescissions.—The Secretary may rescind an exemption if the Secretary decides that the anti-theft device has not been as effective in reducing and deterring motor vehicle theft as compliance with the standard. A rescission may be effective only—

(1) for a model year after the model year in which the rescission occurs; and

(2) at least 6 months after the manufacturer receives written notice of the rescission from the Secretary.

(Added Pub.L. 103–272, § 1(e), July 5, 1994, 108 Stat. 1082, and amended Pub.L. 103–429, § 6(45), Oct. 31, 1994, 108 Stat. 4383.)

HISTORICAL AND STATUTORY NOTES

Revision Notes and Legislative Reports 1994 Acts.

Revised Section	Source (U.S. Code)	Source (Statutes at Large)
33106(a)(1)	15:2025(e).	Oct. 20, 1972, Pub.L. 92–513, 86 Stat. 947, § 605(a)(1), (3), (b)–(e); added Oct. 25, 1984, Pub.L. 98–547, § 101(a), 98 Stat. 2759.
33106(a)(2)	15:2025(a)(3).	
33106(b)	15:2025(a)(1), (2).	Oct. 20, 1972, Pub.L. 92–513, 86 Stat. 947, § 605(a)(2); added Oct. 25, 1984, Pub.L. 98–547, § 101(a), 98 Stat. 2759; Oct. 25, 1992, Pub.L. 102–519, § 304, 106 Stat. 3396.
33106(c)	15:2025(b).	
33106(d)	15:2025(c).	
33106(e)	15:2025(d).	

In subsection (b)(1), the words "the application of any of" are omitted as surplus. The words "or lines" are omitted because of 1:1.

In subsection (b)(2)(A), the words "for model year 1987" are substituted for "For the initial model year to which such standard applies" for clarity. See 50 Fed.Reg. 43166 (1985). In clause (D), the words "that the Attorney General decides" are substituted for "for which the Secretary may grant such an exemption (if any) shall be determined" for clarity and because of the restatement.

In subsection (d), the words "for the line covered by the petition" are added for clarity.

Subsection (e) is substituted for 15:2025(d) for clarity and to eliminate unnecessary words. House Report No. 103–180.

This amends 49:33106(b)(3) to correct an error in the codification enacted by section 1 of the Act of July 5, 1994 (Public Law 103–272, 108 Stat. 1082). House Report No. 103–831.

Amendments

1994 Amendments. Subsec. (b)(3). Pub.L. 103–429, § 6(45), substituted "paragraph (2)(B) or (C) of this subsection" for "subparagraph (2)(B) or (C) of this paragraph".

Effective Dates

1994 Acts. Amendment by Pub.L. 103–429 effective July 5, 1994, see section 9 of Pub.L. 103–429, set out as a note under section 321 of this title.

LIBRARY REFERENCES

American Digest System

Consumer protection; motor vehicle sales and service, see Consumer Protection ⇐9.

Encyclopedias

Consumer protection; motor vehicle sale or lease, see C.J.S. Credit Reporting Agencies; Consumer Protection § 52.

WESTLAW ELECTRONIC RESEARCH

Consumer protection cases: 92Hk[add key number].
See, also, WESTLAW guide following the Explanation pages of this volume.

§ 33107. Voluntary vehicle identification standards

(a) Election to inscribe or affix identifying marks.—The Secretary of Transportation by regulation may prescribe a vehicle theft prevention standard under which a person may elect to inscribe or affix an identifying number or symbol on major parts of a motor vehicle manufactured or owned by the person for purposes of section 511 of title 18 and related provisions. The standard may include provisions for registration of the identification with the Secretary or a person designated by the Secretary.

(b) Standard requirements.—The standard under this section shall be practicable and provide relevant objective criteria.

(c) Voluntary compliance.—Compliance with the standard under this section is voluntary. Failure to comply does not subject a person to a penalty or enforcement under this chapter.

(d) Compliance with other standards.—Compliance with the standard under this section does not relieve a manufacturer from a requirement of a standard prescribed under section 33102 or 33103 of this title.

(Added Pub.L. 103–272, § 1(e), July 5, 1994, 108 Stat. 1083.)

HISTORICAL AND STATUTORY NOTES

Revision Notes and Legislative Reports 1994 Acts.

Revised Section	Source (U.S. Code)	Source (Statutes at Large)
33107	15:2033.	Oct. 20, 1972, Pub.L. 92–513, 86 Stat. 947, § 616; added Oct. 25, 1984, Pub.L. 98–547, § 101(a), 98 Stat. 2765; Oct. 25, 1992, Pub.L. 102–519, § 306(a), 106 Stat. 3397.

House Report No. 103–180, see 1994 U.S. Code Cong. and Adm. News, p. 818.

LIBRARY REFERENCES

American Digest System

Consumer protection; administrative regulation in general, see Consumer Protection ⇐13.

Consumer protection; motor vehicle sales and service, see Consumer Protection ⇐9.

Encyclopedias

Consumer protection; administrative regulation in general, see C.J.S. Credit Reporting Agencies; Consumer Protection § 90.

Consumer protection; motor vehicle sale or lease, see C.J.S. Credit Reporting Agencies; Consumer Protection § 52.

WESTLAW ELECTRONIC RESEARCH

Consumer protection cases: 92Hk[add key number].

See, also, WESTLAW guide following the Explanation pages of this volume.

§ 33108. Monitoring compliance of manufacturers

(a) Records, reports, information, and inspection.—To enable the Secretary of Transportation to decide whether a manufacturer of motor vehicles containing a part subject to a standard prescribed under section 33102 or 33103 of this title, or a manufacturer of major replacement parts subject to the standard, is complying with this chapter and the standard, the Secretary may require the manufacturer to—

(1) keep records;

(2) make reports;

(3) provide items and information; and

(4) allow an officer or employee designated by the Secretary to inspect the vehicles and parts and relevant records of the manufacturer.

(b) Entry and inspection.—To enforce this chapter, an officer or employee designated by the Secretary, on presenting appropriate credentials and a written notice to the owner, operator, or agent in charge, may inspect a facility in which motor vehicles containing major parts subject to the standard, or major replacement parts subject to the standard, are manufactured, held for introduction into interstate commerce, or held for sale after introduction into interstate commerce. An inspection shall be conducted at a reasonable time, in a reasonable way, and with reasonable promptness.

(c) Certification of compliance.—(1) A manufacturer of a motor vehicle subject to the standard, and a manufacturer of a major replacement part subject to the standard, shall provide at the time of delivery of the vehicle or part a certification that the vehicle or part conforms to the applicable motor vehicle theft prevention standard. The certification shall accompany the vehicle or part until its delivery to the first purchaser. The Secretary by regulation may prescribe the type and form of the certification.

(2) This subsection does not apply to a motor vehicle or major replacement part that is—

(A) intended only for export;

(B) labeled only for export on the vehicle or replacement part and the outside of any container until exported; and

(C) exported.

(d) Notification of error.—A manufacturer shall notify the Secretary if the manufacturer discovers that—

(1) there is an error in the identification (required by the standard) applied to a major part installed by the manufacturer in a motor vehicle during its assembly, or to a major replacement part manufactured by the manufacturer; and

(2) the motor vehicle or major replacement part has entered interstate commerce.

(Added Pub.L. 103–272, § 1(e), July 5, 1994, 108 Stat. 1083.)

HISTORICAL AND STATUTORY NOTES

Revision Notes and Legislative Reports
1994 Acts.

Revised Section	Source (U.S. Code)	Source (Statutes at Large)
33108(a)	15:2026(a).	Oct. 20, 1972, Pub.L. 92–513, 86 Stat. 947, § 606; added Oct. 25, 1984, Pub.L. 98–547, § 101(a), 98 Stat. 2760.
33108(b)	15:2026(b).	
33108(c)	15:2026(c).	
33108(d)	15:2026(d).	

In subsection (a), before clause (1), the words "is complying" are substituted for "has acted or is acting in compliance" and "determining whether such manufacturer has acted or is acting in compliance" to eliminate unnecessary words. The word "reasonably" is omitted as surplus. In clause (1), the word "keep" is substituted for "establish and maintain" for consistency in the revised title and to eliminate unnecessary words. In clause (4), the words "upon request", "duly", and "such manufacturer shall make available all such items and information in accordance with such reasonable rules as the Secretary may prescribe" are omitted as surplus.

In subsection (b), the words "duly" and "enter and" are omitted as surplus.

In subsection (c)(2)(B), the words "or tagged" and "if any" are omitted as surplus.

Subsection (d) is substituted for 15:2026(d) for clarity. House Report No. 103–180.

LIBRARY REFERENCES

American Digest System

Administration inspections and searches; regulated businesses, see Searches and Seizures ⇐79.

Consumer protection; motor vehicle sales and service, see Consumer Protection ⇐9.

Encyclopedias

Administration inspections and searches; regulated businesses, see C.J.S. Searches and Seizures § 99.

Consumer protection; motor vehicle sale or lease, see C.J.S. Credit Reporting Agencies; Consumer Protection § 52.

WESTLAW ELECTRONIC RESEARCH

Consumer protection cases: 92Hk[add key number].
Searches and seizures cases: 349k[add key number].
See, also, WESTLAW guide following the Explanation pages of this volume.

§ 33109. National Stolen Passenger Motor Vehicle Information System

(a) General requirements.—(1) Not later than July 25, 1993, the Attorney General shall establish, and thereafter maintain, a National Stolen Passenger Motor Vehicle Information System containing the vehicle identification numbers of stolen passenger motor vehicles and stolen passenger motor vehicle parts. The System shall be located in the National Crime Information Center and shall include at least the following information on each passenger motor vehicle reported to a law enforcement authority as stolen and not recovered:

(A) the vehicle identification number.

(B) the make and model year.

(C) the date on which the vehicle was reported as stolen.

(D) the location of the law enforcement authority that received the report of the theft of the vehicle.

(E) the identification numbers of the vehicle parts (or derivatives of those numbers), at the time of the theft, if those numbers are different from the vehicle identification number of the vehicle.

(2) In establishing the System, the Attorney General shall consult with—

(A) State and local law enforcement authorities; and

(B) the National Crime Information Center Policy Advisory Board to ensure the security of the information in the System and that the System will not compromise the security of stolen passenger motor vehicle and passenger motor vehicle parts information in the System.

(3) If the Attorney General decides that the Center is not able to perform the functions of the System, the Attorney General shall make an agreement for the operation of the System separate from the Center.

(4) The Attorney General shall prescribe by regulation the effective date of the System.

(b) Requests for information.—(1) The Attorney General shall prescribe by regulation procedures under which an individual or entity intending to transfer a passenger motor vehicle or passenger motor

vehicle part may obtain information on whether the vehicle or part is listed in the System as stolen.

(2) On request of an insurance carrier, a person lawfully selling or distributing passenger motor vehicle parts in interstate commerce, or an individual or enterprise engaged in the business of repairing passenger motor vehicles, the Attorney General (or the entity the Attorney General designates) immediately shall inform the insurance carrier, person, individual, or enterprise whether the System has a record of a vehicle or vehicle part with a particular vehicle identification number (or derivative of that number) being reported as stolen. The Attorney General may require appropriate verification to ensure that the request is legitimate and will not compromise the security of the System.

(c) Advisory committee.—(1) Not later than December 24, 1992, the Attorney General shall establish in the Department of Justice an advisory committee. The Attorney General shall develop the System with the advice and recommendations of the committee.

(2)(A) The committee is composed of the following 10 members:

(i) the Attorney General.

(ii) the Secretary of Transportation.

(iii) one individual who is qualified to represent the interests of the law enforcement community at the State level.

(iv) one individual who is qualified to represent the interests of the law enforcement community at the local level.

(v) one individual who is qualified to represent the interests of the automotive recycling industry.

(vi) one individual who is qualified to represent the interests of the automotive repair industry.

(vii) one individual who is qualified to represent the interests of the automotive rebuilders industry.

(viii) one individual who is qualified to represent the interests of the automotive parts suppliers industry.

(ix) one individual who is qualified to represent the interests of the insurance industry.

(x) one individual who is qualified to represent the interests of consumers.

(B) The Attorney General shall appoint the individuals described in subparagraph (A)(iii)–(x) of this paragraph and shall serve as chairman of the committee.

(3) The committee shall make recommendations on developing and carrying out—

prescribed in consultation with the Secretary that are necessary to ensure that a verification a person provides under subsection (a)(2) of this section is uniform, effective, and resistant to fraudulent use.

(Added Pub.L. 103–272, § 1(e), July 5, 1994, 108 Stat. 1086.)

HISTORICAL AND STATUTORY NOTES

Revision Notes and Legislative Reports 1994 Acts.

Revised Section	Source (U.S. Code)	Source (Statutes at Large)
33111(a)	15:2026b(a).	Oct. 20, 1972, Pub.L. 92–513, 86 Stat. 947, § 608; added Oct. 25, 1992, Pub.L. 102–519, § 306(c), 106 Stat. 3397.
33111(b)	15:2026b(c) (1st, 2d sentences).	
33111(c)	15:2026b(b), (c) (last sentence).	

In subsection (a), before clause (1), the word "distribute" is omitted as being included in "sell". In clause (1), the word "establishing" is substituted for "determining" for clarity and consistency in the revised title.

Subsection (b)(2) is substituted for 15:2026b(c)(2d sentence) for clarity. House Report No. 103–180.

Effective Dates

1994 Acts. Section 4(v) of Pub.L. 103–272 provided that: "Section 33111 of title 49, United States Code, as enacted by section 1 of this Act, is effective on the date on which the National Stolen Passenger Motor Vehicle Information System is established under section 33109 of title 49."

LIBRARY REFERENCES

American Digest System

Consumer protection; motor vehicle sales and service, see Consumer Protection ⇐9.

Encyclopedias

Consumer protection; motor vehicle sale or lease, see C.J.S. Credit Reporting Agencies; Consumer Protection § 52.

WESTLAW ELECTRONIC RESEARCH

Consumer protection cases: 92Hk[add key number].
See, also, WESTLAW guide following the Explanation pages of this volume.

§ 33112. Insurance reports and information

(a) Purposes.—The purposes of this section are—

(1) to prevent or discourage the theft of motor vehicles, particularly those stolen for the removal of certain parts;

(2) to prevent or discourage the sale and distribution in interstate commerce of used parts that are removed from those vehicles; and

(3) to help reduce the cost to consumers of comprehensive insurance overage for motor vehicles.

(b) Definitions.—In this section—

(1) "insurer" includes a person (except a governmental authority) having a fleet of at least 20 motor vehicles that are used primarily for rental or lease and are not covered by a theft insurance policy issued by an insurer of passenger motor vehicles.

(2) "motor vehicle" includes a truck, a multipurpose passenger vehicle, and a motorcycle.

(c) Annual information requirement.—**(1)** An insurer providing comprehensive coverage for motor vehicles shall provide annually to the Secretary of Transportation information on—

(A) the thefts and recoveries (in any part) of motor vehicles;

(B) the number of vehicles that have been recovered intact;

(C) the rating rules and plans, such as loss information and rating characteristics, used by the insurer to establish premiums for comprehensive coverage, including the basis for the premiums, and premium penalties for motor vehicles considered by the insurer as more likely to be stolen;

(D) the actions taken by the insurer to reduce the premiums, including changing rate levels for comprehensive coverage because of a reduction in thefts of motor vehicles;

(E) the actions taken by the insurer to assist in deterring or reducing thefts of motor vehicles; and

(F) other information the Secretary requires to carry out this chapter and to make the report and findings required by this chapter.

(2) The information on thefts and recoveries shall include an explanation on how the information is obtained, the accuracy and timeliness of the information, and the use made of the information, including the extent and frequency of reporting the information to national, public, and private entities such as the Federal Bureau of Investigation and State and local police.

(d) Reports on reduced claims payments.—An insurer shall report promptly in writing to the Secretary if the insurer, in paying a claim under an adjustment or negotiation between the insurer and the insured for a stolen motor vehicle—

(1) reduces the payment to the insured by the amount of the value, salvage or otherwise, of a recovered part subject to a standard prescribed under section 33102 or 33103 of this title; and

(2) the reduction is not made at the express election of the insured.

(e) General exemptions.—The Secretary shall exempt from this section, for one or more years, an insurer that the Secretary decides should be exempted because—

(1) the cost of preparing and providing the information is excessive in relation to the size of the insurer's business; and

(2) the information from that insurer will not contribute significantly to carrying out this chapter.

(f) Small insurer exemptions.—(1) In this subsection, "small insurer" means an insurer whose premiums for motor vehicle insurance issued directly or through an affiliate, including a pooling arrangement established under State law or regulation for the issuance of motor vehicle insurance, account for—

(A) less than one percent of the total premiums for all forms of motor vehicle insurance issued by insurers in the United States; and

(B) less than 10 percent of the total premiums for all forms of motor vehicle insurance issued by insurers in any State.

(2) The Secretary shall exempt by regulation a small insurer from this section if the Secretary finds that the exemption will not significantly affect the validity or usefulness of the information collected and compiled under this section, nationally or State-by-State. However, the Secretary may not exempt an insurer under this paragraph that is considered an insurer only because of subsection (b)(1) of this section.

(3) Regulations under this subsection shall provide that eligibility as a small insurer shall be based on the most recent calendar year for which adequate information is available, and that, once attained, the eligibility shall continue without further demonstration of eligibility for one or more years, as the Secretary considers appropriate.

(g) Prescribed form.—Information required by this section shall be provided in the form the Secretary prescribes.

(h) Periodic compilations.—Subject to section 552 of title 5, the Secretary periodically shall compile and publish information obtained by the Secretary under this section, in a form that will be helpful to the public, the police, and Congress.

(i) Consultation.—In carrying out this section, the Secretary shall consult with public and private agencies and associations the Secretary considers appropriate.

HISTORICAL AND STATUTORY NOTES

Revision Notes and Legislative Reports 1994 Acts.

Revised Section	Source (U.S. Code)	Source (Statutes at Large)
33112(a)	15:2032(a)(1) (1st sentence words before 4th comma).	Oct. 20, 1972, Pub.L. 92–513, 86 Stat. 947, § 615; added Oct. 25, 1984, Pub.L. 98–547, § 101(a), 98 Stat. 2763; Oct. 25, 1992, Pub.L. 102–519, § 306(a), 106 Stat. 3397.
33112(b)(1)	15:2032(a)(3).	
33112(b)(2)	15:2032(f).	
33112(c)	15:2032(a)(1) (1st sentence words after 4th comma, last sentence), (2).	
33112(d)	15:2032(d).	
33112(e)	15:2032(a)(4).	
33112(f)	15:2032(a)(5).	
33112(g)	15:2032(e).	
33112(h)	15:2032(b).	
33112(i)	15:2032(c).	

In subsection (b)(1), the word "authority" is substituted for "entity" for clarity and consistency in the revised title.

In subsection (c)(1), before clause (A), the words "(or their designated agents)" are omitted as surplus. The words "beginning 2 years after October 25, 1984" are omitted as executed.

In subsection (c)(2), the words "by the insurer" are omitted as surplus.

Subsection (f)(1)(B) is substituted for 15:2032(a)(5)(C)(ii) for clarity and to eliminate unnecessary words.

In subsection (f)(2), the words "the requirements of" are omitted as surplus.

In subsection (g), the words "by regulation or otherwise" are omitted as surplus.

In subsection (h), the words "the police" are substituted for "including Federal, State, and local police" to eliminate unnecessary words.

In subsection (i), the words "In carrying out this section" are added for clarity. The words "public and private agencies and associations" are substituted for "such State and insurance regulatory agencies and other agencies and associations, both public and private" to eliminate unnecessary words. House Report No 103–180.

LIBRARY REFERENCES

American Digest System

Duties of federal officers and performance thereof, see United States ⇐41.
Heads of executive departments, see United States ⇐32.

Encyclopedias

Duties of federal officers, see C.J.S. United States § 41.
Heads of executive departments, see C.J.S. United States § 32.

WESTLAW ELECTRONIC RESEARCH

United States cases: 393k[add key number].
See, also, WESTLAW guide following the Explanation pages of this volume.

§ 33113. Theft reports

(a) Truck, multipurpose passenger vehicle, and motorcycle report.—Not later than October 25, 1995, the Secretary of Transportation shall submit a report to Congress that includes—

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60610-3781

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An Evaluation of the Effectiveness of Automobile Parts Marking on Preventing Theft

Revised Final Report

July 1, 1999

Prepared for

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Contents

Executive Summary i

Findings Based on Automobile Theft Data ii
Findings Based on a Survey of Law Enforcement Officers iii

Introduction 1

Step One: Parts Marking/Anti-theft Device Effectiveness 3
Statistical Model 3
Analysis File 5
Discussion of the Model 7
Covariates 8
Estimation 10
Interpretation 11
Step 2: Cost of Car Theft 17
Step 3: Cost of Parts Marking 23
Step 4: Conclusions 23

References 26

List of Figures

Figure 1: Average Theft Rates for Cars with Parts Never Marked and Cars with Either Parts Marked or a Factory Installed Anti-Theft Device 3

Figure 2: Trends in Automobile Theft Rates, High Theft-Rate and Low Theft-Rate Models, Controlling for Model and State 11

Figure 3: Trends in Unrecovered Automobile Theft Rates, High Theft-Rate, and Low Theft-Rate Models, Controlling for Model and State 13

Figure 4: NCVS and FBI Data 19

List of Tables

Table 1: Parameter Estimates and Standard Errors from Regressing Thefts on Time 12

Table 2: Parameter Estimates and T-Scores from the Poisson Regressions on Automobile Theft Rates Conditioning on Model and State 15

Table 3: Parameter Estimates and T-Scores from the Poisson Regressions on Unrecovered Stolen Cars Conditioning on Model and State 17

Table 4: National Criminal Victimization Survey Data for Auto Theft, 1981–1994 20

Executive Summary[1]

The nature of car theft changed significantly beginning in the 1970's from joyriding to theft for profit, in large part due to a proliferation of so-called "chop shops" that engage in the volume sale of stolen car parts to body shops, to auto repair shops, and directly to car owners. Because auto theft investigators were often unable to identify from which vehicles the stolen parts came or whether the parts were stolen at all, the Federal Government enacted the Motor Vehicle Theft Law Enforcement Act of 1984 that required automobile manufacturers, based on standards established by the U.S. Department of Transportation (DOT), to mark 14 component parts of selected high-theft automobile lines with identifying numbers. The Federal Anti-Car Theft Act of 1992 required manufacturers to mark an additional 50 percent of their remaining lines. Both statutes permitted the DOT to grant a limited number of exemptions for new automobile lines equipped with selected anti-theft devices.

The 1992 legislation also required the U.S. Attorney General to conduct two assessments of the DOT rules:

(1) conduct by 1997 an initial evaluation of the effectiveness of the parts marking and, if found to be effective in inhibiting chop shop operations and deterring motor vehicle theft, extend parts marking to all remaining vehicle lines by December 1997; and,

(2) conduct by 1999 a long-range review of (a) whether parts marking has been effective in substantially inhibiting the operation of chop shops and motor vehicle theft and (b) whether the anti-theft devices for which the DOT has granted exemptions are an effective substitute for parts marking in substantially inhibiting motor vehicle theft.

Pursuant to the first of these two research requirements, the U.S. Department of Justice's National Institute of Justice contracted with Abt Associates to conduct a two-part study of the legislation's impact.

The first part of the study examined national auto theft data using a cross-sectional time-series design. The second part of the study examined the experiences and opinions of 47 auto theft investigators regarding the effectiveness of anti-theft labels. The 47 investigators represent 31 of the 32 largest cities in the country (plus Miami), six smaller municipalities, and nine State agencies.

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1 This Executive Summary incorporates findings from an earlier report prepared for the National Institute of Justice by Abt Associates Inc. The report is *Opinions of 47 Auto Theft Investigators Regarding Automobile Component Parts Anti-Theft Labels* by Peter Finn, Linda Truitt, and Larry Burton, December 30, 1996.

Findings Based on Automobile Theft Data

The DOT assembled data from two principal sources: The Federal Bureau of Investigations reported automobile thefts by model, model year, state and registration year from 1981 through 1995, and R.J. Polk Inc. provided data on car registrations by model, model year, state and registration year from 1981 through 1995. Taken together, these two files yielded estimates of the automobile theft rate by model, model year, state and registration year from 1984 through 1995. (For reasons discussed in the report, registration years 1981 through 1983 did not enter the analysis.) The DOT indicated which cars were marked. Abt Associates augmented the DOT data by adding information based on Census statistics and FBI Uniform Crime Reports. Abt Associates also analyzed fourteen years of data on automobile theft from the National Household Victimization Survey.

Based on statistical analysis, the study estimated the reduction in automobile thefts attributed to parts marking. Estimates are imprecise, but best estimates are that between 33 and 158 fewer cars are stolen by professional thieves per 100,000 cars that were marked between 1987 and 1995. Those marked cars were among the one-third that would, otherwise, have had the highest theft rates in the Nation. The effectiveness of extending parts marking to average theft-rate cars (as called for by the 1992 Act) is less certain: Because most of those cars have yet to be marked, that effectiveness could not be observed directly.

Estimates of the victim's cost are also imprecise, because victims do not distinguish theft for joyriding (which is unlikely to be deterred by parts marking) from theft by professional thieves. A conservative estimate is that the theft of an automobile by a professional thief costs the average victim about $6,000. This cost excludes insurance reimbursement, and it excludes psychological costs and inconvenience of being a victim.

Marking an automobile costs under $5 per car. Because an automobile is typically used for 10 to 15 years, however, the average cost per year of marking a car is less than 50 cents per car.

Assume that 33 car thefts are prevented every year by marking 100,000 high theft-rate cars, that the cost of a car theft is $6,000 per car, and that the cost of marking each car is 50 cents per year. Then the estimated benefits from marking 100,000 high theft-rate cars is almost $200,000, which compares favorably with paying $50,000 per year to mark those cars. The benefits from extending parts marking to other automobiles is uncertain. Nevertheless, according to our calculations, parts marking would be cost effective if it prevents as few as 8 automobile thefts per 100,000 marked cars. This seems like an achievable target for lower theft-rate cars based on the apparent success rate (at least 33 cars) for marking the parts of high theft-rate vehicles. The implication is that parts marking would be cost effective if extended to cars that were marked as of 1995.

Of course, these estimates could be wrong. Possibly, parts marking is less effective, and victim costs are lower, than estimated here. As explained in the report, the average victim cost is unlikely to be lower than $2,700, which is the average loss from a car theft reported on the National Household Victimization Survey. This means that if as few as 19 car thefts were prevented per 100,000 marked cars, then parts marking would be cost effective. The evidence suggests that parts marking is at least this effective.

The Department of Justice also asked Abt Associates to judge whether anti-theft exclusions were a good substitute for parts marking. For reasons explained in the report, we could not make that judgement, because the data were not adequate to support an inference. Nevertheless, we question the logic of using anti-theft devices as substitutes for parts marking, because they serve different purposes. Anti-theft devices are intended to *harden* a vehicle target, making it more difficult to steal the car. Anti-theft devices probably discourage joyriding, and based on the study, also seem to deter professional thieves. In contrast, parts-marking is intended to assist law enforcement in identifying stolen cars and their parts, and to promote prosecution by building stronger cases. At a cost of somewhat more than $200 per car for anti-theft devices (compared with $5 per car for parts marking), anti-theft devices seem to be a complement to, not a substitute for, parts marking. This conclusion is consistent with the opinions of law enforcement personnel, which are discussed next.

Findings Based on a Survey of Law Enforcement Officers

The conclusions presented in this section are based on telephone conversations with auto theft investigators from 47 jurisdictions, including 31 of the 32 largest cities in the country (plus Miami), six smaller municipalities, and nine State agencies. While the jurisdictions do not represent a random sample of law enforcement agencies across the country, they do include the majority of jurisdictions with the highest auto theft rates in the Nation.

Nearly three-quarters of the 40 big city and State auto theft investigators contacted reported that anti-theft labels are useful in helping to arrest chop shop owners and individuals who steal or traffic in stolen vehicles and parts. Nearly two-thirds of the investigators reported that labels also help them to prosecute chop shop operators and other automobile and parts thieves. Investigators reported that the most serious obstacle to making more effective use of the labels is that they are easy to remove and, once removed, it is impossible to prove that the parts are stolen because the owner cannot be traced. Investigators were about evenly divided regarding whether anti-theft labels deter professionals or amateurs from stealing or stripping cars. Investigators from the six smaller jurisdictions and one rural State report little or no use of anti-theft labels because joyriding, and a resulting high recovery rate of stolen vehicles, is their principal form of auto theft.

A majority of investigators reported that audible alarms, steering wheel "clubs," kill switches, and "smart" keys all help deter auto theft but that each has drawbacks that prevent it from substituting effectively for parts marking. The small minority of investigators who had experience with recovery systems reported that the systems are effective in recovering stolen cars but that their use to date is limited by lack of transmission equipment and cost to the consumer.

All but one investigator felt that the parts marking legislation should be extended to all automobile lines and to all types of noncommercial vehicles, especially pickup trucks. While every investigator reported that the parts that manufacturers are currently required to label are the parts that are stolen most frequently, all but six investigators recommended that additional parts be required to have labels, citing most often seats and airbags. Just over one-third of the investigators recommended that manufacturers be required to stamp vehicle identification numbers (VINs) on the component parts rather than use labels.

Investigators reported making use of three principal types of resources to assist them in making effective use of component parts labels: training, technical assistance, and equipment. Investigators reported they rely primarily on one or both of two organizations for training related to anti-theft labels: the National Insurance Crime Bureau (NICB) and the International Association of Auto Theft Investigators (IAATI). The NICB also assists jurisdictions with auto theft investigations through its computerized database and field agents, many of whom go on site to help local investigators. Local auto theft task forces assist with investigations in nine jurisdictions contacted. Nearly half the jurisdictions use ultraviolet lights to detect counterfeit labels or the footprints that most anti-theft labels are designed to leave if removed.

Findings from the survey suggest that component parts anti-theft labels assist most big city and State auto theft investigators to arrest car and parts thieves and to prosecute them. Investigators were nearly evenly split about the possible deterrent effects of the labels on auto theft, although some reported that the labels deter some chop shop operators. Anti-theft devices are not considered sufficiently effective to warrant labeling exemptions for cars that manufacturers equip with the devices. Almost all investigators would like the parts marking legislation expanded to include not only all remaining car lines but also commercial vehicles and additional parts. Investigators suggested that parts marking might be more effective if auto theft investigators and patrol officers were trained more systematically and frequently in how to investigate label removal and tampering, if legislation in every State made tampering with or removing labels a felony, and if investigators had access to ultraviolet lights.

Introduction

The nature of car theft changed significantly beginning in the 1970's from joyriding to theft for profit, in large part due to a proliferation of so-called "chop shops" that engage in the volume sale of stolen car parts to body shops, to auto repair shops, and directly to car owners. Because auto theft investigators were often unable to identify from which vehicles the stolen parts came or whether the parts were stolen at all, the Federal Government enacted the Motor Vehicle Theft Law Enforcement Act of 1984 that required automobile manufacturers, based on standards established by the U.S. Department of Transportation (DOT), to mark 14 component parts of selected high-theft automobile lines with identifying numbers. The Federal Anti-Car Theft Act of 1992 required manufacturers to mark an additional 50 percent of their remaining lines. Both statutes permitted the DOT to grant a limited number of exemptions for new automobile lines equipped with selected anti-theft devices.

The 1984 Act has received limited evaluation. Using 1987 data, Harris and Clarke (1991a) found that cars designated as "high-theft" models were no more likely to be involved in collisions (which would create greater demand for spare parts) than were other cars, concluding in a separate study (1991b) that parts markings has a limited deterrence effect. The Highway Loss Data Institute (1995), examining insurance industry data, found slightly reduced theft rates for marked vehicles, particularly in urban areas. The Department of Transportation (1991), using National Crime Information Center data from the FBI, could not draw any conclusions concerning parts marking. These evaluations were done shortly after the new regulations went into effect, and before most cars had been marked, which may explain why evaluators could not find a significant relationship between theft rates and parts marking. A recent report by the Department of Transportation (1998) concluded tentatively that parts marking probably was cost effective.

The 1992 legislation also required the U.S. Attorney General to conduct two assessments of the DOT rules:

(1) conduct by 1997 an initial evaluation of the effectiveness of the parts marking and, if found to be effective in inhibiting chop shop operations and deterring motor vehicle theft, extend parts marking to all remaining vehicle lines by December 1997; and,

(2) conduct by 1999 a long-range review of (a) whether parts marking has been effective in substantially inhibiting the operation of chop shops and motor vehicle theft and (b) whether the anti-theft devices for which the DOT has granted exemptions are an effective substitute for parts marking in substantially inhibiting motor vehicle theft.

Pursuant to the first of these two assessment requirements, the U.S. Department of Justice's National Institute of Justice contracted with Abt Associates to conduct a two-part study of the impact of the legislation.

The first part of the study examined the experiences and opinions of 47 auto theft investigators regarding the effectiveness of anti-theft labels.[2] The 47 investigators represent 31 of the 32 largest cities in the country (plus Miami), six smaller municipalities, and nine State agencies. The second part of the study, an empirical evaluation of automobile parts marking on preventing theft, is reported here.

This study has four steps. The first step is to estimate the reduction in automobile theft that is attributable to parts marking and anti-theft devices. The second step is to estimate the dollar costs of stolen cars net of recovery value. The third step is to estimate the cost of parts marking and anti-theft devices. The final step is to compare the cost of marking cars to the estimated savings from preventing thefts through parts marking.

Because this report is necessarily technical, it may be helpful to provide a nontechnical explanation of the analysis. The study identified car models that had never received parts marking and measured trends in their theft rates from 1984 to 1995. The study also identified car models that had been designated for parts marking and examined trends in their theft rates from 1984 to 1995. If parts marking had been effective, we would expect that the theft rates for those marked cars would decrease over time as an increasing proportion of them were, in fact, marked. At the least, we would expect that trends in theft rates for marked cars would compare favorably with trends in the theft rates for unmarked cars. In fact, the analysis showed that theft rates decreased for marked cars, while the theft rate increased slightly for other cars. A rigorous statistical analysis showed that the decrease in theft rates for marked cars was statistically significant, and that parts marking was a likely explanation for that decrease.

The study then analyzed data from the National Household Victimization Survey to determine the costs borne by victims—cars owners and insurance companies—of automobile theft. Estimates of dollar loss were not precise, because the victimization survey does not distinguish between thefts by joyriders (who are unlikely to be deterred by parts marking) and theft by professional thieves and those attempting to defraud insurance companies (who are the target of parts marking). Selecting a low estimate of average victim cost net of recovery value, and comparing this with the cost of marking cars, we concluded that parts marking has been cost effective. Whether extending parts marking to currently unmarked cars would be cost effective is more speculative, obviously, because inferences could not be based on direct experience. Nevertheless, based on demonstrated success marking high-theft cars, evidence

2 *Opinions of 47 Auto Theft Investigators Regarding Automobile Component Parts Anti-Theft Labels* by Peter Finn, Linda Truitt, and Larry Burton, December 30, 1996.

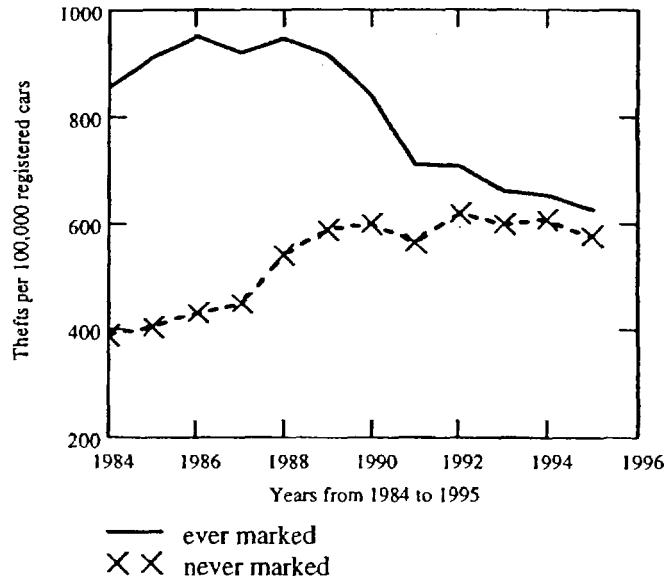
supports a tentative conclusion that extending parts marking to all other cars would be cost effective.

Step One: Parts Marking/Anti-theft Device Effectiveness

Before discussing the statistical analysis, it may be helpful to graph automobile theft rates for two types of cars. "Car Models with Parts Never Marked" are car models that were never designated for either marking or anti-theft exemptions between 1987 and 1995. Our data have as few as 29 million such registered cars in 1984 and as many as 76 million 1995. As explained later, this difference occurs because we could not include model lines that existed before 1981, the earliest year in the data. "Car Models with either Parts Marked or an Anti-Theft Device (ATD) Exemption" had parts marked at some time between 1987 and 1995. Some of the cars may have received anti-theft exemptions that allowed them to discontinue marking parts at a later time. There were 0.8 million cars in 1987 and 26 million in 1995.

Figure 1 shows the theft rates by year for both of these types of cars. For unmarked cars, the theft rate rose slightly before the 1990s and then stayed fairly constant at almost 600 per 100,000 registered cars. For the cars that received a high-theft designation at some time, the rate was about 800 to 900 cars per 100,000 in 1987, and about 600 per 100,000 in 1995. This suggests that parts marking may have been highly effective at reducing automobile theft. However, we need a more rigorous statistical analysis to be confident in the trends that appear in Figure 1.

Figure 1 — Average Theft Rates for Cars with Parts Never Marked and Cars with Either Parts Marked or a Factory Installed Anti-Theft Device



Statistical Model

The National Highway Traffic Safety Administration (NHTSA) provided Abt Associates with car thefts and recovery data by car model, across States, and over time.[3] Variables that enter this analysis are defined as:

3 The usual term is make and model, but we have reduced this to a shorthand form: model. As an illustration, a Ford Explorer is a model for our purposes. A distinguishing feature of a model is that cars of the same model have interchangeable body parts, meaning that a car from any year within this class has parts that meet the specification for parts for a car from any other year in this class.

S_{ijkm} The number of cars of model i that are stolen in State j during year k. The m denotes the model year. For example, the data report the number of 1993 model-year Ford Explorers that were stolen in Massachusetts in 1995.

S_{ijk} For much of the analysis, we will aggregate over model year, so:

$$S_{ijk} = \sum_{m=1}^{m=k} S_{ijkm}$$

For example, this new variable would tell us the number of Ford Explorers that were stolen in Massachusetts in 1993. The sum is from 1984, the first year in the data, to k (1993) in the example.[4] This analysis seeks to explain changes in S_{ijk} as a function of parts marking and factory installed anti-theft devices.

N_{ijk} The number of cars of model i that are registered in State j during year k. The number of registered cars is a measure of the number of cars that are *at risk* of being stolen. Unfortunately, our data about registrations overstates the number of cars at risk. New cars may have been registered for just a few months (1994 Ford Explorers that were registered in 1993 are illustrations), and old cars may have been retired during the year but still appear as having been registered during the entire year. We explain later how we adjusted the registration data to account for this overstatement.

R_{ijk} The automobile theft rate for model i in the jth State during the kth year, defined as S_{ijk} divided by N_{ijk}.

We seek to estimate the expected value of S_{ijk} :

$$E(S_{ijk}) = N_{ijk} e^{\alpha_{ij} + X_{ijk}\beta + M_{ijk}\delta + A_{ijk}\gamma} \quad (1)$$

where:

α_{ij} A fixed effect that varies by model i and State j. Thus, other things equal, the theft rate will vary by car model and by State. It will also vary over time, but that later variation is captured by other variables.

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4 The data report model years as of 1981, so no car of model year earlier than 1981 entered the analysis. The data report registrations as of 1984, so no registration year earlier than 1984 enters the analysis. Of course, most 1981 model cars were still registered as of 1984.

δ A parameter representing the reduction in the theft rate that can be attributed to parts marking

M_{ijk} The percentage of cars of model i that were marked in State j during year k. Before 1987, this number was zero.

γ An effect attributable to anti-theft devices.

A_{ijk} The percentage of cars of model i that had factory installed anti-theft devices in State j during year k.

β A parameter vector that captures variation in theft rates attributable to factors that vary across time within a State. The α parameters are expected to capture effects that are specific to a State but which do not vary over time.

X_{ijk} A vector of exogenous factors that help explain automobile theft rates. A list of such variables will receive attention later.

Analysis File

To be included as a stolen car in these data, the theft had to be reported to the FBI. According to the National Criminal Victimization Survey (1986-1992 data), 93 percent of all automobile thefts are reported to the FBI, which serves as a national clearinghouse for identifying stolen cars. Car registration data come from R.L. Polk and Company. The data were assembled by KRA Corporation under contract to NHTSA (KRA, 1997).

This model is estimated using pooled cross-sectional time-series data. The cross-section has two dimensions—the State and the car model. The definition of a State is obvious. A car model is a dealer model (such as a Ford Explorer) that has not undergone structural changes. That is, if Ford Explorers from 1985 through 1990 had common body parts, and if Ford Explorers from 1991 through 1995 had common body parts, but if the 1985–1990 Explorers differed from the 1991–1995 Explorers, then we considered these as being two distinct models for our purposes. This definition was adopted because our interest centered on cars that were stolen so their parts could be resold as replacement parts for cars of the same model. The time series is measured in years from 1984 through 1995.

Using this definition, there were hundreds of car models. Given that there were 50 States and 12 years, there were potentially tens of thousands of data points. In fact, however, the analysis files were considerably smaller. First, the analysis file comprised car models that were deemed high theft automobiles. Given the use of a fixed effect model, cars that never had parts marked could not contribute directly to the parameter estimate δ. Thus, a desire to reduce the computing burden argued for excluding low theft-rate cars from the analysis file.

Second, we eliminated a few car/state combinations because no cars were stolen between 1984 and 1995, so the fixed effect explained everything. Third, we eliminated car models that existed for fewer than two years because these contributed nothing to the estimation. Fourth, we were forced to eliminate car models that existed in 1984 and later if they also existed in years earlier than 1981. Available data lumped those early-year models into an undifferentiated set so we could not compute the requisite theft rates for individual car models. Fifth, we eliminated cases when there were fewer than 100 registered cars of a given model in a given year. We were forced to eliminate a few cases with missing data.

Finally, we had to make some modifications to the car registration data. This adjustment forced us to exclude some additional data. Let:

P_{ijkm} = the number of cars of model type i, model year m, that were reported as registered in State j during year k.

Registrations for cars of model year m, where m is greater than k, are not reported reliably in the Polk data. For example, 1995 Ford Explorers registered in 1994 were not reported in the data. Our decision was to exclude from the analysis file all registrations and thefts for cars where $m > k$. We had to make one additional adjustment to the registration data. P_{ijkm} represented only the first six months of registrations when $k = m$. For example, available data reported only the first six months of car registrations for 1994 Ford Explorers registered during 1994. KRA recommends multiplying P_{ijkm} by 1.495 to get the total number of registrations for year k when $k = m$. But there is an additional problem because some of the cars registered during the first six months were registered at the beginning of the year, some at the end of six months, and most at times in between. The same problem exists for cars registered during the last six months. To estimate the number of cars on the road during year k, we computed

$$N_{ijkm} = 0.75\, P_{ijkm} + 0.25\ ADJ_m\, P_{ijkm}$$

when $k = m$, and

$$N_{ijkm} = P_{ijkm}$$

when $k > m$; where

ADJ_m is the adjustment ratio (0.495) for estimating registrations for the last six months from registrations for the first six months—that is, the adjustment recommended by Polk.

The 0.75 adjustments reflects an assumption that cars registered during the first six months were on the road for an average of 9 months, or 0.75 years. The 0.25 adjustment reflects the assumption that cars that were registered during the last six months were on the road for an average of 3 months, or 0.25 years.

Discussion of the Model

Distinguishing joyriding from for-profit thefts. Many auto thefts seem to be either theft from a vehicle or theft by minors (or others) for joyriding. These forms of theft are not likely to be deterred by parts marking. The other type is theft for profit. Thieves sometimes intend to resell a stolen car, usually out of this country, but often they plan to strip the car of valuable parts which are then sold as replacement parts for damaged cars of the same model.[5] Theft for profit, the target of parts marking, is the focus of this evaluation. The dependent variable does not distinguish between joyriding and theft for profit. Nevertheless, we do not expect parts marking to reduce joyriding, so any reduction in auto theft attributed to parts marking must be a reduction in thefts for profit.

We also specified the dependent variable EQ(1) in one other way intended to reflect theft for profit. Define:

$$S^{C}_{ijkm} = (1 - C_{ijkm})S_{ijkm}$$

where:

- C_{ijkm} Is the proportion of cars of model i (model year m) in the j^{th} State during the k^{th} year that were stolen but recovered in whole or in part.
- S^{c}_{ijkm} Is the number of cars of model i (model year m) that were stolen and not recovered in State j during year k.
- S^{c}_{ijk} Is the sum of S^{c}_{ijkm} over m.

As a measure of theft for profit, S^{c}_{ijk} suffers several deficiencies. A theft for profit can result in a car being returned to its owner or to the insurance company that has rights to the car after paying the owner's claim. The recovered car may comprise nothing more than a frame. In such a case, theft for profit would seem to be the motivation, but that would not be reflected in S^{c}_{ijk}. A second problem is that parts marking may allow frames and other body parts to be identified for marked cars, and hence, be classified as recovered. For cars without parts marking, the same parts may have been unidentified and thus classified as not recovered. For these two reasons, S^{c}_{ijk} probably understates the number of thefts-for-profit, as well as trends in crimes for profit. Using S^{c}_{ijk} in the regression analysis probably leads to parameter

5 Disposing of a stolen car takes many forms beyond those mentioned here. For example, an insurance fraud may work by reporting a car as stripped of its parts, selling the frame to a junk yard, and then replacing the parts on that frame. Because the frame carries the vehicle identification number, the reassembled car can then be registered.

estimates that have a downward bias. Consequently, this report emphasizes the analyses based on S_{ijk}, the theft rate for all cars, and uses results from an analyses of R^c_{ijk} to establish some lower limits.

Effects vary over time. According to our interviews with law enforcement agencies, police did not react immediately to the advent of parts marking. They had to learn that parts marking had been implemented, they had to be trained how to use parts marking (mostly by institute staff funded by insurance companies), and in some cases they had to purchase equipment (such as infrared reading devices). The impact of parts marking may have been delayed as enforcement agencies learned to use the law. Other things equal, this implies that parts marking should have become more effective over time, so that the parameter δ should increase over time.

Of course, thieves may have become better over time at evading the law, and this effect may mitigate against an increasing value of δ. We know of one specific illustration of this problem. Except for the engine block and transmission, car parts are marked with tape that is supposed to leave an indelible trace if removed. The tape that was used initially was not totally effective, and skilled thieves reportedly could remove it without leaving a trace. Improved tape was introduced over time. This suggests that δ might have increased initially as police got better at using parts marking, decreased subsequently as thieves got better at overcoming parts marking, and then increased again as markings improved.

These arguments not withstanding, our earlier report (Rhodes, Norman and Kling, 1998) found no trends in the effectiveness of parts marking. Based on the principal of parsimony, we have assumed that a single δ parameter, rather than a time-varying δ parameter, was appropriate for the analysis.

Covariates

Although the concern of this evaluation is with the effectiveness of parts marking and anti-theft devices, the analyses is more convincing when it controls for other factors that have influenced theft rates over time. Factors that are specific to a State and car model, specifically those factors that remain constant over time, are captured in the fixed effects—the α parameters. This analysis seeks to control for factors that vary over time within a State.

Variables entering this statistical model represent factors that vary over time within a State:

TOTINDEX	The per capita index crime rate exclusive of automobile theft in State j during year k.
SAMEPCT	The percentage of the automobile stock for model i in State j during year k that were of model year k. This variable was introduced into the regression because the number of cars of model i, State j, registration year k, model year k were believed to be inaccurate.
ONEPCT	Same as SAMEPCT, but the registration year was k and the model year was k–1.
REGPERCP	The number of per capita registrations of model i in State j during year k.
DENSITY	Percentage of the population living in urban areas. It seems plausible that problems with crime become more or less serious in a State as it becomes increasingly urbanized.
POP18_24	Percentage of the population aged 18 to 24. Joyriding would seem to be most prevalent among youths and young adults. Thus, we would expect theft rates to increase or decrease as a State's population becomes younger or older.
AGESTOCK	At any time, in any State, the number of cars of model type i (N_{ijk}) has a distinctive age composition. Some cars are fresh from dealers' lots; others are ten or fifteen years old. The age composition of the stock of cars of model i in State j and year k may reflect the desirability of that stock as theft targets. Newer cars would seem to have the greatest resale value. Then again, replacement parts may become increasingly valuable as the stock ages. Moreover, joyriders may find that older cars are better targets because owners become less diligent about protecting their investment as that investment falls in value. We are uncertain about the relationship between theft rates and AGESTOCK, so we introduce an additional variable into the regression, AGESTK2.
AGESTK2	This is the square of AGESTOCK. By introducing AGESTOCK and AGESTK2 in the model, the statistical model allows the relationship between R_{ijk} and AGESTOCK to be non-linear.
	To derive AGESTOCK, we computed:

$$AGESTOCK_{ijk} = \frac{\sum_{m=1981}^{k} N_{ijkm}(k-m+1)}{N_{ijk}}$$

This formulation assigns an age of 1 to 1994 Ford Explorers (m = 1994) registered in 1994 (k = 1994), an age of 2 to 1993 Ford Explorers (m = 1993) registered in 1994 (k = 1994), and so on for other years and other car models.

MARK — This is the same as M, the percentage of marked cars.

ATD — This is the same as A, the percentage of cars with factory installed anti-theft devices.

TREND — The rate at which cars not deemed to be high theft rate cars were stolen in each state during each year.

TIME — A time trend variable. Some of the analysis also uses TIME2, equal to the square of TIME, and TIME3, equal to the cube of TIME.

Estimation

Our original analysis following an approach suggested by Baltagi (1995, 83), but further investigation of that analysis showed that parameter estimates were unduly sensitive to a few car models and years that had extremely high leverage. We decided to abandon that approach in favor of a fixed effects poisson regression (Cameron and Trivedi, 1998). Estimation was done by conditional maximum likelihood (Cameron and Trivedi, 1998, 282; Greene, 1997, 940). This estimation routine was programmed using GAUSS software routine Maximum Likelihood (Aptech Systems Inc., 1996).

The generic (before conditioning) form of the likelihood is:

$$P(S_{ijk}) = \frac{\lambda_{ijk}^{S_{ijk}} e^{-\lambda_{ijk}}}{S_{ijk}!} \quad (3)$$

where $P(S_{ijk})$ is the probability that S_{ijk} cars are stolen and

$$\lambda_{ijk} = e^{\alpha_{ij} + \ln(N_{ijk}) + X_{ijk}\beta + M_{ijk}\delta + A_{ijk}\gamma} \quad (4)$$

where N_{ijk} is the number of cars registered. It has a parameter constrained to zero. See Cameron and Trivedi for how this generic likelihood can be rewritten as a conditional likelihood.

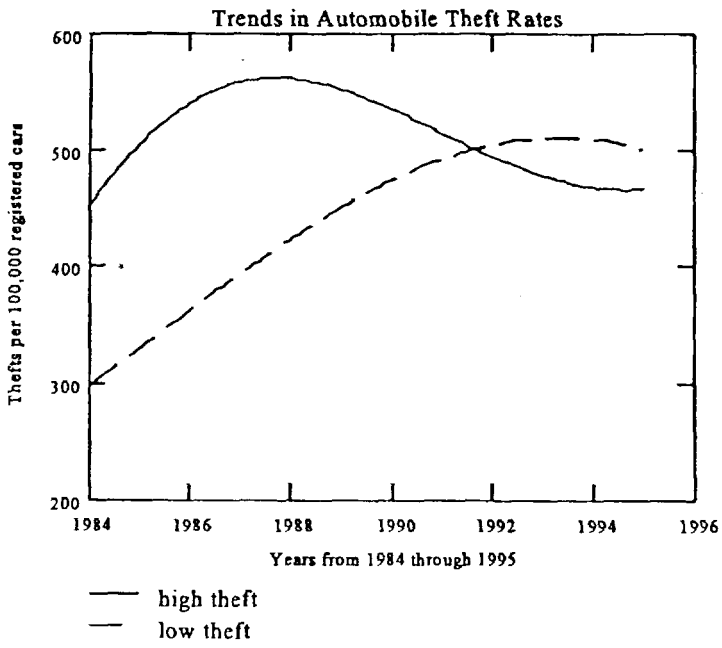
In this approach, estimates of δ and γ are based exclusively on variation within a State and model. Cars that were never marked, or never had anti-theft waivers do not contribute any direct information to the measurement of δ and γ. For this reason, only those cars deemed high theft automobiles (and hence subject to marking) were included in the analysis.

We estimated two general regressions. The dependent variable in the first general regression is the number of cars stolen (S_{jk}). The dependent variable in the general second regression is the number of cars that were stolen and not recovered (S^c_{ijk}). In both cases, we report variations on the two basic regression specifications.

Interpretation

Has parts marking deterred automobile theft? This is a deceptively difficult question to answer. We observe that automobile theft rates decreased or continued to decrease as more and more automobiles had their parts marked. We cannot be sure, however, whether or not that observed trend would have happened in the absence of parts marking. The best we can do is to use statistical analysis to draw inferences from the data at our disposal.

Figure 2 — Trends in Automobile Theft Rates, High Theft-Rate and Low Theft-Rate Models, Controlling for Model and State



As discussed, the statistical technique upon which most of our inferences rest is called a fixed effects poisson model. The technique controls for model type and state. A simple application of this poisson model is to estimate how automobile theft rates changed as a function of time. Figure 2 shows years beginning in 1984, the earliest year for which we have data, and ending in 1995, the last year for which we have data. (Table 1 reports regression results upon which figure 2 is based.) The vertical axis shows the estimated theft rate per 100,000 registered cars based on predictions from the

poisson model. Thus, the curves represent the average theft rate across model and state combinations.[6]

Table 1

Parameter Estimates and Standard Errors from Regressing Thefts on Time

	All thefts of high theft-rate automobiles		All thefts of low theft-rate automobiles		Unrecovered thefts of high theft-rate automobiles		Unrecovered thefts of low theft-rate automobiles	
	estimate	t-score	estimate	t-score	estimate	t-score	estimate	t-score
TIME	2.25	44.13	1.35	27.86	-0.42	-1.12	1.76	4.42
TIME POWER 2	-4.03	-43.00	-0.53	-5.96	10.92	9.55	8.51	7.06
TIME POWER 3	1.98	37.68	-0.20	-4.05	-22.00	-15.54	-19.80	-13.43
TIME POWER 4					11.99	19.76	11.04	17.65

The first curve is a smoothed representation of the theft rates for automobiles that were ever deemed to be high theft-rate automobiles by the NHTSA. (These were identified because they were required to have parts marking or anti-theft device waivers at some time during the model line's life.) The smoothed curve shows that the theft rate had been increasing before parts marking was instituted in 1987. The theft rate leveled off just before parts marking was instituted. And then as more and more high theft cars were marked, fewer and fewer were stolen.

By itself, this evidence is not convincing that parts marking was effective. One problem is that the theft rate stabilized before any cars were marked, and the theft rate began to fall before more than a small percentage of cars had been marked. Quite possible this favorable turn in automobile theft rates had nothing to do with parts marking.

The second curve shows a smoothed version of the trend in automobile theft rates for cars that had never been deemed to be high-theft rate cars. Because these cars were never marked, the program to mark automobile parts should have had no effect on their theft rates. The theft rate for these automobiles also reached a peak and began to decline, but not until about 1992 or 1993. If the trend in theft rates for low theft rate cars reflects the trend that would have prevailed for high theft-rate cars in the absence of parts marking, then the evidence is consistent with the conclusion that parts marking deterred theft.

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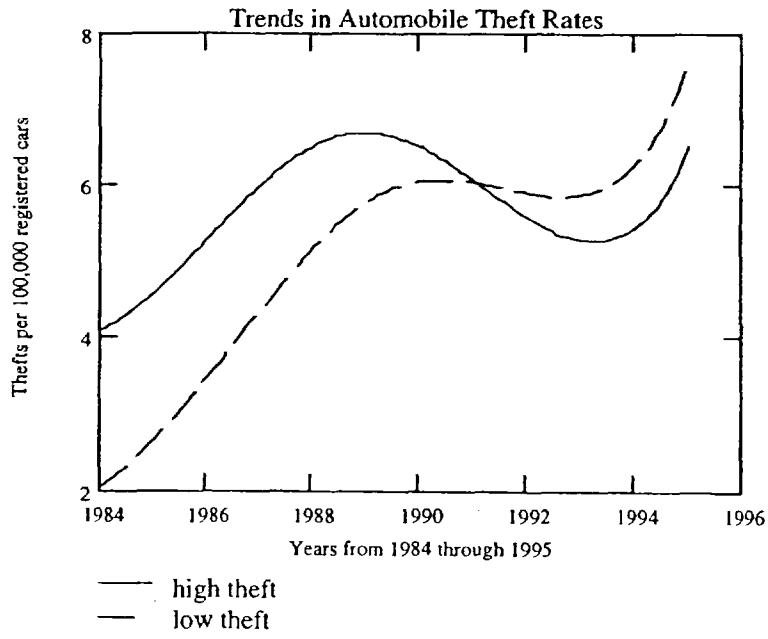
6 The curves in this figure differ from their counterparts in figure 1. The statistics reported in figure 1 were computed by dividing the number of cars stolen by the number of cars registered and then converting the resulting rate to thefts per 100,000 registered cars. The statistics reported in figure 2 are the average across all car models after controlling for State and model. Thus, figure 1 give more weight to car models with the largest number of registrations and figure 2 give equal weight to each car model regardless of the registration volume.

Another way to examine theft rates is to focus on the thefts of cars that were never recovered. Figure 3 is the same as figure 2, except that the trends are based on cars that were never recovered instead of all stolen cars.

The timing of the decrease in thefts is consistent with the advent of parts marking. Automobiles were at the highest risk of being stolen (and not recovered) between 1988 and 1989, the same time as parts marking was being introduced. Theft rates decrease as more and more cars had their parts marked. This decrease in the theft rates seems to have reversed during the last year, but we tend to discount that evidence. Essentially it rests on a single time point and probably overstates the apparent reversal.

Examining the comparable theft rate for cars that were never deemed high theft-rate automobiles, we see that the peak in thefts rates occurred somewhat later than that of their high theft counterparts, but not by much. More important, there was no apparent downturn in the theft rates for those low theft automobiles corresponding to the downturn in the theft rate for the high theft cars. After 1988, and prior to the last year in this data series, the number of thefts was relatively flat.

Figure 3 — Trends in Unrecovered Automobile Theft Rates, High Theft-Rate and Low Theft-Rate Models, Controlling for Model and State



Assuming that trends for low theft rate cars are a surrogate for trends in high theft rate cars absent parts marking is a strong assumption, however, and we would like to have better evidence. Furthermore, the time-series reflects the combined effects of anti-theft devices as well as parts marking. The time-series cannot tell us how much of an effect to attribute to parts marking.

Putting the trend aside temporarily, and placing the focus on the statistical models with covariates, the simplest statistical model has only one independent variable—the percentage of cars that are marked in a car model/state combination. This simple model implies a large effect attributable to parts marking—about 158 fewer stolen cars per 100,000 marked cars. This is not very compelling

evidence however. We know that theft rates were declining after 1987 for high-theft automobiles. We know that parts marking was instituted in 1987 and that an increasing number of cars were marked thereafter. We would expect to find a high correlation between theft rates and the use of parts marking. Such a straightforward analysis cannot tell for sure whether parts marking caused lower theft rates, or whether parts marking was merely coincident with lower theft rates.

More compelling is the evidence that emerges after we have added additional variables to control for factors other than parts marking that might account for the observed trends. With this purpose in mind, we added the following variables to the model:

- Percentage of cars that received anti-theft exemptions
- The age of the stock of cars in a model/state configuration.
- The percentage of the population that lives in urban areas.
- The percentage of the population between the ages of 18 and 24.
- The number of car registrations per capita
- The index crime rates.
- Control variables that correct for problems with the data assembly.

Table 2 reports the parameter estimate associated with parts marking, but that parameter estimate cannot be interpreted by simple inspection. To provide an interpretation, note that:

$$E(S) = Ne^{\alpha_i + X\beta + \gamma M}$$

This expresses the expected value of the number of car thefts as a nonlinear function of the number of car registrations (N), control variables (X), and the percentage of cars that were marked (M). The Greek letters represent parameters including α which represents the fixed effect. On average, about 550 high theft-rate cars were stolen per 100,000 registered cars between 1984 and 1995. This implies that on average:

$$Ne^{\alpha_i + X\beta + \gamma M} = 550$$

To estimate the effect of parts marking, we differentiate the expectation to get:

$$\frac{\partial E(S)}{\partial M} = Ne^{\alpha_i + X\beta + \gamma M}\gamma$$

Evaluating this expression at the mean gives:

$$\frac{\partial E(S)}{\partial M} = 550\gamma$$

Substituting γ=-0.06 from table 2 gives an estimate of the reduction in the number of automobile thefts resulting from marking 100,000 cars. Once the additional variables were introduced into the model, the effect associated with parts marking dropped to 33 car thefts prevented per 100,000 marked cars.

The size of the estimate is approximate and, probably, conservative because we evaluate this derivative at the average value between 1984 and 1995 rather than the highest value between 1984 and 1995. Arguably, parts marking caused the theft rate to fall from its highest value, which would justify a higher estimate for the effect from parts marking. The more conservative estimate is adequate for our purposes, however.

Table 2

Parameter Estimates and T-Scores from the Poisson Regressions on Automobile Thefts Rates Conditioning on Model and State

	estimate	t-score	estimate	t-score	estimate	t-score	estimate	t-score
PERCENT MARKED	-0.06	-5.81	-0.30	-28.60	0.36	27.78	-0.23	-20.50
PERCENT ANTI-THEFT	-0.50	-43.98	-0.48	-41.47	-0.20	-15.18	-0.47	-40.24
AGESTOCK	0.44	8.06	-0.11	-2.09	3.97	50.29	0.05	0.96
AGESTK2	-0.50	-8.49	-0.01	-0.13	-2.18	-33.68	-0.11	-1.80
ONEPCT	-0.12	-10.25	-0.10	-8.87	0.03	2.50	-0.11	-9.35
DENSITY	2.28	32.11	1.69	23.62	3.38	46.03	2.34	32.61
POP18_24	5.09	18.39	3.97	14.21	7.11	23.09	6.03	20.65
REGPERCP	0.01	5.95	0.02	13.41	0.03	16.26	0.02	11.46
SAMEPCT	0.13	10.68	0.13	10.27	0.36	28.19	0.15	12.16
TOTINDEX	16.24	68.79	6.70	26.78	14.02	52.96	10.83	41.86
TREND			0.41	110.02			0.24	78.59
TREND POWER 2								
TIME					1.39	21.57	1.91	18.36
TIME POWER 2					-6.20	-58.22	-3.55	-8.99
TIME POWER 3					3.59	60.16		

There is no guarantee that the control variables account for the entire trend. Consequently, we added one additional control variable:

- The theft rate within a state and year for all cars that NHTSA had never labeled as high theft-rate vehicles.

The reasoning was that these latter vehicles could not have been affected by parts marking, so they provided a comparison group whose theft trend rates could be compared with the theft trend rates for cars that had been designated for marking. With this variable introduced into the model, the statistical analysis suggests that marking 100,000 cars prevents 165 automobile thefts.

One additional model seemed to be appropriate for these data. Instead of using the rate of automobile thefts for the low theft-rate vehicles as a trend variable, we introduce time itself as a trend variable. The model now includes:

- Time
- Time squared
- Time Cubed

With this change, the salutary effects attributed to parts marking disappear from the analysis. In fact, parts marking now appears to *cause* 198 car thefts per 100,000 marked cars. This is a nonsense conclusion because there is no reason to suppose that parts marking would lead to more stolen cars.

We presume this apparently perverse effect arises from model misspecification. In this case, the way we have modeled the relationship between stolen cars, marked cars, and control variables cannot be exactly correct. When both time and marked cars are introduced into the model, the error in the model specification seems to interact so as to produce conclusions that are counterintuitive, in conflict with all other model specifications, and unlikely to imply anything about the true relationship between parts marking and automobile theft. Whatever the explanation for the counter-intuitive effects reported above, adding the trend variable to the time variables recovers results that are consistent with the conclusion that parts marking deters automobile theft.

The alternative way to examine automobile theft rates is to use unrecovered automobile as the dependent variable. In this analysis, we used all the independent variables that were included above (excluding the time trends) but in place of the theft rate for cars that were never deemed high theft we substitute the theft rate for *unrecovered* cars that were never deemed high theft rate automobiles. Results are reported in table 3.

Using the same model specification as above (except, the trend is now the rate of thefts for low theft rate models that were not recovered), parts marking had a coefficient that was not statistically significant. When we added the square of the theft rate for low theft rate cars to the statistical model, however, the effect was statistically significant and suggested that parts

Table 3

Parameter Estimates and T-Scores for Poisson Regressions on Unrecovered Stolen Cars Conditioning on Model and State

	estimate	t-score	estimate	t-score
PERCENT MARKED	0.03	0.79	-0.21	-6.78
PERCENT ANTI-THEFT	-0.21	-5.69	-0.24	-7.25
AGESTOCK	-2.14	-13.51	-0.97	-6.64
AGESTK2	2.36	13.99	0.93	5.96
ONEPCT	-0.25	-7.89	-0.14	-4.73
DENSITY	-1.57	-6.83	-0.68	-3.03
POP18_24	2.00	2.14	4.02	4.72
REGPERCP	0.03	5.07	0.02	4.26
SAMEPCT	-0.40	-11.03	-0.16	-4.81
TOTINDEX	4.82	6.42	5.05	7.64
TREND	1.10	75.26	3.04	92.38
TREND POWER 2			-0.88	-65.71

marking reduced theft of unrecovered vehicles by about 20 percent. This is only 1.4 cars per 100,000 marked, but the base rate of 6.73 cars stolen on average is probably too low for reasons explained in the text. A higher base rate would yield a larger estimated effect.

We cannot feel confident that the statistical analysis accurately estimates the effect of automobile parts marking. Changes in the model specification—sometimes even subtle changes in the model specification—lead to different estimates of how parts marking reduces automobile theft. Nevertheless, the evidence is consistent with the conclusion that parts marking does reduce automobile theft, even if the size of the effect is uncertain. The next section raises and answers the question: How small of an effect would justify the conclusion that parts marking is cost effective? Does the size of that critical value comport with the evidence presented here?

Step 2: Cost of Car Theft

Conducted by the Bureau of Justice Statistics, the National Criminal Victimization Survey (NCVS) is useful as an indicator of the severity of motor vehicle theft in this country. The NCVS interviews approximately 49,000 households (about 101,000 individuals) annually. Households are interviewed every six months during a three year period, and new households are rotated into the sample over time. By interviewing victims of theft, the NCVS complements law enforcement data which records only reported crimes. It is also useful in

conjunction with insurance industry data as the NCVS records thefts unreported to insurance companies.

The NCVS asks a representative household member whether any member of the household had an automobile stolen in the six months before the survey. If a car was stolen, an interviewer asks the respondent about the dollar value of the stolen car and the car's value after recovery. The interviewer also asks whether the theft was reported to the police or to an insurance company. If the theft was reported to an insurance company, the interviewer asks about reimbursement.

Respondents seemed to have trouble answering these questions. We found many responses where the respondent said that the car's value was the same when stolen and when recovered, yet the insurance company paid restitution. Our assumption was that the respondent subtracted the restitution from the recovered loss, so we set loss equal to insurance payment whenever insurance restitution was greater than or equal to the reported loss. This solution is imperfect, because insurance payments are grossly understated in the NCVS. When compared with the average payment for car theft reported by the Highway Loss Data Institute, respondents to the NCVS report only one-tenth of the average insurance reimbursement.

This raises the question of whether the NCVS is a reliable source for automobile theft statistics. To answer that question, Figure 4 shows the annual number of car thefts from households according to the NCVS and the annual number according to the FBI.

We would not expect the two sources to agree perfectly. The NCVS is a survey, so it has some sampling error, while the FBI source is an enumeration. Also, according to the NCVS, only 93 percent of car theft victims report their loss to the police, so we would expect the NCVS to show more thefts than appear in the FBI data. In fact, the FBI data tend to show more thefts, but that difference is explainable. The NCVS does not report car theft from business and government, which would cause the FBI source to record more thefts. At any rate, Figure 4 shows the NHVS and FBI to be in substantive agreement after these differences between the data are taken into account.

During 1994, households reported almost 1.2 million car thefts (see Table 4). This was more than the 0.9 million in 1981, but fewer than the reported car thefts at the turn of the decade. The total value of cars stolen in 1994 was almost $7 billion, or over $6,000 per car. Roughly 70 percent of the value of stolen cars was recovered (57 percent of the cars were recovered), so the net theft loss was about $3 billion, or nearly $3,000 per car.

The information in Table 4 was compiled from three different versions of the NCVS. Although each version has methodological differences, they do not overly affect motor vehicle theft data. The main incompatibility between the data sets is revealed by the absence

Figure 4
NCVS and FBI Data

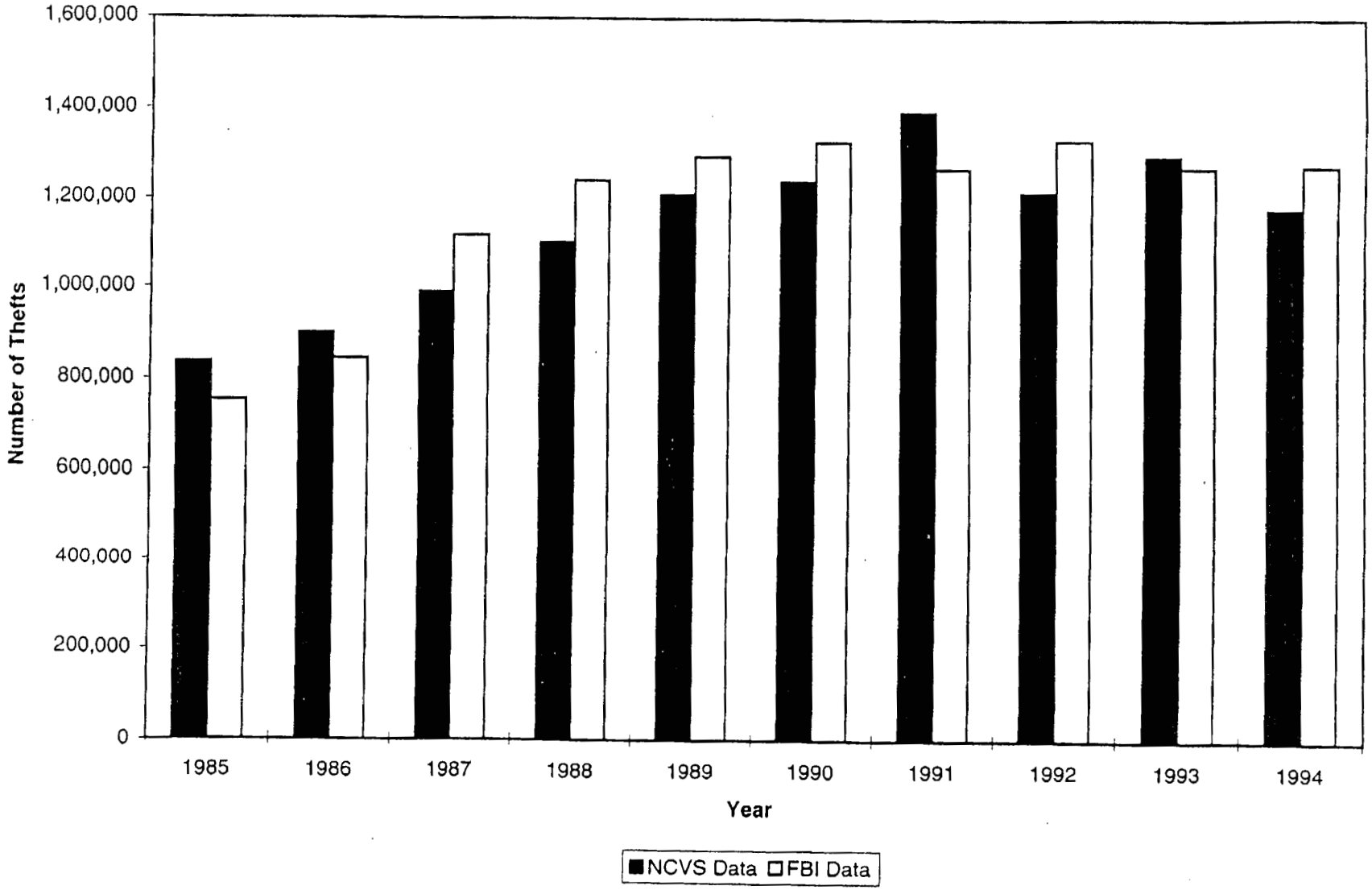


Table 4

National Criminal Victimization Survey Data for Auto Theft 1981-1994

	1981	1982	1983	1984	1985	1986	1987	1988
Total Incidents	904,106	958,066	818,211	841,692	835,515	897,739	995,669	1,101,021
Total Value of Property Taken	$2,878,523,247	$3,275,850,082	$3,265,847,991	$4,038,650,338	$4,355,148,576	$4,389,901,653	$5,373,503,074	$6,325,344,836
Average Loss per Incident	$3,348	$3,585	$4,230	$5,272	$5,637	$5,304	$5,582	$6,077
Total Recoveries (Whole or Part)	586,481	592464	528,867	569,936	559,174	419,752	620,208	695,222
Total Monetary Amount Recovered (Whole or Part)	$1,441,333,734	$1,642,588,211	$1,710,995,255	$1,927,660,989	$2,405,052,354	$2,426,103,820	$3,603,807,522	$4,468,277,927
Average Monetary Amount Recovered (Whole or Part)	$1,689	$1,806	$2,241	$2,503	$3,188	$3,019	$3,943	$4,176
Percent Recovered (Whole or Part)	65%	62%	65%	68%	67%	47%	62%	63%
Percent of Thefts Recovered (Whole or Part)	50%	50%	52%	48%	55%	55%	67%	71%
Net Theft Loss	$1,716,189,202	$2,007,670,864	$1,862,795,999	$2,543,465,320	$2,628,509,947	$2,393,241,679	$1,769,695,552	$1,857,066,909
Average Theft Loss	$1,659	$1,779	$1,989	$2,769	$2,449	$2,285	$1,639	$1,901
Number of Thefts Reported to Insurance	N/A	N/A	N/A	N/A	N/A	N/A	578,268	637,472
Number of Thefts Reported to Insurance Recovered	N/A	N/A	N/A	N/A	N/A	N/A	403,038	460,690
CPI Adjusted Average Loss (1994 Dollars)	$2,324	$2,407	$2,631	$3,514	$3,031	$2,968	$2,067	$2,321

Table 4

National Criminal Victimization Survey Data for Auto Theft
1981-1994

	1989	1990	1991	1992	1993	1994
Total Incidents	1,209,959	1,239,467	1,393,864	1,203,242	1,296,812	1,179,147
Total Value of Property Taken	$7,186,844,161	$7,932,569,723	$8,074,861,984	$7,211,294,402	$7,460,569,997	$6,778,002,059
Average Loss per Incident	$6,296	$6,725	$6,103	$6,399	$6,079	$6,247
Total Recoveries (Whole or Part)	654,657	753,475	838,934	872,140	849,189	827,451
Total Monetary Amount Recovered (Whole or Part)	$4,337,414,532	$6,169,130,050	$5,888,317,702	$4,378,127,757	$3,989,945,911	$3,876,150,676
Average Monetary Amount Recovered (Whole or Part)	$3,696	$5,115	$4,318	$3,849	$3,203	$3,501
Percent Recovered (Whole or Part)	54%	61%	60%	72%	65%	70%
Percent of Thefts Recovered (Whole or Part)	60%	78%	73%	61%	53%	57%
Net Theft Loss	$2,849,429,629	$1,763,439,673	$2,186,544,282	$2,833,166,645	$3,470,624,086	$2,901,851,383
Average Theft Loss	$2,600	$1,610	$1,785	$2,550	$2,876	$2,746
Number of Thefts Reported to Insurance	686,688	782,413	849,138	697,776	733,652	659,813
Number of Thefts Reported to Insurance Recovered	430,968	565,899	578,555	481,561	466,620	444,022
CPI Adjusted Average Loss (1994 Dollars)	$3,027	$1,781	$1,923	$2,690	$2,965	$2,746

of data listed in the table concerning insurance reporting by theft victims. The 1979 through 1986 data set did not ask sufficiently similar questions as to be comparable with the other two more recent data sets.

In compiling these data, a motor vehicle theft incident included an incidence of car theft, other motor vehicle theft, or motor vehicle parts theft. Similarly, all monetary amounts listed (both aggregate and average) are for all three types of motor vehicle theft. Except for the last line of the table (CPI Adjusted Average Loss), dollar figures have not been adjusted for inflation.

The benefit from preventing an automobile theft is, roughly, the dollar cost incurred by the victim when his or her car is stolen. We say roughly because there are additional costs stemming from the psychic costs of being a victim, the time associated with reporting the loss to police and insurance companies, and the inconvenience—at least temporarily—of being without a car. These are real, nontrivial costs, but they are not considered here.

Even discounting these nonpecuniary costs, estimating the benefit from preventing an automobile theft is not as straightforward as determining the dollar costs of the average car theft. The average loss from a car theft is based on those cars that were taken for joyriding, and were recovered with little or no loss, and those cars that were taken by professional thieves, and were either not recovered or were recovered with large losses. Because parts marking is expected to reduce thefts by professional thieves, and have little effect on the theft rate for joyriding, using the average loss from a car theft to evaluate the benefits from parts marking would surely understate the benefits of marking automobile parts.

Although the data do not differentiate between joyriding and professional theft, they do tell us that between 1987 and 1992 the average loss from an automobile theft was about $2,700. Many stolen cars are returned without being damaged, so the victim incurs no financial loss (as measured here). But cars stolen by professionals are unlikely to be returned without some damage, so the $2,700 is too low of an estimate for cars stolen for chop shop operations. When the estimate is based on dollar loss when there is *some* dollar loss, the average jumps to $4,400.

There is some confirmation for these loss estimates. The Insurance News Network,[7] reporting statistics collected by the Highway Loss Data Institute, says that the average claim paid by insurance companies between 1992 and 1994 was $4,081. Of course, owners typically pay a deductible, so the dollar loss was probably closer to $4,400 per claim based on the NCVS data.

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7 Insurance New Network, downloaded from the Internet, April 27, 1997: WWW.INSURE.COM/AUTO/THEFTS/INDEX.HTML.

A figure of $4,400 probably understates the loss attributed to professional thieves, because joyriders may damage cars and petty thieves may take radios and other equipment. When the average is based on an assumed threshold of a $500 for a professional theft, then the average loss is $5,200. When the threshold is $1,000, the average loss is close to $6,000, and when the threshold is $2,000, the average loss is close to $8,000. For our purposes, the analysis adopts an assumption that the benefit from reducing a theft by a professional thief is $6,000. Assuming that the average benefit from preventing a theft by a professional thief is $6,000 is somewhat conservative, especially given that nonmonetary costs should be taken into account. Never-the less, as seen in the next section, a conservative estimate is adequate for our purposes.

Step 3: Cost of Parts Marking

According to the National Highway Traffic and Safety Administration, the cost of parts marking is trivial—about $5.00 per car (DOT, 1991). Additionally, cars do not have to be marked every year. If the average car is in use for ten years, then the cost per year is only 50 cents per car. Thus, the yearly cost of marking 100,000 cars is $50,000.

The cost of parts marking does not include the additional cost to law enforcement of training and equipping personnel. Given that parts marking assists law enforcement personnel in their investigations, the marginal cost of parts marking to law enforcement may be negative. At any rate, additional costs to law enforcement personnel are not taken into account in this study.

Step 4: Conclusions

Step one provided estimates of the reduction in automobile theft attributed to parts marking and anti-theft devices. Step two gave estimates of the cost of automobile theft to society. Step three reported estimates of the cost of marking parts. This final section ties the first three sections together to assess whether parts marking is cost effective, and whether anti-theft devices are a suitable substitute for parts marking.

This integration of the three sections cannot provide a definitive answer because the estimates themselves are imprecise. The intent in this section is to assemble the best available evidence, and let the reader decide ultimately whether that evidence is sufficient to conclude that parts marking should or should not be extended.

The argument is advanced by specifying a shorthand designation for three kinds of cars. The 1984 Act require NHTSA to identify cars (about one-third of all cars) that had the highest theft rates. We call these HTR cars, or *high theft-rate* cars. HTR cars were designated for parts marking or anti-theft exemptions as of 1987. Estimates of the effectiveness of parts

marking presented in step one applies strictly to HTR cars, because they were the only cars that had parts marking between 1987 and 1995. The 1992 Act stipulates that NHTSA identify cars (again, about one-third of all cars) that had average theft rates—that is, theft rates that were lower than those for HTR cars but higher than those for cars with below average theft rates. We designate these as ATR cars, or *average theft rate* cars. The 1992 Act also stipulates that the U.S. Attorney General shall recommend whether or not parts marking should be extended to the remaining cars, which we shall designate as LTR cars, for *low theft-rate* cars. Direct evidence about the effectiveness of parts marking to ATR and LTR cars is practicably unavailable (ATR cars were marked as of 1995), but indirect evidence can be inferred from findings regarding the effectiveness of parts marking and anti-theft devices for HTR cars.

Has parts marking been effective for HTR cars? The best estimates from step one suggest that parts marking has reduced automobile theft by 33 to 165 cars per 100,000 cars that are marked. The cost to the consumer of marking these cars is about $5 per car. Assuming that a car is in use for an average of ten years, marking 100,000 cars costs about $50,000 per year. In step two, we argued that each of these stolen cars costs its owner (or his or her insurance company) about $6,000. Using the $6,000 figure, and assuming the estimate of 33 fewer stolen cars per 100,000 marked cars, the benefit from marking HTR cars has been almost $2 million per 100,000 cars while the cost has been about $50,000 per 100,000 cars. Parts marking appears to have been cost effective for HTR cars.

We are uncertain about each of the estimates used above. Note, however, that parts marking of HTR cars would have been cost beneficial even if victim loss was $2,700, the average victim loss from a stolen car, which would seem to underestimate victim losses for cars stolen by professional thieves. That is, the $2,700 estimate is the average for car thefts for cars stolen by joyriders and by professional thieves combined. It is almost certainly too low as an estimate of the loss from cars stolen by professional thieves, because with exceptions, cars stolen by professionals are either never returned or returned with major parts missing.

Even the estimate of 33 fewer thefts per 100,000 registered cars may be too high of an estimate, and we can ask: How few car thefts must be deterred to make parts marking cost effective. Given that parts marking costs about $50,000 per 100,000 marked cars, and assuming that a stolen car costs its victim (or the insurance company) $6,000, then the parts marking is cost effective if as few as 8.33 car thefts are prevented per 100,000 marked cars. The $6,000 figure seems very conservative given that high theft rates cars tend to be more expensive the typical cars. At $8,000 per car, the critical value would be 6.25 cars per 100,000 marked; at $10,000 per car, the critical value would be 5 fewer thefts per 100,000 marked cars.

If the marking of HTR cars has been cost effective, what can be said about the cost effectiveness of marking ATR and LTR cars? We cannot observe how car marking has affected the theft of ATR cars, so we must reason by analogy. Adopting the $6,000 figure for the cost of a ATR or LTR car, we know that parts marking must deter 8.33 cars per 100,000 that are marked for parts marking to be cost effective. This figure would be achieved if parts marking were to be only 25 percent as effective with ATR and LTR cars as it is with HTR cars. This seems entirely plausible. Another way to look at this problem is to note that about 450 ATR/LTR cars are stolen each year per 100,000 registration. Reducing the theft rate by 7 percent would make parts marking cost effective. This may not seem like an unreasonable achievement, and the figure would be less than 7 percent if stolen cars were valued at more than $6,000.

The Department of Justice also asked Abt Associates to evaluate whether anti-theft devices are a suitable substitute for parts marking. Although the analysis showed that anti-theft devices can reduce automobile thefts, the effectiveness of anti-theft devices is almost surely understated in the analysis reported earlier. Even if this were not true, the analysis does not provide a sound basis for saying whether anti-theft devices are good substitutes for parts marking.

The problem is that parts marking and anti-theft devices serve different purposes. Parts marking is a tool for law enforcement. By allowing police to identify stolen parts, it allows them to make stronger cases against those criminals who deal in stolen cars and their parts, and it allows prosecutors to secure more and better convictions. Improved law enforcement can work by deterring criminals from trafficking in stolen parts, and by dismantling the organizations of criminals who persist. Anti-theft devices are different. They increase the difficulty of stealing a car in the first place, and in that regard, they probably reduce thefts for joyriding (which should be unaffected by parts marking) in addition to thefts for profit. In this regard, it is difficult to see why anti-theft devices should be considered as a substitute for parts marking, and thus, why anti-theft devices marking waivers should be granted for manufacturers who install anti-theft devices as standard equipment.

Possibly, anti-theft devices could reduce the automobile theft rate to a level that was so low that parts marking would cease to be cost effective. To test this, we would need to have time-series cross-sectional data that identify cars that have their parts marked but not anti-theft devices, cars that have anti-theft devices but not parts marking, cars that have both, and cars that have neither. With such data, we could infer the extent to which anti-theft devices are a substitute for parts marking. Suitable data for this analysis are not available.

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management and recreation use restrictions are needed to prevent conflicts between users and unacceptable impacts on resource values, while continuing to provide a variety of recreational opportunities.

Notice of these regulations will be posted on-the-ground at the entrance to the Black Ridge Road network, at the beginning of the cherry stemm road to the arches, at the Rattlesnake Arches, Devils Canyon and Pollock Bench Trailheads, at the Loma Boat Launch, at the main staging area in Rabbit Valley, and at the Grand Junction Resource Area office.

Persons who may be exempted from the restrictions include: (a) Any federal, state, or local officers engaged in fire, emergency and law enforcement activities; (b) BLM employees engaged on official duties; (c) other persons authorized to operate motorized vehicles within the restricted areas.

PENALTIES: Violations of this restriction order are punishable by fines not to exceed $100,000 and/or imprisonment not to exceed 12 months.

FOR FURTHER INFORMATION CONTACT: Catherine Robertson, Area Manager, Grand Junction Resource Area, 2815 H Road Grand Junction, Colorado 81506; (303) 244–3000. Mark Morse, District Manager, Grand Junction District, 2815 H Road, Grand Junction, Colorado 81506; (970) 244–3000.

Rich Arcand,

Grand Junction Acting District Manager.

[FR Doc. 98–24439 Filed 9–10–98; 8:45 am]

BILLING CODE 4310–JB–P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[ID–957–1430–00]

Idaho: Filing of Plats of Survey; Idaho

The plat of the following described land was officially filed in the Idaho State Office, Bureau of Land Management, Boise, Idaho, effective 9:00 a.m., August 31, 1998.

The plat representing the dependent resurvey of portions of the south and east boundaries and portions of the subdivisional lines, and the subdivision of sections 25, 26, 35, and 36, the survey of certain lots, and certain metes-and-bounds surveys in T. 4 S., R. 19 E., Boise Meridian, Idaho, Group 985, was accepted August 31, 1998. This survey was executed to meet certain administrative needs of the Bureau of Land Management.

All inquiries concerning the surveys of the above described land must be sent to the Chief, Cadastral Survey, Idaho State Office, Bureau of Land Management, 1387 South Vinnell Way, Boise, Idaho, 83709–1657.

Dated: August 31, 1998.

Duane E. Olsen,

Chief Cadastral Surveyor for Idaho.

[FR Doc. 98–24429 Filed 9–10–98; 8:45 am]

BILLING CODE 4310–GG–M

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[ID–957–1150–00]

Idaho: Filing of Plats of Survey; Idaho

The plats of the following described land was officially filed in the Idaho State Office, Bureau of Land Management, Boise, Idaho, effective 9:00 a.m., August 31, 1998. The plat representing the dependent resurvey of a portion of the subdivisional lines, and the subdivision of section 4, and the survey of lots 8 and 12 in section 4 and lot 5 in section 5, T. 17 N., R. 24 E., Boise Meridian, Idaho, Group 988, was accepted August 31, 1998. This survey was executed to meet certain administrative needs of the bureau of Land Management. The plat representing the dependent resurvey of portions of the Fourth Standard Parallel North, the south boundary of the Lemhi Indian Reservation, and subdivisioned lines, and the subdivision of certain sections, T. 18 N., R. 24 E., Boise Meridian, Idaho, Group 988, was accepted August 31, 1998. This survey was executed to meet certain administrative needs of the Bureau of Land Management. All inquiries concerning the survey of the above described land must be sent to the Chief, Cadastral Survey, Idaho State Office, Bureau of Land Management, 1387 South Vinnell Way, Boise, Idaho, 83709–1657.

Dated: August 31, 1998.

Duane E. Olsen,

Chief Cadastral Surveyor for Idaho.

[FR Doc. 98–24430 Filed 9–10–98; 8:45 am]

BILLING CODE 4310–GG–M

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[ID–957–1030–00]

Idaho: Filing of Plats of Survey; Idaho

The field notes of the following described land were officially filed in the Idaho State Office, Bureau of Land Management, Boise, Idaho, effective 9:00 a.m., September 4, 1998.

The field notes representing the remonumentation of certain original corners in Tps. 18 and 19 N., R. 22 E., Boise Meridian, Idaho, Group 1000, were accepted September 4, 1998. This remonumentation was executed to meet certain administrative needs of the Bureau of Land Management.

The field notes representing the remonumentation of certain original corners in T. 24 N., R. 3 E., Boise Meridian, Idaho, Group 1000, were accepted September 4, 1998. This remonumentation was executed to meet certain administrative needs of the Bureau of Land Management.

All inquiries concerning the survey of the above described land must be sent to the Chief, Cadastral Survey, Idaho State Office, Bureau of Land Management, 1387 South Vinnell Way, Boise, Idaho, 83709–1657.

Dated: September 4, 1998.

Duane E. Olsen,

Chief Cadastral Surveyor for Idaho.

[FR Doc. 98–24438 Filed 9–10–98; 8:45 am]

BILLING CODE 4310–GG–M

DEPARTMENT OF JUSTICE

Auto Theft and Recovery; Request for Comments

AGENCY: Department of Justice.

ACTION: Notice.

SUMMARY: The Anti Car Theft Act of 1992 ("ACTA"), as amended, requires the Secretary of the Department of Transportation to expand the scope of its existing automobile parts marketing program to include certain unmarked passenger motor vehicles—*unless* the Attorney General finds that such a program would not substantially inhibit chop shop operations and motor vehicle thefts. In accordance with the requirement of section 306 of ACTA, the Attorney General is required to make this finding based, in part, on information developed after notice and an opportunity for a public hearing. Therefore, the United States Department of Justice is publishing this notice seeking public comment on the issue of whether or not parts marking substantially inhibits chop shop operations and motor vehicle thefts.

DATES: All comments must be received no later than November 10, 1998.

ADDRESSES: All comments should be submitted to Thomas Eldridge, U.S. Department of Justice, Room 2213, 950 Pennsylvania Avenue, N.W., Washington, DC 20530.

FOR FURTHER INFORMATION CONTACT: Thomas Eldridge, U.S. Department of Justice, Room 2213, Washington D.C. 20530 (202) 307–3966.

SUPPLEMENTARY INFORMATION: The Motor Vehicle Theft Law Enforcement Act of 1984 (the "1984 Act") required the Secretary of the Department of Transportation ("DOT") to issue a rule requiring the marking of certain major parts of high-theft passenger automobile lines. DOT implemented the 1984 Act by issuing the Federal Motor Vehicle Theft Prevention Standard, as codified at 49 CFR Part 541.

The purpose of the Federal Motor Vehicle Theft Prevention Standard was to reduce the incidence of motor vehicle theft by facilitating the tracing and recovery of parts from stolen vehicles. The standard seeks to facilitate such tracing by requiring that vehicle identification numbers ("VINs"), VIN derivative numbers, or other symbols be placed on major motor vehicle parts. At this time, each vehicle in a high-theft line must have its major parts and major replacement parts marked unless the line is exempted from parts marking pursuant to 49 CFR part 543.

The Anti Car theft Act of 1992 ("ACTA") expanded the coverage of the Federal Motor Vehicle Theft Prevention Standard to include high theft lines of multipurpose passenger vehicles or light duty trucks rated less than 6,000 pounds gross vehicle weight. ACTA also required DOT to prescribe a vehicle theft standard to cover not more than 50 percent of passenger motor vehicles (except light duty trucks) not designated as high theft lines. DOT was required to prescribe such conforming vehicle theft standards by October 25, 1994. In addition, ACTA required the Secretary of DOT to apply the Federal Motor Vehicle Theft Prevention Standard to all remaining lines of passenger motor vehicles (except light duty trucks) within three years after prescribing the vehicle theft standard—*unless* the Attorney General found that applying the standard would not substantially inhibit chop shop operations and motor vehicle thefts.

The Attorney General is required to make this finding based, in part, on information developed after notice and an opportunity for a public hearing. Therefore, the Department of Justice now seeks public comment on whether or not applying the Federal Motor Vehicle Theft Prevention Standard to the remaining lines of passenger motor vehicles (except light duty trucks) substantially inhibits chop shop operations and motor vehicle thefts.

The Attorney General also is required to consider and include in a record submitted to the Secretary of DOT additional costs, effectiveness, competition, and available alternative factors concerning the expansion of the Federal Motor Vehicle Theft Prevention Standard. The Department of Justice will consider studies conducted by the Department and DOT, as well as any comments solicited by this notice, in reaching its finding. The Department of Justice also will consider comments previously submitted to DOT in response to a June 26, 1997 Federal Register Notice (62 FR 34494) requesting comments on a DOT preliminary report entitled "Auto Theft and Recovery; Preliminary Report on the Effects of the Anti Car Theft Act of 1992 and the Motor Vehicle Theft Law Enforcement Act of 1984." Parties who submitted comments to DOT in response to that request do not need to submit similar comments to the Department of Justice.

In order to develop the required information for its finding, the Department of Justice awarded a grant, through a competitive process, to a contractor to evaluate the impact of the auto parts marking regulations on automobile thefts. As part of this grant, the contractor surveyed auto theft investigators from local and state law enforcement agencies. This survey, titled "Opinions of 47 Auto Theft Investigators Regarding Automobile Component Parts Anti-Theft Labels," was prepared and submitted to the Department of Justice for consideration on December 30, 1996. The following outlines the findings contained in the survey:

(1) The survey was administered by telephone to a sample of investigators from 47 jurisdictions, including 31 of the 32 largest cities in the country (plus Miami), six smaller jurisdictions, and nine state agencies.

(2) Nearly three-quarters of the 40 big city and state auto theft investigators contacted reported that anti-theft labels are useful in helping to identify and arrest chop shop owners and individuals who steal or traffic in stolen vehicles and parts.

(3) Nearly two-thirds of investigators reported that labels also aid in the successful prosecution of chop shop operators and other automobile and parts thieves.

(4) Investigators reported that the most serious obstacle to making more effective use of the labels is that they are easily removed and, once removed, it is impossible to prove that the parts are stolen because the owner cannot be traced.

(5) Investigators were about evenly divided regarding whether anti-theft labels deter professionals or amateurs from stealing or stripping cars.

(6) All but one investigator felt that parts marking legislation should be extended to all automobile lines and to all types of noncommercial vehicles, especially pickup trucks.

(7) Investigators suggested that parts marking might be more effective if: (i) auto theft investigators and patrol officers were trained more systematically and frequently in how to investigate label removal and tampering; (ii) legislation in every state made tampering with or removing labels a felony; and (iii) manufacturers were required to stamp VINs on the component parts rather than using removable labels.

(8) Respondents also recommended providing investigators access to ultraviolet lights with which to detect counterfeit labels or the "footprints" that most anti-theft labels are designed to leave if removed.

The Department of Justice plans to consider this survey prior to making and providing its required finding to DOT. Persons interested in obtaining a copy of the survey should call the National Criminal Justice Reference Service at 1–(800) 851–3420 and request Document No. NCJ 171693.

Pursuant to the grant awarded by the Department of Justice, the contractor also is preparing a report based on a cross-sectional time series analysis of national auto theft data, including FBI reported automobile thefts, R.J. Polk, Inc.'s data on car registrations, supplemented by Census statistics, FBI Uniform Crime Reports, and the National Household Victimization Survey. This report currently is being revised to incorporate new information provided by DOT and should be completed no later than the end of 1998. The Department of Justice plans to consider this report prior to making and providing its required finding to DOT.

In addition to the report being prepared on behalf of the Department of Justice, DOT also conducted studies addressing the effectiveness of parts marking which the Department of Justice will consider as part of the record for its findings. In 1991, the National Highway Traffic Safety Administration presented a report to Congress assessing the auto theft problem in the United States and evaluating parts marking. Although evidence of the effectiveness of parts marking could not be obtained through statistical analysis of theft and recovery rates at that time, DOT nevertheless found wide support in 1991 for parts marking in the law enforcement community. Investigators believed that

fking provided them with a
.e tool for detecting,
nending, and prosecuting thieves.
r considering the analyses, surveys
d public comments obtained during
ıe preparation of the 1991 report, DOT recommended that the Federal Motor Vehicle Theft Prevention Standard be continued with minor changes.

In addition, on June 26, 1997, DOT sought information concerning the Federal Motor Vehicle Theft Prevention Standard in a Federal Register Notice (62 FR 34494) requesting comments on a DOT preliminary report entitled "Auto Theft and Recovery; Preliminary Report on the Effects of the Anti Car Theft Act of 1992 and the Motor Vehicle Theft Law Enforcement Act of 1984." Persons interested in obtaining a copy of this report should contact the Docket Section, Room 5111, NASSIF Building, 400 Seventh Street, SW, Washington, DC 20590, and refer to Docket Number 97–042; Notice 1.

According to DOT's June 26, 1997 notice, analyses of the effectiveness of parts marking in "high theft" passenger car lines suggested that parts marking has benefits in reducing theft rates, and at times in increasing recovery rates. DOT stated that these benefits seem to exceed the cost of parts marking. DOT also found that the greatest impact of parts marking appears to occur with chop shops and "professional" auto thieves. While more vehicles stolen for export are being recovered according to DOT, the number recovered was too small to say that parts marking has helped reduce thefts for export or recovery of these vehicles. (62 FR 34496).

Given that parts marking appears to be effective in currently marked passenger car lines, DOT believed that there was no reason to doubt that it also could have benefits for other passenger vehicles. DOT further stated that it appears that parts marking and other provisions of the 1984 Act and ACTA have given the law enforcement community tools they can use to deter thefts, trace stolen vehicles and parts, and apprehend and convict thieves. (62 FR 34496–97).

The Department of Justice plans to utilize these reports and studies, as well as any comments solicited by this notice or the DOT notice, as the record for the finding it will make to the Secretary of DOT pursuant to 49 U.S.C. 33103(c).

Comments Sought

The Department of Justice seeks public comment on whether or not applying the Federal Motor Vehicle Theft Prevention Standard to the remaining lines of passenger motor vehicles (except light duty trucks) substantially inhibits chop shop operations and motor vehicle thefts. In this regard, the Department of Justice also seeks comments concerning additional costs, effectiveness, competition, and available alternative factors associated with the expansion of the Federal Motor Vehicle Theft Prevention Standard to the remaining lines of passenger motor vehicles (except light duty trucks).

All comments received before the close of business on the comment closing date will be considered. To the extent possible, comments filed after the closing date also will be considered.

Authority: 49 U.S.C. 33103.

Dated: August 25, 1998.

James K. Robinson,

Assistant Attorney General.

[FR Doc. 98–24434 Filed 9–10–98; 8:45 am]

BILLING CODE 4410–14–M

DEPARTMENT OF JUSTICE

Notice of Lodging of Consent Decree Pursuant to the Comprehensive Environmental Response Compensation and Liability Act

In accordance with Departmental policy, 28 CFR § 50.7, and Section 122 of CERCLA, 42 U.S.C. 9622, notice is hereby given that on July 31, 1998, a proposed Consent Decree in *United States* v. *Crestwood Development et al.*, Civ. Action No. 98–73313 was lodged with the United States District Court for the Eastern District of Michigan. This Consent Decree represents a settlement of claims of the United States against: (1) Crestwood Development Company, (2) Ford Motor Company; (3) Indian Head Industries, Inc. (f.k.a Detroit Gasket & Manufacturing Company); (4) John Denski; (5) Minnesota Mining & Manufacturing Company; (6) Purolator Products Company; (7) Stanley Denski; (8) TBG Services, Inc.; (9) TPI Petroleum, Inc. (f.k.a. J. Austin Oil); (10) Woolf Aircraft Products; (11) Charter Township of Canton; (12) City of Allen Park; (13) City of Garden City; (14) City of Inkster; (15) City of Livonia; (16) City of Plymouth; (17) City of Romulus; (18) City of Wayne; (19) City of Westland; and (20) County of Wayne (collectively "Settling Defendants"), for reimbursement of response costs in connection with the Nankin Township Superfund Site ("Site") pursuant to the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. 9601 et seq.

Under this settlement with the United States, Settling Defendants, will pay $1,573,551.76, plus interest, in reimbursement of response costs incurred by the United States at the Site. In addition, Performing Settling Defendants (Minnesota Mining and Manufacturing Company, the County of Wayne and Crestwood Development) will submit a Remedial Action Plan ("RAP") to the Michigan Department of Environmental Quality ("MDEQ") by February 1, 1999. Upon approval of the RAP by MDEQ, the Performing Settling Defendants will implement the work outlined in the RAP by the dates specified in the RAP.

The Department of Justice will receive for a period of thirty (30) days from the date of this publication comments relating to the proposed Consent Decree. Comments should be addressed to the Assistant Attorney General of the Environmental and Natural Resources Division, Department of Justice, Washington, D.C. 20530, and should refer to *United States* v. *Crestwood Development, et al.*, D.J. Ref. 90–11–2–1291.

The proposed Consent Decree may be examined at the Office of the United States Attorney, Eastern District of Michigan, Southern Division, 211 West Fort Street, Suite 2300, Detroit, MI 48226, at the Region 5 Office of the Environmental Protection Agency, 77 West Jackson Street, Chicago, Illinois 60604–3590, and at the Consent Decree Library, 1120 G Street, N.W., 4th Floor, Washington, D.C. 20005, (202) 624–0892. A copy of the proposed Consent Decree may be obtained in person or by mail from the Consent Decree Library, 1120 G Street, N.W., 4th Floor, Washington, D.C. 20005. In requesting a copy of the Consent Decree, please enclose a check payable to the Consent Decree Library in the amount of $9 (25 cents per page reproduction cost) for a copy of the Consent Decree.

Joel Gross,

Chief, Environmental Enforcement Section, Environment and Natural Resources Division.

[FR Doc. 98–24447 Filed 9–10–98; 8:45 am]

BILLING CODE 4410–15–M

DEPARTMENT OF JUSTICE

Notice of Lodging of Consent Decree Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act and the Resource Conservation and Recovery Act

In accordance with Departmental policy, 28 CFR 50.7, notice is hereby given that a proposed Consent Decree in *United States* v. *Joel G. Freeman, et al.*, Case No. 96 Civ. 2354 (CLB), was lodged on August 31, 1998, in the United States

U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

400 Seventh St., S.W.
Washington, D.C. 20590

January 21, 1998

U.S. Department of Justice
Office of Legislative Affairs
950 Pennsylvania Ave.
Washington, D.C. 20530

Attention: Adrien Silas

Subject: Comments on the Abt Associates report of June 9, 1997 "An Evaluation of the Effectiveness of Automobile Parts Marking on Preventing Theft"

Dear Mr. Silas:

Dr. Charles Kahane and I have reviewed and compared the Abt Associate evaluation report with our Report to Congress on the Anti Car Theft Act of 1992. The primary and large difference between our findings and the Abt Associate report is the huge reduction in the theft rate which Abt Associates allegedly attributes to parts marking. Abt Associates mentions that there is a regression to the mean influence on the theft rate reduction but they never attempt to quantify and correct for it. Abt Associates finds that parts marking reduced theft rates by 50 percent to 70 percent. They say parts marking resulted in 250 to 350 fewer thefts per 100,000 vehicles and later go on the say that the theft rate on average was 506 thefts per 100,000 registered vehicles. Abt Associates does comment that this reduction is truly remarkable and that it exceeds the estimated percent of vehicles stolen by professionals for profit. What is that saying about "if the deal seems to good to be true it probably isn't"?

Our report to Congress does take into account the effect of regression to the mean. Because this effect is so large it accounted for most of the theft rate reduction, except for a small amount that approached two percent. Even at that the various estimates we made had enough variation that we did not feel we could put an exact quantitative estimate on the amount of theft rate reduction attributable to parts marking. Nevertheless, we did feel that parts marking at least reduced theft rates by two percent which was sufficiently large for parts marking to be cost effective.

The public comments to our preliminary report published in June, 1997 revealed an error in the year that vehicles were equipped with antitheft devices for which exemptions from parts marking were granted. Many of these vehicles were equipped with these devices the year before they were granted the exemptions. We mistakenly used the year of the exemption in our preliminary report. Our draft final report, (including the draft we provided the Justice Department), includes the

corrected data and corrected analyses. The result is that we found antitheft devices effective and one type very effective. The Abt Associate discussion on antitheft devices in their report suggests that their report was based on the earlier incorrect data we supplied your agency. If we have not supplied your agency with the corrected data, let us know and we will send you corrected data.

The discussion in the Abt Associates report on the costs of auto theft appears comprehensive and corroborates information we had gathered. It should become apparent to Congress that there are large cost consequences of auto theft when compared to the low cost of parts marking or other means of theft prevention - even antitheft devices cost a fraction of what a stolen vehicle is worth. The major thought here is that even though - barring a carjacking - there is no human physical danger of harm because of auto theft, the cost of a stolen vehicle is sufficiently high that there is mental stress caused to the victim. Also, stolen vehicles and parts provide money to thieves for other unlawful purposes - mainly to acquire drugs.

We relied on the Abt Associates law enforcement survey and agreed with and used much of what was found. We agree that more training and technical assistance for state and local investigators is needed and think that some of the grant monies that your agency has for law enforcement agencies could be used for these purposes.

One final thought, considering the negative comments to our preliminary report we received on the beneficial finding for parts marking we estimated, those critics are going to have a field day with the overly optimistic finding in the Abt Associates report.

Sincerely,

Warren G. La Heist

Warren G. La Heist
Office of Regulatory Analysis and Evaluation
Plans and Policy

memorandum

Justice and Public Policy

Date November 13, 1998

To Nancy LaVigne

From William Rhodes and Quentin McMullen

Subject Automobile Parts Marking

The National Institute of Justice contracted with Abt Associates Inc. to evaluate the effectiveness of parts marking on preventing automobile theft. In a final report, dated August 1997, Abt researchers concluded that parts marking had reduced automobile theft significantly for cars that the National Highway Traffic Safety Administration deemed to be high theft vehicles.[1] Based on those findings, and supported by the opinions of law enforcement officers, the Abt report recommended the continuation of parts marking.

The National Highway Traffic Safety Administration conducted its own evaluation[2], which produced two findings that agreed with the Abt report. First, parts marking appeared to be cost effective. That is, the benefit from reducing car thefts was greater than the cost of marking cars. Second, parts marking and anti-theft devices are complements rather than substitutes. That is, parts marking and anti-theft devices work together to deter automobile theft. NHTSA concluded that parts marking should be continued.

Still, NHTSA disagreed with Abt Associates' findings. Other than a methodological quibble, NHTSA's disagreement rested on its assessment that Abt Associates' estimate of

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[1] W. Rhodes, J. Norman and R. Kling. An Evaluation of the Effectiveness of Automobile Parts Marking on Preventing Theft. Abt Associates Inc. August 31, 1997.

[2] NHTSA, Auto Theft and Recovery: Effects of the Anti Car Theft Act of 1992 and the Motor Vehicle Theft Enforcement Act of 1984. Report to the Congress, July 1998.

the effectiveness of parts marking was so large that it would raise industry objections. Anyway, NHTSA argued, it had given Abt Associates bad data, so conclusions based on those data were insupportable. The data problem, according to NHTSA, was that some cars had received anti-theft exemptions in lieu of parts marking, but the data failed to distinguish *some* cars with exemptions from cars that had not received exemptions.

The National Institute of Justice and Abt Associates agreed that correcting the data errors were unlikely to change major conclusions. Without correcting those errors, and repeating the analysis, however, we could not tell for sure. Consequently, NIJ asked Abt Associates to repeat the analysis with the corrected data.

Upon assembling a new analysis file with the corrected data, Abt Associates noted many changes to the data that had nothing to do with correcting the designation of whether an automobile line had its parts marked, had an anti-theft exemption, or both. The new data file excluded many nameplates – including cars designated as high-theft vehicles – that were included in the original data and it mislabeled the marking/anti-theft status of some other car lines. The Abt researchers were concerned that these omissions and errors could have a serious effect on the analysis – that is, the new data were no improvement over the old data and, in fact, the new data could be less reliable.

After carefully weighing the issues, our conclusion is that the original analysis is more reliable than analysis based on the new data. This did not resolve the problem raised by NHTSA, of course. We still could not know whether the mislabeling in the original data caused the analysis to be defective. Therefore, we repeated the original analysis using the new data. We would not expect the original results and the newer results to be identical, but we would not expect them to differ substantially.

In fact, the original data and the new data yield similar conclusions, but the conclusions based on the original data are stronger than those based on the new data. Specifically, using the original data, Abt Associates reported that parts marking was a statistically significant deterrent in every year from 1987 through 1995; roughly 250 car theft were

prevented for every 100,000 cars that were marked. Using the new data, parts marking was statistically significant in five of the nine years (1987, 1990, 1991, 1992, and 1995) and, for those five years, roughly 100 cars thefts were prevented for every 100,000 cars that were marked. Of course, the estimate is lower than 100 prevented thefts for years that were not statistically significant, but as explained in the original report, deterring 30 thefts per 100,000 marked cars is almost certainly cost effective. In fact, deterring as few a nine would seem to be be cost beneficial. Thus, although the original estimates and the new estimates disagree about the number of thefts prevented by parts marking, the substantive conclusion is unchanged – parts marking is cost effective.

We feel uncomfortable with the new estimates. Although the analysis of the new data preserved the most important findings, the new findings suggest that anti-theft devices increased automobile thefts significantly from 1987 through 1989 and decreased them from 1990 through 1995. This pattern is difficult to explain. Another problem is that we could not replicate findings from the original analysis when the dependent variable was cars stolen but not recovered. The original analysis reported significant reduction attributed to parts marking and anti-theft devices; the new analysis finds neither. Finally, we could not replicate earlier findings when the analysis was limited to luxury cars and sports cars, probably because NHTSA eliminated many of these model lines from its new data file. That is, there were too few cars to support a credible analysis.

The most important conclusions stand regardless of the data used in the analysis. It does not matter materially whether parts marking deters 250, 100, 50 or even 25 cars per 100,000 marked cars. Stolen cars are expensive – about $6,000 per stolen car based on a conservative estimate reported in the Final Report. According to the NHTSA, parts marking is comparatively inexpensive, roughly $50,000 per year for 100,000 marked cars. If these figures are roughly correct, then parts marking would be effective if it prevented at least 9 thefts per 100,000 marked cars per year. Regardless of the data used in this analysis, it seems safe to conclude that the effectiveness of parts marking exceeds this threshold.

One additional point remains. NHTSA complained that the Abt Associates' analysis failed to adjust for a problem known as "regression to the mean." Although we question whether or not regression to the mean is a real problem in these data, the issue is moot. The statistical procedures used by the Abt Associates researchers control for regression to the mean. Specifically, the statistical procedure (multiple regression analysis on pooled data) introduced a year dummy variable for cars designated as high-theft and a year dummy variable for cars not so designated by NHTSA. Those dummy variables should provide a suitable control for the possibility that regression to the mean could have accounted for the trends observed in these data, a point missed by the NHTSA reviewers.

Our recommendation is that NIJ consider the August 1997 report as providing the best available estimates of the effectiveness of parts marking. The cost-effectiveness may be overstated, as NHTSA asserts; nevertheless, concluding that parts marking deters the threshold of at least nine cars per 100,000 marked cars is reasonable. The majority police view that parts marking is an effecuve deterrent is further argument recommending the continuation of parts marking.

DEPT. OF TRANSPORTATION
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Administration

U.S. Department
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180027

Auto Theft and Recovery: Effects of the Anti Car Theft Act of 1992 and the Motor Vehicle Theft Law Enforcement Act of 1984

NHTSA-02-12231

Report to the Congress
July 1998

TABLE OF CONTENTS

	Page
Table of Contents	i
List of Figures	iv
List of Tables	vii
Executive Summary	viii
Recommendations	xvi
Discussion of Recommendations Received from Commenters	xix
Introduction	1
Motives and The Market	5
Theft, Theft Rates, and Recovery Rates, 1984-1995	8
Effect of Parts Marking and Antitheft Devices on Thefts and Recovery Rates	14
Effect of Vehicle Age on Theft and Recovery Rates	19
Collection and Dissemination of Theft and Recovery Information	20
The Economic Cost of Auto Theft	23
The Cost of Marking Parts	25
Arrest and Prosecution	27
Surveys of District Attorneys	28
Surveys of Law Enforcement Agencies	29
Surveys of Motor Vehicle Administrations	30
Insurance Premiums	30
Insurance Claim Payments for Recovered Vehicles Before and After Inception of Parts Marking	32
Used Replacement Parts	34

The Condition of Recovered Vehicles 35

Adequacy of Theft Laws 39

The Adequacy of Tracking Systems for Theft Investigators 40

Benefits of Parts Marking to Other Classes of Motor Vehicles 41

APPENDIX A - Effects of Parts Marking and Antitheft Devices on Theft and Recovery Rates

Potential Effects of Parts Marking or Antitheft Devices A-1

The Confounding Effect of "Regression to the Mean" A-4

Preview of Analyses A-5

Long-Term Theft and Recovery Rates (model years 1976-1995) A-7

Parts Marking and Theft Rates Just Before and After Model Year 1987 . . . . . A-13

Parts Marking, Recovery Rates and Unrecovered-Theft Rates Before/After Model Year 1987A-29

Effects of Antitheft Devices Introduced in MY 1989-92 Domestic Cars A-35

Effects of Factory-installed Antitheft Devices in Other Cars A-41

"In-part" Recovery Rates Just Before and After Model Year 1987 . . . . . A-53

Conclusions A-59

APPENDIX B - Analysis of Regression to the Mean in Theft Rates of Cars With Marked and Unmarked Parts

Estimation of Regression to the Mean Effects B-3

Effects of Regression to the Mean on Average Theft Rates B-6

APPENDIX C - Vehicle Age and Passenger Car Theft and Recovery Experience

The Effect of Vehicle Age on Thefts and Recoveries C-1

Vehicle Age and Theft Rates of Passenger Cars C-1

Recovery Rates for Passenger Cars C-4

Vehicle Age and Theft and Recovery Rates for Light Trucks C-4

Effects of Parts Marking on Vehicle Age and Theft and Recovery Rates C-5

APPENDIX D - Summary and Discussion of Docket Comments - Docket No. 97-042, Notice 1

97-042-N01-002 Jaguar Cars, Inc. D-2

97-042-N01-003 Florida Motor Vehicle Theft Prevention Authority D-2

97-042-N01-004 American Automobile Manufacturers Association D-3

97-042-N01-005 Advocates for Highway and Auto Safety D-5

97-042-N01-006 Nissan North America, Inc. D-6

97-042-N01-007 Dade County Multi-Agency Auto Theft Task Force D-6

97-042-N01-008 Florida Auto Theft Intelligence Unit D-7

97-042-N01-009 Volkswagen of America, Inc. D-8

97-042-N01-010 State Farm Insurance Companies D-11

97-042-N01-011 International Association of Auto Theft Investigators D-12

97-042-N01-012 Highway Loss Data Institute D-12

97-042-N01-013 Document does not exist D-13

97-042-N01-014 Toyota D-13

97-042-N01-015 3-M Safety and Security Systems D-13

97-042-N01-016 Association of International Automobile Manufacturers (AIAM) D-14

97-042-N01-017 Iowa State Patrol D-14

Discussion D-15

LIST OF FIGURES

Page

Figure 1A. Motor Vehicle Thefts by Vehicle Type 10

Figure 1B. Total Motor Vehicle Thefts 10

Figure 2A. Motor Vehicle Theft Rates by Vehicle Type 11

Figure 2B. Theft Rates for All Vehicles 11

Figure 3A. Motor Vehicle Recovery Rates All Vehicles 13

Figure 3B. Motor Vehicle Recovery Rates by Type 13

Figure 4. Federal Court Motor Vehicle Theft Statistics 27

APPENDIX A

Figure A-1. Passenger Car Theft Rates by Model Year, 1976-95 ..... A-8

Figure A-2. Theft Rate Differential, MY 1976-95 Make-Models That Got Parts Marking or Antitheft Devices in 1987 Versus Make-Models That Never Had Them at Anytime A-11

Figure A-3. Passenger Car Recovery Rates by Model Year, 1976-95 ..... A-14

Figure A-4. Recovery Rate Differential, MY 1976-95 Make-Models That Got Parts Marking or Antitheft Devices in 1987 Versus Models That Never Had Them At Any Time A-15

Figure A-5. Unrecovered Theft Rates by Model Year, 1976-95 ..... A-16

Figure A-6. Unrecovered Theft Rate Differential, MY 1976-95 Make-Models That Got Parts Marking in 1987 Versus Make-Models that never had Them at any time A-17

Figure A-7. Passenger Car Theft Rates by Model Year, 1984-89 ..... A-20

Figure A-8. Theft Rate Differential, MY 1984-89 Make-Models That Got Parts Marking in 1987 Versus Make-Models Without Parts Marking or Antitheft Devices in 1984-89 ..... A-21

Figure A-9. Theft Rate Differential, MY 1984-89, Brand New Cars Make-Models that got Parts Marking in 1987 versus Make-Models without Parts Marking or Antitheft Devices in 1984-89 ..... A-26

Figure A-10. Brand-New Passenger Car Theft Rates by Model Year, 1984-89 ..... A-27

Figure A-11. Brand-New Passenger Car Overall Theft Rates by Model Year, 1984-89 .... A-31

Figure A-12. Passenger Car Recovery Rates by Model Year, 1984-89 ..... A-32

Figure A-13. Recovery Rate Differential, MY 1984-89 Make-Models That Got Parts Marking in 1987 Versus Make-Models Without Parts Marking or Antitheft Devices in 1984-1989 ..... A-42

Figure A-14. Unrecovered Theft Rate Differential, MY 1984-89 Make-Models That Got Parts Marking in 1987 Versus Make-Models Without Parts Marking or Antitheft Devices in 1984-89 ..... A-43

Figure A-15. Unrecovered Theft Rate Differential, MY 1984-89 Brand-New Cars Make-Models That Got Antitheft Devices in 1987 Versus Make-Models Without Parts Marking or Antitheft Devices in 1984-89 ..... A-44

Figure A-16. Passenger Car Theft Rates by Model Year, 1988-95 ..... A-47

Figure A-17. Theft Rate Differential, MY 1988-95, LeSabre +88+ Bonneville (Antitheft Devices in 1992-95) versus Taurus +Sable (No Parts Marking or Antitheft Devices 1988-95) A-48

Figure A-18. Recovery Rate Differential, MY 1988-95, LeSabre +88+ Bonneville (Antitheft Devices in 1992-95) versus Taurus +Sable (No Parts Marking or Antitheft Devices 1988-95) A-49

Figure A-19. Unrecovered Theft Rate Differential, MY 1988-95, LeSabre +88+ Bonneville (Antitheft Devices in 1992-95) versus Taurus +Sable (No Parts Marking or Antitheft Devices 1988-95) A-50

Figure A-20. Theft Rate Differential General Motors Cars that Got Antitheft Devices, Starting in 1989-92 versus Control Group Cars that did not get Antitheft Devices in 1985-95 ..... A-51

Figure A-21. Unrecovered Theft Rate Differential General Motors Cars that Got Antitheft Devices, Starting in 1989-92 versus Control Group Cars that did not get Antitheft Devices in 1985-95 ..... A-52

APPENDIX B

Exhibit 1. Theft Rates for Current Year Cars B-2

APPENDIX C

Figure C-1. Theft Rates - Calendar Year for Passenger Cars C-1

Figure C-2. Theft Rates - Model Year of Passenger Cars C-2
Figure C-3. Model Year 86 - Theft Rates - Passenger Cars C-2

Figure C-4. Model Year 87 - Theft Rates - Passenger Cars C-2

Figure C-5. Model Year 88 - Theft Rates - Passenger Cars C-2

Figure C-6. Model Year 89 - Theft Rates - Passenger Cars C-3

Figure C-7. Model Year 90 - Theft Rates - Passenger Cars C-3

Figure C-8. Model Year 91 - Theft Rates - Passenger Cars C-3

Figure C-9. Model Year 92 - Theft Rates - Passenger Cars C-3

Figure C-10. Theft Rates - Model Year 86-88 - Passenger Cars C-3

Figure C-11. Recovery Rates - Model Year 86-88 - Passenger Cars C-4

Figure C-12. Theft Rates - Model Year 85-95 - Light Trucks C-4

Figure C-13. Recovery Rates - Model Year 86-95 - Light Trucks C-5

Figure C-14. Theft Rates - Model Year 86-88 Unmarked, Marked, Antitheft Passenger Cars C-5

Figure C-15. Recovery Rates - Model Year 86-88 Unmarked, Marked, Antitheft Device Cars C-6

LIST OF TABLES

Page

Table 1. Motor Vehicle Thefts 10

Table 2. Motor Vehicle Theft Rates by Vehicle Type 11

Table 3. Motor Vehicle Recovery Rates by Vehicle Type 12

Table 4. Average Theft Claim Payments and Number of Claims for CMY Marked, & Unmarked, and Antitheft Device Passenger Cars 33

Table 5. Percent of Claims and Average Payments for In-Part, Intact, and In-whole Insurance Claims 38

APPENDIX B

Table 1. Average Theft Rates Current Year Passenger Vehicles by Type 1984-1991 ..... B-9

Table 2. Thefts, Registrations and Theft Rates for Current Year Marked and Unmarked Passenger Vehicles 1984-1991 ..... B-10

Table 3. Theft Rate Correlation Matrix 1984-1991 ..... B-11

Table 4. Calculation of Expected Regression Marked and Unmarked Passenger Vehicles B-12

Executive Summary

Motor vehicle theft was a growing problem in the early and mid 1980's. In 1984, Congress enacted the Motor Vehicle Theft Law Enforcement Act in order to reduce the incidence of motor vehicle thefts and facilitate the tracing and recovery of stolen motor vehicles and parts from stolen vehicles. The Department of Transportation implemented the 1984 Act by issuing the Federal Motor Vehicle Theft Prevention Standard, which requires manufacturers of designated high theft passenger car lines to inscribe or affix the Vehicle Identification Number (VIN) onto the engine, the transmission, and 12 major body parts. As an alternative to parts marking, manufacturers could choose to install antitheft devices as standard equipment on a limited number of those lines. The objective of parts marking is to allow law enforcement agencies to identify stolen vehicles or parts removed from stolen vehicles - and to deter professional thieves since they will have difficulty in marketing stolen marked parts and are more likely to get caught if they steal cars with marked parts. The high-theft car lines were designated in 1985, and actual parts marking began with model year 1987.

In 1991, the National Highway Traffic Safety Administration (NHTSA) presented a report to the Congress assessing the auto theft problem in the United States and, in particular, attempting to evaluate parts marking. At that time, however, only two years of theft and recovery data were available for cars with marked parts. Evidence of the effectiveness of parts marking could not be obtained through statistical analysis of theft and recovery rates. Nevertheless, the Department found wide support in 1991 for parts marking from the law enforcement community. Investigators believed that parts marking provided them with a valuable tool for detecting, apprehending, and prosecuting thieves. After considering the analyses, surveys and public comments obtained during the preparation of the 1991 report, the Department recommended that the theft prevention standard be continued with minor changes.

In 1991-92, motor vehicle theft was still a large problem. Thefts had increased from 830,000 in 1984 to 1,270,000 by 1990. In search of stronger remedies, and in response to the Department's recommendation and other information, Congress enacted the Anti Car Theft Act of 1992. The 1992 Act built on the 1984 Act in several ways: Federal penalties were enhanced; a grant program was authorized to help law enforcement agencies concerned with auto theft; steps were taken to

improve motor vehicle titling, registration, and salvage; the Theft Prevention Standard was to be expanded to other passenger car lines and high theft multipurpose passenger vehicles and light trucks with gross vehicle weight ratings of 6,000 pounds or less, which became effective starting with the 1997 model year; rules were established regarding salvage or junk vehicles; a stolen parts information system was to be maintained by the Attorney General; dealing in stolen marked parts became a Federal crime; and random customs inspections were allowed.

The 1992 Act requires the Department of Transportation to provide a report to the Congress updating the findings of the 1991 report and evaluating the effects of the 1984 and 1992 acts. As a first step, the Department published a Preliminary Report for public review and issued a notice in the Federal Register on June 26, 1997 announcing a 45 day opportunity for public comment. Comments received have been summarized and discussed as part of this Final Report that will be transmitted to the Congress.

The goals of this report are:

- To update the detailed statistics on motor vehicle theft and recovery presented in the 1991 report. For this report, theft and recovery data were available from 1984 through 1995, and insurance data from 1986 through 1992.

- To revisit the evaluation of parts marking and antitheft devices, now that extensive data are available on the theft experience of cars with those remedies. (However, since theft data were available only through 1995, the effectiveness of the 1992 Act as regards expanded coverage in 1997 and later models cannot be analyzed at this time.)

- To evaluate other provisions of the 1992 Anti Car Theft Act and the 1984 Act, focusing on changes that have occurred since the 1991 report.

The basic reasons for stealing cars have not changed since the 1991 report. Cars are stolen for transportation, joyriding, export, for repair parts, and to obtain expensive items such as stereo equipment for a quick profit. Since the last report to Congress, a new type of auto theft crime has emerged -- carjacking -- but the theft motives are still the same. Fundamentally, though, two

types of auto theft may be recognized: (1) Professional thefts for profit, such as thefts to supply chop shops, retagging and retitling, or for illegal export. These thefts often result in a total loss to the original owner, but there is hope they can be deterred by remedies such as parts marking. They are believed to account for at least 23 percent of all thefts, and perhaps substantially more. (2) Nonprofessional thefts for purposes such as joyriding or to obtain temporary transportation. The vehicles are mostly recovered; on the other hand, parts marking would not appear as likely to deter these thefts.

Overall theft and recovery statistics: As in the 1991 report, theft and recovery data come from the FBI's National Crime Information Center. The data do not indicate the motives for individual thefts or separate the "professional" from the "nonprofessional" thefts. Analyses based on aggregate data cannot identify the effectiveness of each subsection of the 1984 and 1992 Acts, but can provide insights on the trend in thefts and recoveries.

The principal finding of this evaluation is that the auto theft problem, which was growing during the mid 1980's, leveled off or even began to decline after 1989-90. In 1995, there were 1,180,000 motor vehicles stolen, a decline of seven percent from the all-time peak of 1,270,000 experienced in both 1990 and 1992. However, the 1995 thefts are still 39 percent more than the 830,000 experienced in 1984. The theft rate per 100,000 registered vehicles increased from 543 in 1984 to 714 in 1990, but had dropped back to 597 by 1995.

Passenger cars account for 71 percent of all motor vehicle thefts, followed by light trucks - pickup trucks, sport utility vehicles and vans - at 24 percent. The remaining thefts are split between heavy trucks and motorcycles. Theft rates for all four vehicle types have declined since 1990.

Recoveries of stolen vehicles have kept pace with thefts over the years - recovery rates have remained stable at close to 80 percent of thefts throughout 1984-95. Passenger cars have slightly higher recovery rates than light trucks. Motorcycles have substantially lower recovery rates, and they have gotten worse. It is estimated that the annual economic loss resulting from vehicle thefts - and from the fact that many vehicles are never recovered or only recovered in a damaged condition - is at least $4 billion and could be as high as $8 billion.

Effect of parts marking and antitheft devices: The average consumer cost of parts marking in 1995 models was $4.92 per car. At that cost, just a 2 percent reduction in the theft rate would create consumer benefits exceeding the cost of parts marking.

Theft and recovery rates for car lines that got parts marking in 1987 were compared to the rates for the same car lines before 1987 and to the rates for car lines that did not get either parts marking or antitheft devices. However, the fact that, originally, only high-theft car lines got parts marking resulted in biases in the data that made it essentially impossible to reliably attribute a specific percentage reduction in thefts or increase in recoveries to parts marking. Still, the analyses provided five indications (hedged with caveats) that parts marking quite possibly had beneficial effects at times, apparently greater than 2 percent:

- There was a conspicuous shift in theft rates in model years 1986-87, coinciding with the introduction of parts marking. Cars with marked parts had lower theft rates than expected, while those with unmarked parts had higher rates than expected. The effect was as strong as 20 percent when cars were new, but it weakened as they became older and seemed to have vanished by the time they were two years old. The latter is a noteworthy finding, since it is consistent with the view that many professional thieves subsequently learned how to obliterate the markings, and found them less of a deterrent.

- Recovery rates for 1987 cars with marked parts were consistently higher than for corresponding 1986 models, even as the cars got older. However, this favorable effect in model year 1987 consistently deteriorated in later model years.

- In calendar year 1987, the unrecovered-theft rate of model year 1987 cars with parts marking was 26 percent lower than expected. As the model year 1987 cars got older, the benefit diminished, but still persisted at about 6 percent. However, the latter estimate is within the "noise range" of possible biases in the data and it cannot be attributed to parts marking without considerable doubt.

- Almost all car lines had lower theft rates in their early 1990's models than in their late 1970's models. However, the long-term reduction was substantially greater in the car lines that got

parts marking or antitheft devices than in the car lines that did not. It is not so clear what happened during the crucial intervening years, the 1980's.

- There was a strong reduction after 1987 in the percentage of vehicles that were only recovered in-part - i.e., missing their engine, transmission or a major body part (those which for high theft lines are required to have markings). There was a corresponding increase in percentage of vehicles recovered in-whole (no major parts missing) or intact. This trend was especially strong in the car lines with marked parts.

By contrast, for at least one type of factory-installed antitheft device, the available data unequivocally show effectiveness. The system installed by a domestic manufacturer as standard equipment in various car lines during 1989-94 was associated with an immediate, and persistent 70 percent reduction in the theft rate and a 58 percent reduction in the unrecovered-theft rate. This device appears to be quite effective in reducing both "professional" and "casual" thefts. Of course, a system of this type has a far higher cost than parts marking.

Fewer data were available on the antitheft devices factory-installed by other manufacturers. Specific estimates were not obtained, but there appeared to be considerable variation in effectiveness. With some of the devices, little change was seen in theft rates; with others, there were reductions comparable to those for the domestic manufacturer. No data were available for evaluating the effect of aftermarket antitheft devices.

On the whole, the analysis results seem to suggest that the approach of Chapter 331 of the Anti Car Theft Act, which views both parts-marking and factory-installed antitheft devices as effective deterrents to automobile theft, has had benefits. There is some indication that the effect of parts marking might have been greater than two percent needed for cost-effectiveness, at least at certain times. Parts marking and antitheft devices have complementary roles: antitheft devices make it harder to steal a car, while parts marking deters professional thieves because it makes it easier to apprehend and convict them. The two remedies seem to be integral components of a larger program to combat auto theft. That program has, on the whole, had an impact, as evidenced by the leveling off and reduction of theft rates after 1990.

Discussion of other provisions of the 1984 and 1992 Acts: Collection and dissemination of theft and recovery information has improved since 1991, primarily because technical advances in communications and computer equipment made databases more complete and accessible to agencies needing the information. The two systems called for in the Anti Car Theft Act of 1992 - the National Motor Vehicle Title Information System and the National Stolen Auto Part Information System - are either not completely in place or are so new that their effects on vehicle theft (prevention, recovery or apprehension of thieves) cannot be evaluated at this time.

In tandem with the number of motor vehicle thefts, arrests for auto theft peaked in 1989 and have leveled off since then. In 1994, an estimated 200,000 were arrested for auto theft or attempted theft in the United States.

While recent surveys of district attorneys and law enforcement agencies did not provide detailed statistical data on arrests, prosecutions, and convictions for auto theft, they present an even more encouraging picture than corresponding surveys in the earlier report. Since 1991, there have been moderate increases in the number of prosecutions under both Federal Acts. There have also been increases in the level of effort directed to each prosecution. Now that they have better evidence with which to work, both prosecutors and officers are willing to invest more effort at obtaining a conviction. By 1996, prosecutors saw an increase of over 20 percent in the number of prosecuted cases, and 10 percent said that theft rates had declined in their jurisdictions. By 1996, in contrast to almost no effect seen in 1991, almost half of the district attorneys reported an increase in convictions - and most of them attributed it to the Federal Acts. Stiffer sentencing was occurring in 45 percent of the convictions, including a 75 percent increase in jail sentences. This could be even higher, they report, but for prison overcrowding.

Law enforcement agencies report the same attitudes about the deterrent effects of parts marking in 1996 as they did in 1991. They feel that auto thefts for chop shop operations will continue if there is a demand for a part, marked or not. But almost half of the investigators feel that parts marking makes professional thieves more cautious or even deters them completely from stealing cars with marked parts. All investigators thought parts marking had no effect on amateur thieves.

Parts marking seems to have the greatest effect on chop shop operators because of the increased cost of "doing business."

Auto theft investigators feel that parts marking is a valuable tool for arresting and prosecuting thieves. In 1991, they saw little or no effect, but by 1996, most of them felt that parts marking did assist in identifying and recovering stolen parts and vehicles. About three fourths of the law enforcement agencies in big cities said parts marking helped in arresting both chop shop operators and professional thieves. Auto theft investigators, as in 1991, still say that more permanent methods for parts marking are needed. Even though it is unlawful to remove labels from marked parts and the labels are required to leave evidence that they were once on the marked part, thieves have found methods for removing both the label and its "footprint". The investigator then has to be sufficiently knowledgeable to recognize that the part should have a label. Also without the label it is very difficult to trace the part back to the vehicle from which it was stolen.

Data received from the Customs Service since the 1991 report, indicates it has improved its ability to recoup stolen vehicles.

Insurance companies have not reported any effects of parts marking on insurance premiums. Some insurance companies do offer discounts on comprehensive premiums for vehicles equipped with certain types of anti theft devices. Analysis of claim payments also has not shown any specific effects of either parts marking or antitheft devices. Insurance companies report that their used part policies have not changed since 1986. About three fourths of the reporting companies encourage the use of used parts for crash repairs. Most companies rely on the repair shops to obtain parts from reputable sources.

In conclusion, it appears that parts marking and other provisions of the 1984 and 1992 Acts have given the law enforcement community tools they can use to deter thefts, trace stolen vehicles and parts, and apprehend and convict thieves. Theft rates leveled off after 1989-90 and have begun to drop. While the program to reduce auto theft has had an impact, there appear to be four areas with potential room for improvement: (1) Insurance companies and motor vehicle departments could take better advantage of the existing parts marking program by routinely requiring

inspection of the markings of used parts acquired at body shops and used vehicles brought in for new titles. The current setup, where some models have parts marking and others do not, may discourage routine inspections. (2) To the extent that current parts markings can be obliterated, their long-term deterrent effect may be diminished. (3) Since many vehicles still do not have marked parts, the deterrent effect of parts marking at this time may be offset by increased thefts of the vehicles without marked parts. (4) Appropriate antitheft devices can substantially reduce all types of thefts, but are currently standard equipment on only a limited number of car lines. However, to the extent that antitheft devices and parts marking are complementary strategies, more extended availability of antitheft devices ought not come at the expense of eliminating parts marking. The best results are likely to be obtained when vehicles have both remedies.

Recommendations

Section 33113(b)(11) of Title 49, USC Chapter 331 requires the Department to "...include recommendations (including, as appropriate, legislative and administrative recommendations) for (A) continuing without change the standards prescribed under this chapter, (B) amending this chapter to cover more or fewer lines of passenger motor vehicles, (C) amending this chapter to cover other classes of motor vehicles, or (D) ending the standards for all future motor vehicles."

Some analyses of the data suggest that parts marking has shown effectiveness as a theft deterrent at times greater than the two percent cost beneficial threshold. Comments received from the law enforcement community, prosecutors, and motor vehicle administrations indicate that parts marking has been an aid in detecting, apprehending, prosecuting and convicting auto thieves. These officials also recommend extending parts marking to all passenger motor vehicles, requiring more permanent marking methods, adding other parts for marking, and eliminating anthitheft device exemptions. In contrast, the auto industry favors discontinuing parts marking, or if that is not done, having more exemptions for antitheft devices.

Insufficient information was received from the public comments to determine the cost of more permanent marking methods. Likewise, no information was provided on the cost of marking air bags - the one part that appears worthy of consideration for addition to the list of major parts to be marked. Airbags are expensive to replace costing between $500 and $1,500 and are frequently stolen. Because the Justice Department is required to evaluate the effectiveness of antitheft devices by December 31, 1999, decision making regarding exemptions should be postponed until that time.

Within the authority provided by the current legislation, the Department is considering taking several actions:

The Department is considering issuing an Advance Notice of Proposed Rulemaking to obtain data on parts marking methods. This information was requested when the preliminary report was published. No public comments were received on parts marking methods. Currently, parts

marking sources are being surveyed for more information and there is some indication that more permanent marking methods are under development. If there is sufficient information obtained from the advance notice to indicate that more permanent methods beyond adhesive labels can be used which have a cost less than the cost limitations specified in Section 33105 of Chapter 331, then the Department could proceed with rulemaking to require more permanent marking methods.

This action is warranted because the analyses suggest that the reason parts marking effectiveness seems to be short termed is that professional thieves have discovered ways to remove the adhesive marking labels along with the label's footprint. There is also evidence that professional thieves are counterfeiting labels. In one case, a vehicle had the VIN plate on the dashboard replaced with a plate and counterfeit labels that had the same VIN were put on major parts in place of the original labels. Hence more permanent marking methods should increase effectiveness to the extent that benefits exceed the added marking cost.

The Department is contemplating issuing another Advance Notice of Proposed Rulemaking to obtain data on the cost of marking air bags and glazing. Currently information is being sought from the auto industry. One manufacturer indicated that it costs them about $2 per vehicle to mark airbags and maintain cross reference information after a one time cost of about $14 per vehicle for facilities investments. Another manufacturer indicated that they used a low-cost adhesive label to mark its airbags. No manufacturer reported marking glazing. If there is sufficient information obtained from the Advance Notice to indicate that one or both can be marked so that the total parts marking cost is less than the cost limitations specified in Section 33105 of Chapter 331, then the Department could proceed with rulemaking to require air bags and/or glazing be marked.

This action is warranted for air bags which, in addition to being a safety item, cost $500 to $1,500 to replace (based on one comment received). Air bags are theft targets (several comments indicated this). While air bags do have serial numbers, they may not easily be identified with the vehicles from which they were taken. Some manufacturers indicate that they are cross-referencing the air bag serial number with the VIN. Marking air bags with the VIN, which would have to be done during the assembly process, would aid in parts recovery and for use as evidence

of vehicle theft. Marking glazing is not for the purpose of preventing glazing from being stolen but to act as a theft deterrent, especially for retag operations. Marking glazing has been previously considered and rejected for cost reasons. However, it might be worth taking another look at this alternative since it has a great deterrent possibility.

Pending the Justice Department's 1999 evaluation, the Department would consider making a recommendation to have the legislation changed to eliminate granting exemptions from parts marking for vehicles equipped with antitheft devices which meet certain requirements. This report found that parts marking and antitheft devices address different theft problems. Antitheft devices tend to have a greater deterrent effect on amateur thieves who steal vehicles for joy riding or transportation. Professional thieves and chop shops still want vehicles that are likely to have antitheft devices because these vehicles are often more expensive and thus these vehicles and their parts will potentially bring a better price on the illicit market. The evidence to support these conclusions is the fact that vehicles equipped with antitheft devices show lowered theft rates but their recovery rates, which were always lower than the average stolen vehicle, does not improve to the same level as vehicles without antitheft devices. Vehicles that are stolen by amateurs have a high recovery rate. Vehicles stolen by professional thieves and for chop shops are more often either dismantled or exported and are less likely to be recovered.

Parts marking deters professional thieves and chop shops because the marked parts aid law enforcement in detecting a stolen vehicle or part and also help get the criminals convicted of motor vehicle theft. Parts marking also helps in recovering stolen vehicles and parts. Thus, antitheft devices systems are not a replacement for the parts marking system. Both systems complement each other. Having vehicles with antitheft devices and with marked parts should prove to be sufficiently effective to warrant the cost of both the devices and the cost of parts marking.

After receiving the Justice Department findings, the Department will determine whether to propose that the theft prevention standard be amended to require all passenger vehicles, rated at 6,000 pounds gross vehicle weight or less, to have marked parts, except pickup trucks and vehicles granted exemptions for antitheft devices.

Discussion of Recommendations Received from Commenters

Section 614(c)(4) states that at least 90 days before submitting this report to Congress, the Secretary shall publish the proposed report for public review and for an opportunity for written comment of at least 45 days. The Secretary shall include a summary of such comments with the final report.

Comments were received from 17 companies, automobile manufacturers, automobile associations, and state enforcement agencies recommending modifications to the parts marking standard. Listed below is a summary by issue of recommendations received from commenters. All comments received are discussed in Appendix D.

Extend Parts Marking to Other Vehicles

Eight commenters recommend extending the parts marking to other vehicles currently exempt. Seven commenters (Florida Motor Vehicle Theft Prevention Authority (FL MVTPA), Advocates for Highway and Auto Safety, Dade County Multi-Agency Auto Theft Task Force, State Farm Insurance Companies, International Association of Auto Theft Investigators (IAATI), 3-M Safety and Security Systems, and Iowa State Police) recommend extending parts marking to all passenger vehicles (passenger cars, sport utility vehicles, and light duty trucks). Advocates, IAATI, Florida Auto Theft Intelligence Unit (FL ATIU) and 3-M also recommended extending the parts marking to vehicles with antitheft devices. State Farm wants to extend parts marking to vehicles with ineffective antitheft devices. Two commenters (IAATI and 3-M) even recommend eliminating the 6,000 pounds weight exemption.

The auto industry comments were opposed to parts marking. They feel that parts marking should either be terminated, phased out, or limited to only high theft lines. The industry favors antitheft devices over parts marking because of demonstrated effectiveness. Auto manufacturers say that parts marking costs are higher than the government estimate, hence they say the cost benefit is either lower or nonexistent.

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RESPONSE:

The Department tentatively believes that parts marking should be extended to other passenger vehicles and light trucks for the following reasons: (1) parts marking has shown effectiveness that at times exceeded the threshold for cost effectiveness, and (2) law enforcement, prosecutors, and motor vehicle administrations have presented evidence that parts marking is effective in detecting, arresting, prosecuting, and convicting auto thieves. If all passenger vehicles are marked, law enforcement officers, repair shops, and insurance agents will know that any used major part from vehicles made after the effective date must be marked.

While the position of the auto industry is understandable, parts marking effectiveness has been demonstrated even though it is difficult to quantify. We agree that antitheft devices are effective but not necessarily as a substitute for parts marking which acts both as a deterrent and for tracing stolen parts and vehicles. The government calculation of the cost for parts marking has been estimated by two different sources with similar results using recognized-standard estimating procedures. Little cost information was provided by the auto manufacturers - only estimates from Nissan and Volkswagen which were higher than the government estimates, but still within the statutory cost limit. Nissan stated that other manufacturers with low volume production lines subject to parts marking might have costs in excess of the Congressional ceiling.

Extend Parts Marking to Additional Parts

Six commenters recommend extending parts marking to additional parts. FL MVTPA, Dade County, FL ATIU, State Farm, 3-M, and Iowa State Police recommend parts marking for air bags. Three of these commenters (Dade County, FL ATIU, and State Farm) also recommend parts marking for glazing and two of these commenters (3-M and Iowa State Police) also recommend parts marking for sound systems. Toyota opposes marking glazing because of the unreasonable labor costs to coordinate marked glazing to their respective vehicles and the lack of demonstrable benefits.

RESPONSE:

One comment indicated that the replacement cost of air bags was between $500 and $1,500. While air bags have serial numbers, tracing an air bag back to its rightful vehicle without parts marking is more difficult to do. Marking glazing has a deterrent effect but its cost may exceed the Congressional limit per vehicle. The cost estimate of marking glazing was excessive a few years ago when the Department considered rulemaking to require glazing be marked. The theft of sound systems is more related to theft of vehicle contents rather than stealing the entire vehicle. Thus, the Department does not support marking sound systems.

No data on the cost of marking for any of these additional parts was provided with the comments received. To consider rulemaking for inclusion of any of these parts, the Department would have to obtain cost data. In addition, information would be needed to indicate that marking any of these parts would reduce vehicle thefts. Rulemaking would only proceed if there was evidence that adding one or more of these parts could be done without increasing the total cost of parts marking above the Congressional threshold and that there would be sufficient reductions in auto thefts to pay for the costs.

Make Parts Marking More Permanent

FL MVTPA, Advocates, Dade County, and FL ATIU recommend making parts marking more permanent. FL ATIU mentions invisographic type labels which leave the full VIN as its footprint if the label is peeled off.

RESPONSE:

While more permanent marking methods have merit, no data were provided in the comments received to support this initiative. The Department is interested in pursuing this recommendation but needs additional information before arriving at a final decision. Parts marking manufacturers have given some indication that such technology is under development.

Expand Exemptions of the Parts Marking Standard

Volkswagen of America, Inc recommends that NHTSA request Congress to allow exempting at least two car lines per year, instead of one and Association of International Automobile Manufacturers (AIAM) recommends expanding antitheft device exemptions.

RESPONSE:

The Department made this recommendation in the 1991 Report to Congress. However, given the variety of effectiveness of antitheft devices, the Department defers any decision making until the Justice Department has finished its 1999 study.

AUTO THEFT AND RECOVERY

Effects of

The Anti Car Theft Act Of 1992

and

The Motor Vehicle Theft Law Enforcement Act Of 1984

July 1998

Auto Theft and Recovery

Introduction

Every year, more than one million motor vehicles are stolen. Estimates show that the economic loss resulting from these thefts is at least $4 billion, and it could be as high as $8 billion. In 1991, the National Highway Traffic Safety Administration presented a report to the Congress assessing the auto theft problem in the United States and the measures employed to fight theft. The basic reasons for stealing cars have not changed since the 1991 report. For example, cars are stolen for transportation (including unauthorized use of a vehicle or for use in transporting stolen goods or committing other types of crimes), joyriding, export, for repair parts, and for obtaining expensive stereo equipment to sell for a quick profit. A substantial economic loss continues to result from thefts motivated to meet the demands for replacement parts. Since the last report to Congress, a new type of auto theft crime has emerged -- carjacking -- but the motives for auto theft are still the same.

Auto theft was an escalating problem that caused Congress to enact the Motor Vehicle Theft Law Enforcement of 1984 (the 1984 Theft Act). The Theft Act was designed to reduce the incidence of motor vehicle thefts and simplify the tracing and recovery of parts from stolen vehicles. The Act directed the Secretary of Transportation to issue a theft prevention standard requiring manufacturers to inscribe or affix numbers or symbols on major parts of passenger-car, high-theft lines for identification purposes. The Act also addressed other issues such as criminal penalties, export of stolen motor vehicles, and comprehensive insurance premiums.

In October 1985, the Department issued the Federal Motor Vehicle Theft Prevention Standard (49 CFR Part 541) which requires manufacturers of designated high theft passenger car lines to inscribe or affix the vehicle identification number (VIN) onto the following major parts: engines, transmissions, fenders, doors, bumpers, quarter panels, hoods, and decklids/tailgates and/or hatchbacks. In the case of engines and transmissions, either the 17-digit vehicle identification number (VIN) or an eight digit VIN derivative must be engraved or stamped. Manufacturers can meet the affixation requirements with indelibly marked labels that cannot be removed without becoming torn or rendering the number on the label illegible. The labels must also leave a residue on the part after being removed.

As a further theft deterrent, the 1984 Act allowed for an exemption from the parts-marking requirements for certain car lines where antitheft devices were installed as standard equipment in factory-delivered passenger cars. The Act limited each manufacturer to two car line exemptions per model year. The manufacturer has to petition NHTSA for an exemption which is granted if it is determined that the devices are likely to be as effective in reducing and deterring motor vehicle theft as compliance with parts marking. The common features of antitheft devices installed as standard equipment for which exemptions have been granted include "passive" systems, which means that the system engages automatically without any extra action by motorists. Such systems are activated automatically by removing the key from the ignition and locking the doors. Sensors located in the doors, hood, trunk, and key cylinders activate alarms when unauthorized entry is attempted. The approved systems have a starter or ignition interrupt and power (battery) protection. Most systems granted exemptions in full have an audio and/or visual alarm (some of the GM systems which use the PASS-Key have been granted exemptions in full but have no visual or audio alarm). Systems granted a partial exemption because they do not have the audio/visual alarm, must have the engines and transmissions marked.

In the 1991 report, theft rates between marked and unmarked cars was found to be statistically insignificant. Recovery rates also showed no statistically significant differences between marked and unmarked car lines. Cars with antitheft devices did not show a significant difference in theft rates of cars containing marked parts. Recovery rates of antitheft device equipped cars appeared to be lower than those of marked cars. Analysis of theft claims costs resulted in the same conclusion. At the time of the 1991 report, evidence of the effectiveness of the theft standard could not be obtained through statistical analysis of the data sets examined.

However, the Department did find wide support in 1991 for parts marking from the law enforcement community. Law enforcement agents concerned with prevention and deterrence of motor vehicle theft or the capture and prosecution of perpetrators believed that marking parts provided them a valuable tool.

After considering the analyses, surveys, and public comments obtained during the preparation of the 1991 report, the Department recommended that the theft prevention standard be continued with several minor changes.

As a result of the Department's recommendation and other information received by the Congress, the Anti Car Theft Act of 1992 was enacted. This Act built on the 1984 Act in several ways: Federal penalties for auto theft were enhanced. A grant program was authorized to help state and local law enforcement agencies concerned with auto theft. Experts were called on to look into and report on motor vehicle titling, registration, and salvage (the report was published in February 1994). The National Motor Vehicle Title Information System was to be established and the states were required to participate in the system; the Theft Prevention Standard was expanded, rules were established to check if salvage or junk vehicles are stolen; and the Attorney General is to maintain a National Stolen Auto Part Information System. Selling or distributing marked parts that are stolen became a Federal crime. Random customs inspection to detect stolen vehicles being exported were allowed. A pilot study on a nondestructive inspection system was authorized. As in the 1984 Act, the Anti Car Theft Act of 1992 calls for a report to the Congress on the effects of the Act on trends in motor vehicle thefts and recovery. The report is due five years after the legislation was enacted (October 25, 1992). As in the 1984 Act, a preliminary report was published in June 1997 and announced in the Federal Register (June 26, 1997 page 34494) with a 45 day comment period ending August 11. The comments received are summarized and discussed in Appendix D of this report.

The 1992 Act's amendments on theft prevention include: expanding coverage to selected lines that were below the 1990/1991 median theft rate, and including high theft multipurpose passenger vehicles and light trucks that are rated at not more than 6,000 pounds gross vehicle weight under the provisions of the theft standard. These changes had to be made two years (1994) after the enactment of the Act. Three years later (1997), based on the Attorney General's findings, the Secretary of Transportation shall designate all remaining such lines of passenger motor vehicles (other than light-duty trucks), unless the Attorney General determines such additional parts marking would not substantially inhibit chop shop operations and vehicle thefts. By the end of 1999, the Attorney General shall determine if the rules have been effective in inhibiting chop

shops and vehicle theft and send these findings to the Secretary. These findings are to include an analysis of the effectiveness of factory-installed antitheft devices as a substitute for parts marking.

The rulemaking process and manufacturer comments regarding lead time to implement parts marking resulted in expansion of the Theft Prevention Standard to a selected group of low theft line vehicle lines and other passenger vehicles beginning with the 1997 model year. The most recent theft data available for this report from the National Crime Information Center is the 1995 file. Thus the effectiveness of the Anti Car Theft Act as regards to expanded coverage cannot be determined with the available data at this time. Other provisions of the 1992 Anti Car Theft Act and the effectiveness of the 1984 Act are evaluated in this report.

Both the 1984 and the 1992 Acts require the Secretary to include the following information in the evaluation report: motor vehicle theft and recovery statistics as well as their collection and reliability; the extent to which motor vehicles are dismantled or exported; the market for stolen parts; the cost and benefit of marking parts; arrest and prosecution of auto theft offenders; the Act's effect on the cost of comprehensive premiums; the adequacy of Federal and State theft laws; and an assessment the potential benefits of parts marking on other classes of motor vehicles. The 1991 report studied and discussed each of these topics in depth. This report focuses on changes that have occurred since the 1991 report. It also updates detailed statistics on motor vehicle theft and recovery. Theft data were available from 1984 through 1995, and insurance data from 1986 through 1992.

The Department obtained data from sources specified in the Act and available elsewhere, including: the FBI's National Crime Information Center (NCIC), the U.S. Attorney Generals Office, the Bureau of Customs, the Highway Loss Data Institute (HLDI), the National Insurance Crime Bureau (NICB), and individual insurance companies. Surveys or interviews were conducted with officials of state, county and city enforcement agencies, motor vehicle administrations and court systems; and with personnel at auto body repair shops.

In preparing this report, the Department worked with and consulted the Department of Justice's National Institute of Justice.

Motives and the Market

Thieves differ in their motives for stealing motor vehicles. The 1991 report included two surveys, performed in 1989, that estimated the distribution of car thefts by motive. Fundamentally, some vehicles are stolen in more or less professional operations for profit, while other thefts are typically the work of individuals, for profit or for other reasons. Here are some of the most common motives for theft:

Thefts to supply vehicles or parts for resale:

- Chop shop operations: businesses that acquire stolen vehicles or hire thieves to provide vehicles so that parts can be removed and sold for profit. These parts may eventually be sought by others to repair damaged vehicles, since they sell for substantially less than original equipment parts. (The 1989 surveys estimated that chop shops account for between 10 and 16 percent of all thefts.)

- Theft and retag: vehicles are stolen and sold for profit to be registered under another VIN. The new VIN and title are obtained by purchasing a junked vehicle of the same make-model. The VIN plate is transferred from the junked vehicle to the stolen vehicle and the title may need slight alteration to match the stolen vehicle (an estimated 15 percent of thefts).

- Thefts for export: vehicles are stolen and illegally shipped out of the United States to be sold for profit (4 to 17 percent of thefts).

Other motives for theft:

- Insurance fraud: "stealing" your own car, or having somebody else "steal" and hide it, so you can collect its insured value. After the insurance company pays off, the vehicle may be abandoned by the thieves, eventually recovered, and end up as the property of the insurance company Insurance fraud might be contemplated, for example, if the owner has financial distress, or if the vehicle is in much worse shape than its insured value (9 to 23 percent of thefts).

- For concealing one's identity while committing another crime: stealing a vehicle as temporary transportation to and from the scene of another crime. The stolen vehicle does not belong, and cannot be traced, to the criminal. Soon afterwards, it may be abandoned and eventually recovered (an estimated 13 percent of thefts).

- Joyriding or temporary transportation: the vehicle is usually abandoned and recovered after a matter of hours or days (estimates ranged from 25 percent up to 68 percent of thefts).

Of the million vehicles stolen each year, 200,000 are never recovered. Chop shop operations, export, insurance fraud, and retagging are believed to account for most of the unrecovered vehicles. Before parts marking, passenger cars represented 57 percent of the unrecovered vehicles, but from 1987 through 1995, this has increased to over 62 percent. The number of unrecovered passenger cars has varied from as few as 87,000 in 1985 to over 170,000 in 1991.

No new surveys have been conducted on the distribution of thefts, by motive. Assuming, for the moment, that the distributions were similar in 1995 and 1988, the estimated counts and costs for chop shop operations, fraud and export in 1995 are as follows:

- Between 84,000 and 135,000 passenger cars valued from over $600 million to almost $1 billion were stolen to remove parts in chop shops.

- Fraud of all kinds accounted for anywhere between 75,000 to 320,000 stolen passenger cars, valued from $550 million to $2.4 billion; and

- Between 30,000 and 123,000 of the 143,000 unrecovered passenger cars are believed to have been stolen for export, with an estimated value of $221 million to $905 million.

However, the Customs Service has provided more recent estimates of vehicles stolen for export. They estimated that in 1995 as many as 375,000 (the FBI data indicates that 200,000 is a better estimate of unrecovered vehicles) cars may have been stolen and exported. Using the Customs Service value of recovered stolen cars in 1994 of $13,100, the upper bound estimated value of stolen exported passenger cars could be as much as $4.9 billion. The Customs Service also estimated that 200,000 passenger cars were stolen and exported in 1990 with a market value of $800 million (at a reported average of $4,000 per vehicle in 1990).

Exports of stolen vehicles are extremely difficult to estimate. In 1988 and 1989, Customs agents report seizing 1,292 stolen passenger cars, a fraction of the estimated total. The Customs Service has improved its ability to recoup stolen passenger cars and reported 1,700 recovered in 1992 and 2,300 recovered in 1994. However, no inferences can be drawn from the trend in recoveries to the number exported and not recovered. While 1992 and 1994 show an improvement in recoveries over 1988 and 1989, there are still tens of thousands of stolen vehicles being exported illegally out of this country. Because law enforcement officials believe most stolen vehicles and parts are exported in sealed containers or crates, two provisions of the Anti Car Theft Act of 1992 specifically address that issue. One provision allows for random customs inspections to detect stolen vehicles being exported, and the other authorizes a pilot study of a nondestructive inspection system.

The 1991 report estimates that almost 32 million passenger cars during 1988 had crash damage which cost an estimated $28.6 billion in parts to repair. The used/rebuilt portion of the parts market in 1988 was thought to be 4 to 5 percent or $1.6 billion at that time. That portion appears to have grown over time. A survey of repair shops in 1989 indicated that used parts were employed in making repairs about 10 percent of the time; a similar survey in 1996 indicates that used parts comprise 14 percent of the repair parts. Assuming that the same number of cars as in 1988 need repair today and using current dollars, the estimated portion for used/rebuilt repair parts is about $5.3 billion. Stolen parts comprise a portion of that used parts market.

The lack of information for making good estimates on the motives for auto theft results in broad and sometimes overlapping ranges. Thus, in the remainder of this evaluation, vehicle thefts and recoveries are analyzed only in the aggregate, without identifying the motives.

Thefts, Theft Rates, and Recovery Rates, 1984-1995

The FBI's National Crime Information Center (NCIC), once again is the source of theft and recovery data for this report as it was for the 1991 report. Theft data from 1984 through 1995 were available. Because of differences in screening, vehicle definitions, and aggregating the data, totals shown for 1984 through 1988 are slightly different from the 1991 report. The NCIC information is considered the most accurate and precise available. Each record contains the make, line, theft and recovery dates of individual stolen motor vehicles. The summary information compiled from the Uniform Crime Reports (UCR), which are based on reports by local police agencies, is not presented here, as it had been in the 1991 report. Comparisons were made between the NCIC and UCR data bases in the 1991 report, and the NCIC data base was found to be more definitive for analysis purposes. The UCR data base includes attempted thefts as well as successful thefts.

Thefts: The principal finding of this evaluation is that the auto theft problem, which was growing during the mid 1980's, leveled off or even began to decline after 1989-90. In 1995, there were 1,179,856 motor vehicles stolen, a rise of 39 percent since 1984, but a decline of 7 percent since 1990. In 1995, passenger cars account for 71 percent of all motor vehicle thefts; light trucks - i.e., pickup trucks, vans and sport utility vehicles (SUV's) account for 24 percent. The remaining five percent are thefts of heavy trucks, buses and motorcycles. Total thefts increased steadily from 830,545 in 1984 to 1,234,088 in 1989, an 8 percent annual rate of increase. They leveled off in the early 1990's, with a reduction from 1,227,768 in 1994 to 1,179,856 in 1995. The sharp increase in thefts of pickup trucks, vans and SUV's throughout this period is proportionate to their increasing share of the vehicles on the road. Annual thefts of motor vehicles from 1984 through 1995 are shown in Table I and Figures 1A and 1B.

Theft rates (Thefts per 100,000 registered vehicles[2]) are shown in Table 2 and Figures 2A and 2B. The theft rate for all types of vehicles has the same trend as overall thefts. The theft rate increased from 543 in 1984 to 714 in 1990. It has declined to 597 by 1995. The rates for passenger cars and light trucks show a similar pattern. (Even though thefts of light trucks have increased, their registrations grew even more rapidly, so the theft rate declined after 1989.) Theft rates for heavy trucks, buses and motorcycles have experienced even larger reductions.

Recovery rates: The number of recoveries have kept pace with thefts over the years. The recovery rate (recoveries/thefts) has remained stable. Table 3 and Figures 3A and 3B indicate that overall recovery rates during 1984-95 have ranged from a low of 78 percent to a high of 87 percent but the trend has been neither increasing nor decreasing: the rate has been consistently close to 83 percent. NCIC recovery data for 1995 was still incomplete at the time of this study. The 1995 rates in Table 3 can be expected to increase if vehicles stolen in 1995 and recovered in 1996 (after the cutoff date for the file used in this study) were to be included.

Passenger cars have slightly higher recovery rates than pickup trucks/vans/SUV's or heavy trucks. Motorcycles have substantially lower recovery rates, and they have gotten worse. After 1990, recovery rates for all types of vehicles tend to be higher in the even years than the odd years. The reason for that pattern is unknown.

[2]Registered vehicles are the number of vehicles registered by the states and reflects the fleet of vehicles on the road. The data comes from the R. L. Polk Co. which compiles the information obtained from the states usually at the end of June which is the fiscal year for most states. Registered vehicle data is essential since it can be separated by model year.

TABLE 1. MOTOR VEHICLE THEFTS

Motor Vehicle Type	CALENDAR YEAR											
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Passenger Cars	603,103	636,663	709,497	749,607	846,050	912,466	945,181	894,167	942,388	897,020	891,020	840,642
Trucks, Vans, MPVs	119,117	130,498	150,378	172,614	207,741	230,985	242,621	242,260	260,856	258,879	274,729	279,894
Heavy Trucks & Buses	38,630	37,222	37,182	37,066	36,398	33,441	30,439	25,975	24,420	22,766	21,708	20,875
Motorcycles	69,695	73,765	74,338	70,050	64,251	57,196	51,543	50,993	44,213	41,213	39,754	38,445
TOTAL THEFTS	830,545	878,148	971,395	1,029,337	1,154,440	1,234,088	1,269,784	1,213,395	1,271,877	1,219,878	1,227,211	1,179,856

Source: Federal Bureau of Investigation, National Crime Information Center

FIGURE 1A. MOTOR VEHICLE THEFTS BY VEHICLE TYPE

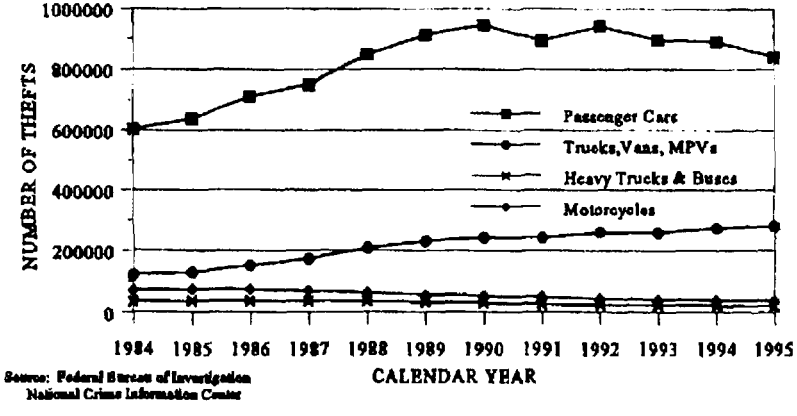


FIGURE 1B. TOTAL MOTOR VEHICLE THEFTS

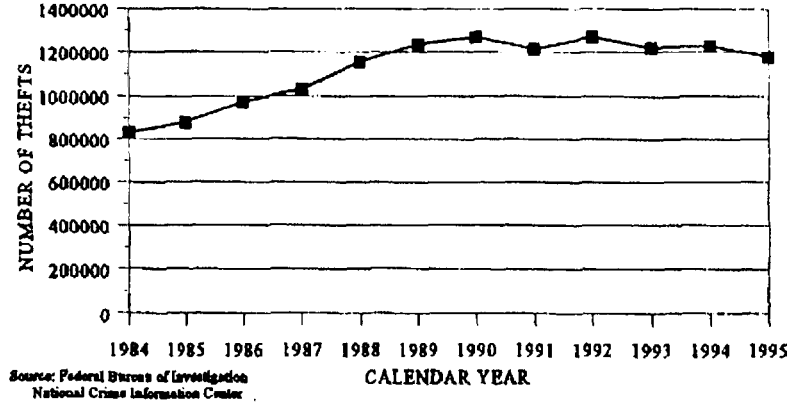


TABLE 2. MOTOR VEHICLE THEFT RATES BY VEHICLE TYPE

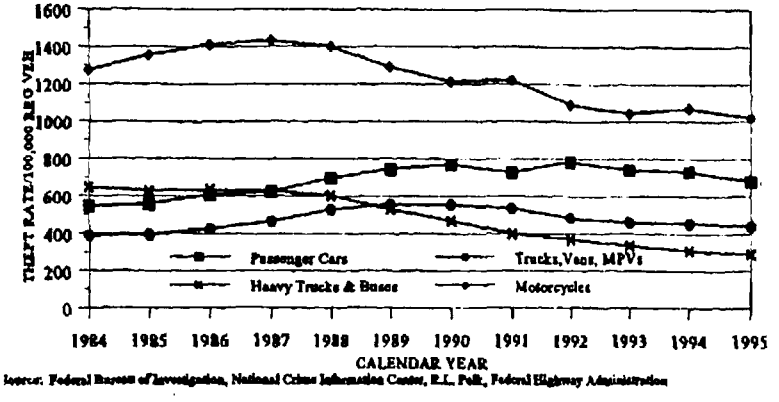
Motor Vehicle Type	CALENDAR YEAR											
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Passenger Cars	545	555	605	625	696	743	767	725	783	741	731	682
Trucks, Vans, MPVs	387	393	426	465	527	557	553	535	485	458	455	441
Heavy Trucks & Buses	645	628	636	628	602	529	469	400	369	336	311	293
Motorcycles	1,272	1,355	1,413	1,434	1,402	1,290	1,210	1,210	1,088	1,042	1,069	1,021
ALL VEHICLES	543	551	594	613	673	705	714	682	688	648	636	597

Source: Number of thefts - Federal Bureau of Investigation, National Crime Information Center

Registration data - R.L. Polk & Co. Data, & Federal Highway Administration

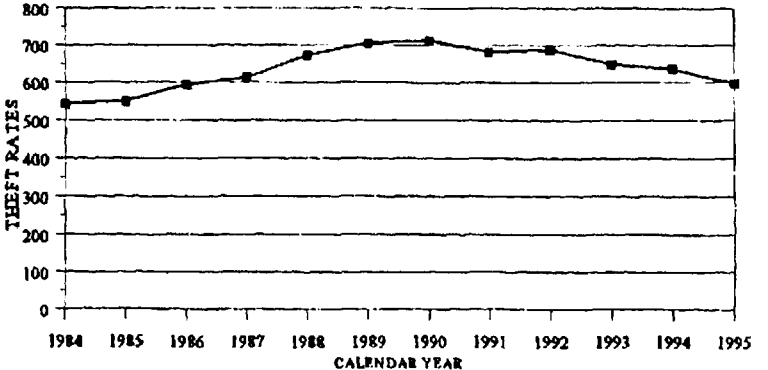
(Theft Rate = Thefts/100,000 Registered Vehicles)

FIGURE 2A. MOTOR VEHICLE THEFT RATES BY VEHICLE TYPE



Source: Federal Bureau of Investigation, National Crime Information Center, R.L. Polk, Federal Highway Administration

FIGURE 2B. THEFT RATES FOR ALL VEHICLES



Source: Federal Bureau of Investigation, National Crime Information Center, R.L. Polk, Federal Highway Administration

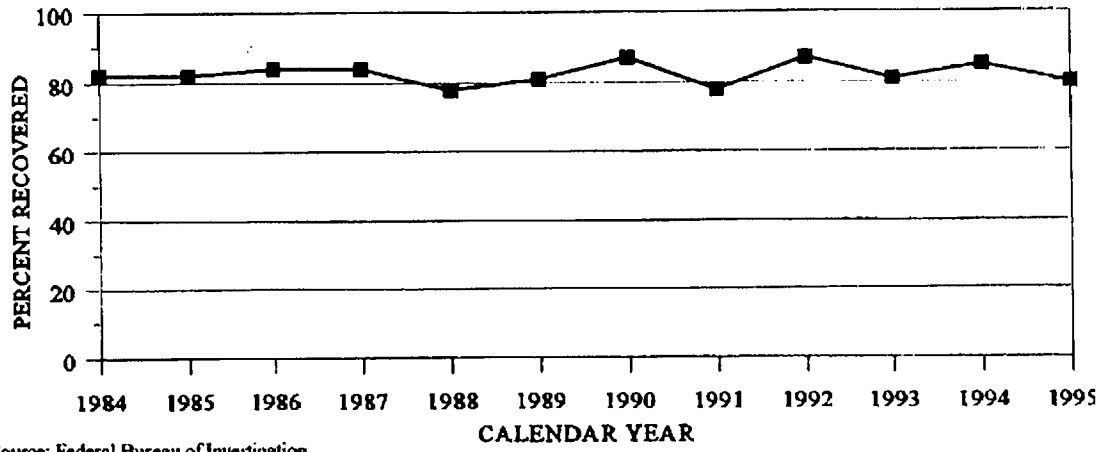
TABLE 3. MOTOR VEHICLE RECOVERY RATES BY VEHICLE TYPE

Motor Vehicle Type	CALENDAR YEAR											
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Passenger Cars												
Number Thefts	603,103	636,663	709,497	749,607	846,050	912,466	945,181	894,167	942,388	897,020	891,020	840,642
Number Recovered	511,167	547,765	620,291	655,595	684,903	761,930	838,779	723,412	840,634	750,696	778,984	697,565
Theft Rate	545	555	605	625	696	743	767	725	783	741	731	682
Recovery Rate	85%	86%	87%	87%	81%	84%	89%	81%	89%	84%	87%	83%
Lt. Trucks/Vans/SUVs												
Number Thefts	119,117	130,498	150,378	172,614	207,741	230,985	242,621	242,260	260,856	258,879	274,729	279,894
Number Recovered	89,437	98,557	116,656	135,445	155,661	181,326	203,700	182,807	222,651	204,079	228,403	219,385
Theft Rate	387	393	426	465	527	557	553	535	485	458	455	441
Recovery Rate	75%	76%	78%	78%	75%	79%	84%	75%	85%	79%	83%	78%
Heavy Trucks & Buses												
Number Thefts	38,630	37,222	37,182	37,066	36,398	33,441	30,439	25,975	24,420	22,766	21,708	20,875
Number Recovered	32,626	30,987	30,845	30,203	27,213	25,645	24,692	18,650	20,130	16,938	17,395	15,441
Theft Rate	645	628	636	628	602	529	469	400	369	336	311	293
Recovery Rate	84%	84%	83%	81%	75%	77%	81%	72%	82%	74%	80%	74%
Motorcycles												
Number Thefts	69,695	73,765	74,338	70,050	64,251	57,196	51,543	50,993	44,213	41,213	39,754	38,445
Number Recovered	43,837	43,837	44,526	41,100	33,346	30,265	31,386	24,042	26,797	18,146	20,365	15,442
Theft Rate	1,272	1,355	1,413	1,434	1,402	1,290	1,210	1,210	1,088	1,042	1,069	1,021
Recovery Rate	63%	63%	60%	59%	52%	53%	61%	47%	61%	44%	51%	40%
TOTAL												
Number Thefts	830,545	878,148	971,395	1,029,337	1,154,440	1,234,088	1,269,784	1,213,395	1,271,877	1,220,111	1,227,768	1,179,856
Number Recovered	677,067	721,146	812,318	862,343	901,123	999,166	1,098,557	948,911	1,110,212	989,859	1,045,147	947,833
Recovery Rate	82%	82%	84%	84%	78%	81%	87%	78%	87%	81%	85%	80%

Source: Federal Bureau of Investigation, National Crime Information Center, R.L. Polk & Company data, Federal Highway Administration (Theft Rate = Thefts/100,000 Registered Vehicles)

FIGURE 3A. MOTOR VEHICLE RECOVERY RATES

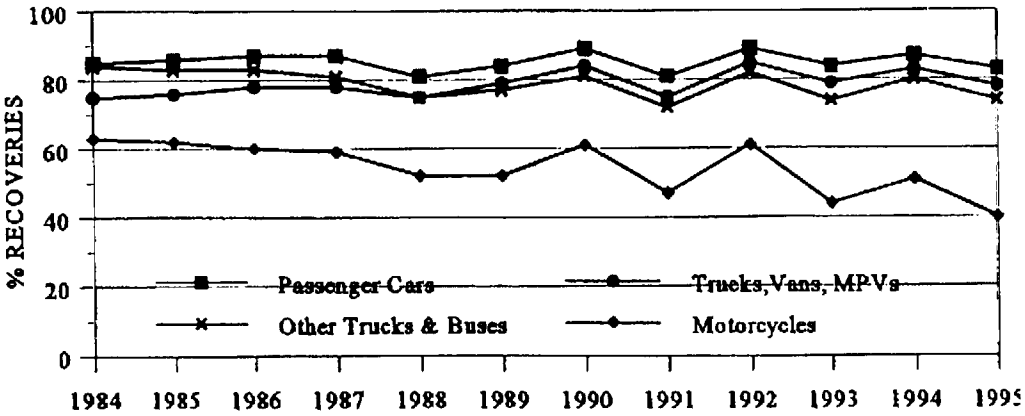
ALL VEHICLES



Source: Federal Bureau of Investigation
National Crime Information Center

FIGURE 3B. MOTOR VEHICLE RECOVERY RATES

BY TYPE



Source: Federal Bureau of Investigation
National Crime Information Center

Effect of Parts Marking and Antitheft Devices on Theft and Recovery Rates

A key outcome of the Antitheft Act of 1984 was that a large number of model year 1987 passenger cars would get marked parts. A smaller number would get factory-installed antitheft devices in 1987, or a few years earlier or later. At the time of the 1991 Report to the Congress, a comprehensive evaluation was impossible simply because there were not yet enough data on cars with marked parts or antitheft devices. By now, those cars have been on the road for a much longer time. Their theft and recovery rates can be tracked for several years and compared to the corresponding rates for cars without either measure. Appendix A of this report presents the analyses that were performed to evaluate the effect of parts marking and antitheft devices. However, biases in the data obstructed the evaluation of parts marking and made it essentially impossible to attribute a specific percentage reduction in thefts or increase in recoveries to that remedy. Still, the analyses do suggest that parts marking quite possibly had **some** beneficial effects at times. The analyses produced quantitative effectiveness estimates for one type of antitheft device installed in domestic cars, but the data were insufficient for similar analyses of other types of antitheft devices. Here is a summary of the analysis objectives, data sources, findings and conclusions.

If parts marking or antitheft devices are effective, they ought to **reduce** theft rates **and/or increase** recovery rates. These goals would be accomplished through **direct** effects and **deterrent** effects. While there have been numerous cases where parts marking directly helped recover cars or convict thieves, it is probably safe to say that the deterrent effects are potentially far larger, in quantitative terms. The primary deterrent effect, of course, would be to dissuade professional car theft operations, especially chop-shop operations, from stealing cars with marked parts or antitheft devices. Thefts for joyriding, etc., are less likely to be deterred by parts marking. A significant reduction in the theft rate might be expected to start **in model year 1987** in the make-models that got marked parts that year. However, the effect might not trigger all at once (i.e., in model year 1987). It might have built up over time as thieves became more aware of parts marking, or as body shops gradually became more careful about the source of their parts, and it might even have spilled over onto earlier cars (thieves do not always have time to ascertain the exact model year, and might avoid stealing cars of the lines that got parts marking, even if they are slightly pre-1987). A **long-term** reduction of theft rates might be expected in the lines

that got parts marking or antitheft devices, relative to car lines that did not. Thus, it is appropriate to perform short-term (just before/after model year 1987) and long-term analyses of theft rates.

The deterrent effect might also impact the **recovery** rate. When cars are stolen for chop shops, the overall recovery rate is relatively low and many of the recoveries are only "in part" (as defined in "Collection and Dissemination of Theft and Recovery Information," later in this report). When cars are stolen for joyriding, etc., the overall recovery rate is usually high, and most of the recoveries are "intact" or "in whole." If parts marking deters thefts for chop shops but has little effect on joyriding, etc., it ought to increase the overall recovery rate and reduce the proportion of recoveries that are only "in part."

The remedies should reduce the number of unrecovered stolen vehicles per million registered vehicles. To the extent that many of the vehicles stolen by professional thieves - for chop shops, salvage switch and retag, or export - are never recovered, this "**unrecovered theft rate**" may be considered as a sort of surrogate for the unknown "professional" theft rate. If the remedies change all three rates in the right direction, so much the better, but even if they change just one, especially the unrecovered theft rate, it might be good enough.

Only a small reduction in theft is needed to make parts marking cost effective. As discussed in "The Cost of Marking Parts," later in this report, a relative reduction of two percent in the theft rate of 0-3 year old cars would already pay for parts marking.

The make-models slated for parts marking or antitheft devices in 1987 were not picked on a random basis, but were the ones that had **the highest theft rates in MY 1983-84**. Even without parts marking or antitheft devices, these make-models would inevitably have experienced a strong reduction in their theft rates, relative to other car lines, for a number of years after 1984 - a phenomenon called "regression to the mean." As is explained in Appendix A, parts-marking effects on the order of, say, two percent cannot readily be discerned from the much stronger "regression to the mean" effect that went on at the same time. With this fundamental bias in the data, it becomes almost impossible to produce specific, quantitative effectiveness estimates. A closer look at "regression to the mean," and an attempt to isolate its effect by statistical tools is

documented in Appendix B. However, even with statistical tools, it is difficult to distinguish one effect from another in the type of data furnished for this evaluation.

The principal data base for the analyses, assembled from NCIC and R.L. Polk data, enumerates how many cars were registered, stolen and recovered, by make-model, model year and calendar year. The data base covers calendar years 1984-95, and it includes cars from 0 to 15 years old. It is useful for studying the short-term and long-term trends in theft rates and overall recovery rates. Another data base, assembled by HLDI from theft and recovery records supplied by the NICB, enumerates how many cars were recovered "in part," "in whole," or "intact," by make-model, model year and calendar year. That data base is complete for calendar years 1986-91, and it includes cars from 0 to at least 2 years old. It is useful for studying short-term trends of the "in part" recovery rate.

As stated above, the analyses did not generate a reliable quantitative estimate of the reduction of thefts or enhancement of recoveries attributable to parts marking, and they did not lead to an unequivocal conclusion that parts marking has been effective. But the analyses were not totally inconclusive or neutral. They produced five concrete indications of benefits for parts marking, all hedged with caveats that made them fall short of firm deductions:

(1) Short-term theft trends: Above all, there was a conspicuous shift in theft rates in 1986-87, coinciding with the introduction of parts marking. Thefts of 1987 make-models with marked parts were lower than expected, while thefts of the same make-models in 1986 (unmarked) and thefts of other 1987 make-models (unmarked) were both higher than expected. The net shift was on the order of 20 percent when the cars were less than a year old (see Figures A-9 and A-10 in Appendix A). However, the effect was already much weaker for one-year-old cars and it had vanished by the time the cars were two years old. Also, the effect was more of a shift in what cars were stolen than a reduction of overall theft rates.

(2) Short-term recovery trends: Recovery rates for 1987 cars with parts marking were consistently higher than for the same make-models in 1986, the last year before parts

marking. Unlike the effect on theft rates, this benefit persisted as the model year 1987 cars got older. On the other hand, the 1986-87 favorable effect was followed by an unexplained but consistent deterioration, starting in model year 1988, in the recovery rates of cars with parts marking relative to other make-models without the markings.

(3) Short-term unrecovered-theft trends: In calendar year 1987, the unrecovered-theft rate of model year 1987 cars with parts marking was 26 percent lower than expected. As the model year 1987 cars got older, this benefit diminished, but not to zero; it persisted at about 6 percent. That is the closest thing to a specific "effectiveness estimate" for parts marking. However, that observed benefit is within the "noise range" of possible biases in the data and it cannot be attributed to parts marking without considerable doubt.

(4) Long-term trends: In the very long term (cars of the early 90's vs. cars of the late 70's), parts marking and antitheft devices appear to be associated with a reduction in theft rates (see Figures A-1 and A-2 in Appendix A). In other words, the make-models that were selected in 1983-84 to get parts marking or antitheft devices in 1987 historically had higher theft rates than other make-models, even as far back as model year 1976. But from model year 1991 onwards, their theft rates were slightly lower than other make models. Little can be said about the crucial intervening years, the 1980's. The nonrandom selection of high-theft lines for parts marking caused a "regression to the mean" situation that obscured all other trends. It is only possible to compare cars of the late 70's and early 90's, before and after the "regression to the mean" phenomenon. So many other factors could be affecting theft trends over a 20-year period that it would be foolhardy to attribute the observed long-term reduction to parts marking. Additionally, the unrecovered-theft rates did not experience a similar long-term improvement.

(5) Short-term "in part" recovery trends: There was a strong reduction of "in part" vehicle recoveries, and a corresponding increase of "in whole" and "intact" recoveries in all make-models after parts marking was introduced in 1987, and especially in the make-models that got the markings. The reduction of "in part" vehicle recoveries could be an indication that chop shop operations and some other types of professional car theft are declining.

However, a closer examination of the data showed that the reduction did not begin immediately with the introduction of parts marking, but mostly came 1-3 years later, possibly as a result of factors unrelated to parts marking, such as, perhaps, changes in the way that recoveries were reported.

By contrast, for at least one type of factory-installed antitheft device, the available data provide unequivocal evidence of effectiveness. One domestic manufacturer installed a system as standard equipment in various car lines during 1989-94. This system was associated with an immediate - and persistent - 70 percent reduction in the theft rate and a 58 percent reduction in the unrecovered-theft rate. In other words, the devices appear to be quite effective in reducing all kinds of thefts, both the "professional" and the "casual" type.

Substantially fewer data were available on the antitheft devices installed by other manufacturers. Specific estimates were not obtained, but the available data suggest considerable variation in effectiveness. With some of the devices, little change was seen in theft rates; with others, there were reductions comparable to those for the domestic manufacturer.

On the whole, the analysis results seem to suggest that the approach of Chapter 331 of the Anti Car Theft Act, which views both parts-marking and factory-installed antitheft devices as effective deterrents to automobile theft, has had benefits. Only a small effect, such as a 2 percent reduction of unrecovered thefts is necessary for parts marking to be cost-effective. An effect of that magnitude would have been obscured in the data available for the analyses. However, the positive results described above hint that the effect of parts marking might have been greater than 2 percent, at least at certain times. Antitheft devices, at least those installed in certain vehicles, are many times more effective, but also many times higher in cost. Parts marking and antitheft devices are components of a larger program that has, on the whole, succeeded. As shown in Table 2 and Figure 2, theft rates have leveled off and even began to decline after 1989-90. When the team wins, each of the individual players gets some credit.

Two other issues tie in with the analysis results. (1) The nonrandom selection of high-theft make-models for parts marking impeded the evaluation, and (2) There is a hint that the initial effect of

parts marking may have waned in subsequent years. That's at best a tentative finding, given the uncertainties in all the analyses. However, it corresponds to the view that many professional thieves eventually learned how to obliterate the markings. If so, that encourages consideration of more permanent systems of parts marking: the high potential for benefits might well justify the higher cost.

Effect of Vehicle Age on Theft and Recovery Rates

A vehicle's age is a theft motive consideration. Chop shop operations involve removing parts from stolen vehicles for the purpose of providing repair parts for other vehicles that have either been damaged in collisions or because of wear. As vehicles age, the chance of needing repairs increases and the chance of being in a collision remains fairly constant. In contrast, vehicles that are stolen for either joyriding or for the purpose of retagging may more likely be newer vehicles that are attractive targets with higher market value. Unfortunately, there is no method for identifying theft motives by vehicle age.

Appendix C shows a detailed analysis of theft rates by vehicle age to determine if there is a relationship. Analysis of theft data in aggregate immediately suggested that there were two possible confounding factors: calendar year effects, and model year effects. In the first situation, vehicle thefts in any year can be influenced by such things as the weather or economic conditions, neither of which would have anything to do with vehicle age. For example, the blizzard conditions in the midwest this spring has meant that some states have virtually no vehicles on the road and few people out-of-doors. This would mean for that region and time period, vehicle thefts would be low. Model year influences include such things as major manufacturers making across the board design changes such as when they went from rear to front wheel drive. Again, if these changes are radical it can result in fewer vehicle thefts of that model year because parts are not interchangeable with other older vehicles or because the new model' appearance has less appeal. The analysis in Appendix C corrected for both calendar year and model year effects.

The result of the vehicle age analysis was that no relationship between vehicle age and theft rate was found. Current model year cars were just as likely to be stolen as eight year old models.

Also, there was no relationship between vehicle age and recovery rate. Thus, current model year vehicles had the same recovery chance as did eight year old models. What the analysis suggests is that theft motives, including those of professional thieves, that may change as vehicles age may have countervailing effects. Thus, as vehicle thefts for used parts may increase as vehicles age, thefts for retagging or joy riding may decrease with vehicle age in a proportionate manner.

The analysis was extended to light trucks with the same findings: no relationship was found between vehicle age and theft and recovery rates. The passenger car data was separated by marked, unmarked and those with antitheft devices with the same result - no vehicle age effect was found with respect to either theft rates or recovery rates.

What this suggests is that the risk of theft persists over the life of a car. This implies that parts markings ought to last essentially over the life of the car.

Collection and Dissemination of Theft and Recovery Information

National theft and recovery information is collected and compiled by the same organizations as discussed in the 1991 report: The Federal Bureau of Investigation is responsible for the Uniform Crime Reports (UCR) and the National Crime Information Center (NCIC); the insurance industry sponsors the Highway Loss Data Institute (HLDI), the Insurance Institute for Highway Safety (IIHS), and the National Insurance Crime Bureau (NICB), formerly the National Automobile Theft Bureau.

The 1991 report discussed the fact that these data sources provide substantial information on the number of thefts, the costs associated with auto theft, and the recovery of stolen vehicles and their condition. These systems do not reveal the motives for vehicle thefts. Thus it is not possible to directly measure changes in thefts so as to determine if the 1984 and 1992 Acts have had an impact on chop-shop operations and any of the other thefts for profit: retagging, insurance fraud, and export of stolen vehicles.

As in 1991, the UCR collects monthly information from local police agencies on reported vehicle thefts and attempted thefts, and arrests for these crimes. This information is published at least annually with the primary objective of providing reliable crime statistics for law enforcement use.

The NCIC has an online-computerized filing system of theft cases with all the key information for ready access to individual records of reported motor vehicle thefts. This system is used to obtain information on crimes under investigation. When a vehicle is located, the case is closed. The NCIC maintains historical information for four years before purging its files. Each case of a reported stolen vehicle includes the Vehicle Identification Number (VIN) and complete state registration data as well as the date of the theft, theft location and reporting agency.

The NICB is a clearinghouse for information on motor vehicle thefts reported by the insurance industry. The NICB provides assistance to law enforcement and other public agencies such as state motor vehicle administrations. The NICB is the organization designated by the U.S. Department of Transportation to collect information in a standard reporting system on vehicle recovery condition:

"In part" One or more major parts missing. "Major" parts are the engine, transmission, fenders, doors, bumpers, quarter panels, hood, and decklid/tailgate/hatchback - i.e., the parts that would have been marked if the vehicle had parts marking.

"In whole" No major parts missing; but there is damage to the vehicle such as being stripped of other than major parts and/or wrecked, burned, etc.

"Intact" No major parts missing; no damage to the vehicle other than that caused when the thieves entered and operated the vehicle; ordinary wear and tear.

The NICB assists law enforcement agencies by matching reports of stolen vehicles with reports of vehicle recoveries, and impounded vehicles. The NICB also helps with investigative inquiries.

The IIHS and HLDI collect and compile the insurance industry annual report on theft experience and its effect on insurance premiums. This report is submitted to the Department of Transportation, as required by the 1984 Act. HLDI also compiles and disseminates insurance claim cost data and insurance theft losses and prepares industry reports annually.

The Anti Car Theft Act of 1992 calls for two new or expanded systems: the National Motor Vehicle Title Information System and the National Stolen Auto Part Information System. The Justice Department is setting up the first system after considering the recommendations of an expert advisory committee that prepared a report in 1994 for the President, Congress, and State Governors. A pilot project for the system is under development in Virginia, Florida, Indiana and Massachusetts. The American Association of Motor Vehicle Administrators is managing the project and the R.L. Polk Company is also participating. Three other states, Maryland, Delaware, and New York are expected to participate as well. The stolen auto parts system is an expansion of a NCIC system that existed before the 1992 Act. These two systems are either not completely in place or are so new that their effects on vehicle theft (on the prevention, recovery or apprehension of auto thieves) cannot be evaluated at this time.

Current data and views on what changes have taken place in collecting and disseminating motor vehicle theft information are based on a survey of state motor vehicle administrations and the annual insurance reporting information sent to the Department. All the state motor vehicle administrations in 1991 agreed that there had been no changes in information sharing practices between 1983-1986 (before the 1984 Act's provisions were implemented) and 1987-1988. By 1996, however, one-third had experienced gradual changes in the way information was shared due mainly to improvements in information-processing technology implemented since 1988. Nevertheless, the majority still felt that no changes occurred after 1988.

Databases became more complete and accessible to the agencies needing the information. In 1991, three-fourths of the state agencies recorded the recovered vehicle's condition, by 1996 this had grown to almost 90 percent. Almost 80 percent of the states surveyed in 1996 had made changes to procedures regarding the collection and recording of vehicle recovery information since 1986, as a direct result of the 1984 and 1992 Acts. New technology has provided for increased data collection and dissemination and resulted in changes in these processes. All states

surveyed participated with the NCIC and equivalent state-level organizations. Two-thirds indicated that state and local law enforcement agencies played a major role in collecting and recording vehicle theft and recovery information. In other words, although there have not been major changes in the type of information collected, technology improvements have made it easier to access and share the information.

Each year since 1986, the insurance industry has reported to the Department on collecting and disseminating motor vehicle theft and recovery data as well as effects on insurance premiums and other related matters. In 1986, there were 24 companies that reported, while in 1992 (the latest year of information available for this report), 19 companies reported.

Percent of insurance companies that:

	1986	1992
Reported thefts and recoveries to NICB	83	76
Notified local law enforcement agencies	20	60
Notified other insurance companies or state/federal agencies	33	33
Did not notify any outside organization	10	10

Insurance companies have made some progress in directly disseminating auto theft and recovery information, including a threefold increase of reporting to local law enforcement agencies. Nevertheless, it is clear that insurance companies still rely most heavily on the NICB as a clearinghouse for such information.

The Economic Cost of Auto Theft

The overall cost of motor vehicle thefts to the United States economy is difficult to estimate accurately, since not all thefts are reported, the precise value of stolen and recovered vehicles may be unknown, and ancillary costs such as insurance administration, police work, and loss of consumers' time are hard to gauge. Based on available data, four estimates were generated,

ranging from about $4.0 to $8.3 billion per year. The best guess is that the actual cost is near the middle, or somewhat below the middle of that range, i.e., about $5 or $6 billion per year.

The lowest estimate is derived from the Uniform Crime Report (UCR), as summarized in *Crime in the United States*; 1994 is the most recent year for which data were available. The total value of vehicles stolen in 1994, as reported to police agencies, was $7.6 billion (based on *Crime in the United States*, 1994, p 50). While over 80 percent of the vehicles were eventually recovered, many of them are damaged or have parts missing; only 61.1 percent of the **value** of the stolen vehicles was recovered (ibid, p. 205). The other 38.9 percent of the value, $2.957 billion was lost. To those direct losses, it is necessary to add the cost of insurance administration, police investigation, and time lost by victims (filling out reports, court appearances, acquiring substitute transportation, etc.): an estimated markup of 33.7 percent (taken from The Economic Cost of Motor Vehicle Crashes, 1994, DOT HS 808 425, p.7). Thus, the overall cost to the economy was an estimated $3.954 billion in 1994. Based on the UCR data, the economic cost of motor vehicle theft escalated from $2.4 billion in 1985 to $4 billion in 1991, and it leveled off after 1991, consistent with the pattern of overall thefts in Table 1 and Figure 1.

A somewhat higher estimate is derived from NCIC data. In 1995, there were 1,179,856 stolen vehicles with an average value of $7,350 (based on Crime in the United States). The total value of the stolen vehicles, according to NCIC, would have been $8.672 billion. If 38.9 percent of that value is lost, as was estimated in the UCR data, the direct loss was $3.373 billion. With a 33.7 percent markup, the net loss to the economy would have been $4.510 billion.

A nearly identical estimate can be obtained by examining actual premiums paid for comprehensive insurance. The Insurance Information Institute reports that the comprehensive policies written for motor vehicles during 1995 amounted to 110.8 million insured vehicle years. The average premium was $116.91 per year. Thus, consumers actually spent $12.954 billion on comprehensive premiums. Very close to one-third of comprehensive premiums go to processing and paying theft claims: $4.318 billion (the remainder goes to processing and paying claims for vandalism, fires, floods, etc.). When an 8.7 percent markup is added for police investigation and time lost by victims, the cost to the economy is $4.694 billion.

The preceding estimate may be considered low because many stolen vehicles are not insured by comprehensive policies. For an upper bound, let it be assumed that all of the 196.6 million vehicles on the road in 1995 had comprehensive insurance, at the same $116.91 premium as above. In that case, the total cost of premiums would have been $22.985 billion, the portion used for processing and paying theft claims $7.662 billion, and the cost to the economy, after the 8.7 percent markup, $8.329 billion. However, this is undoubtedly an overestimate. It is primarily older vehicles that do not have comprehensive policies, and since their value has substantially depreciated, their average premiums, if they had such policies, would have been less than $116.91.

The Cost of Marking Parts

To comply with the standard, up to 14 parts have to be marked. These include the engine and transmission, which historically had already been marked with the entire VIN or a VIN derivative of eight to nine digits. If manufacturers had been using the VIN derivative on or before October 24, 1984, they were permitted to continue using it. The other parts that were marked were the front fenders (2), doors (2 or 4), bumpers (2), rear quarter panels (2), hood and decklid/tailgate/hatchback.

When labels are used, the 17 digit VIN must be printed indelibly, and the label permanently affixed to the part. If the label is removed it must self-destruct by tearing or making the VIN illegible. Removing the label must also alter the appearance of the area where it was affixed so that evidence remains that a label was originally there. Any attempts to alter the number on a label must leave traces of the original number. Standards also apply to new replacement parts: they do not have a VIN but instead have the DOT logo and the letter "R" to indicate that they are new replacement parts.

Since the beginning of parts marking, manufacturers have met the requirements with adhesive backed labels made by a variety of suppliers. In accordance with Section 604(b)(1) of the 1984 Theft Act, the cost of marking engines and transmissions was not taken into account in estimating

the cost of parts marking since these parts have historically been marked with the VIN or VIN derivative.

The 1984 Theft Act limited the cost to manufacturers to $15 per car (in 1984 dollars) or less. In 1995 dollars, the maximum cost per car would be $22 (based on the Consumer Price Index for all items, United States city average). Using a detailed production analysis process and factors to estimate the consumer cost, the 1991 report to Congress showed that actual costs were well within the permissible amount. The highest cost to a manufacturer among the make-models analyzed was $3.35 per passenger car and the highest cost to purchasers was $5.49 per car. The average cost per car was $4.14. These estimates were in 1988 dollars. There is no evidence to suggest that the cost of labels and the cost of the manufacturing assembly process have changed. Thus the average cost to the purchaser, per car, in 1995 dollars is estimated to be $4.92.

A two percent reduction in thefts among 0-3 year old cars would generate a consumer benefit that would more than pay for the cost of the labels. The cost-benefit analysis is as follows: in 1995, when 3.2 million cars with marked parts were sold, the cost to consumers for parts marking was $15.7 million. Also in 1995, thieves stole 50,131 model year 1992-95 cars with marked parts (i.e., 0-3 years old). The average market value in 1995 of these new or partially depreciated cars was $14,833 (Source: Average New Car Prices 1993-1996 Automotive News Market Data Books and the Used Car Book). The types of theft most likely to be deterred by parts marking (chop shop operations, retag) typically result in a total or near-total loss of the vehicle ($14,833); after adding the cost of insurance administration, police investigation and victims' lost time, the cost to the economy is $19,832. Given the $15.7 million cost of parts marking, thefts of 0-3 year old passenger cars would have to drop by about 792 (i.e., $15,700,000/$19,832) to have the benefit in terms of auto thefts avoided equal to the cost of parts marking. That amounts to approximately 1.6 percent of the 50,131 thefts of 0-3 year old cars with marked parts.

In the 1991 report to Congress, the subject of removal of labels was discussed. It was found at that time that it was possible to completely remove the label and its adhesive and even any traces that the parts was originally labeled. A national survey of auto theft investigators conducted for the Justice Department in 1996 found that the most serious obstacle to making effective use of labels is their ease of removal. Once the label is removed and its trace wiped out, it is, of course,

of no value for proving the parts are stolen because the owner cannot be traced. A more permanent system of parts marking could help overcome that obstacle.

Arrest and Prosecution

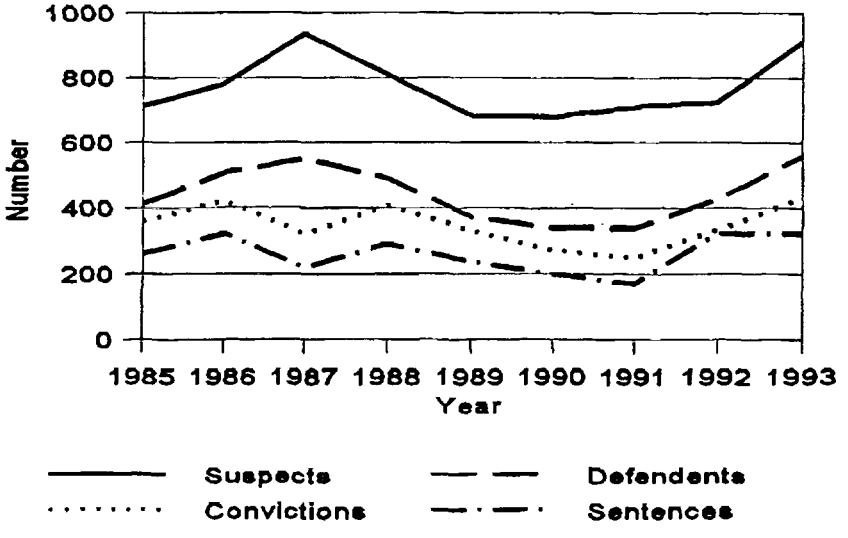
The 1991 report to Congress discussed the dramatic rise in the number of persons arrested for auto theft during the years immediately following the Theft Act of 1984: there were 133,900 arrests in 1985 and 208,400 in 1988, the latest year of data available for that report. Subsequently, arrests peaked at 228,500 in 1989, but have leveled off since then. In 1994, an estimated 200,200 people were arrested for auto theft or attempted theft in the United States.

In 1991, no national prosecution data were available on cases involving the parts marking standard. The 1991 report to Congress estimated 35,000 convicted auto theft cases involving 50,000 convicted defendants. The 1991 report indicated that the odds of being arrested and serving time in prison (more than one year) were one in 100.

The 1991 report to Congress also discussed Federal cases prosecuted under the new sections of the 1984 Act: 180 cases involving 258 defendants and resulting in 114 convictions and 159 convicted defendants. During 1985-89, over 1,100 other cases were filed under U.S. laws in existence before the 1984 Act, primarily brought to the courts after FBI investigations.

The Justice Department reported the following Federal court activity in motor vehicle theft from 1985 through 1993 (Figure 4):

FIGURE 4. FEDERAL COURT MOTOR VEHICLE THEFT STATISTICS



The Federal statistics seem to indicate that court activity peaked in 1987 and again in 1993. The actual number of cases is so small that no conclusions can be drawn from these data.

The 1991 report to Congress did not include any statistical analyses of parts marking in apprehending, arresting, and prosecuting car thieves because of insufficient data, but it contained summaries of individual cases where parts marking helped accomplish those goals. The report concluded that auto theft investigators were able to use labels to their advantage in chop shop cases, inspections of salvage yards, steal-to-order operations, and insurance fraud.

Surveys of District Attorneys

For both the 1991 report to Congress and this report, surveys were conducted of state district attorneys, motor vehicle administrations and law enforcement agencies to determine the effects of the 1984 and 1992 Acts on apprehending, arresting, prosecuting, convicting, and sentencing chop shop owners and "professional" auto thieves as well as chop shop operations and monitoring body shops. The second survey showed a moderate increase in the number of prosecutions under the 1984 and 1992 Acts and an even larger increase in the level of effort that could be directed to each prosecution. In 1991, very few of the district attorneys reported that the 1984 Act made prosecution of professional auto thieves and chop shop operators easier. Similarly, only four percent reported an increase in the number of prosecuted cases as a result of the 1984 Act and none of the district attorneys had increased their efforts to prosecute auto theft cases. By 1996, over 20 percent had seen an increase in the number of prosecuted cases in their jurisdictions and 10 percent saw a decrease in the auto theft rates as a result of the 1984 and 1992 Acts, although two-thirds of the district attorneys reported that the number of prosecuted cases had not changed as a result of the 1984 and 1992 Acts. In 1996, two-thirds of the district attorneys did increase their efforts on a case-by-case basis in prosecuting these cases. Half of them indicated that the 1984 and 1992 Acts were responsible for this increase and the other half indicated that increased motor vehicle thefts and administrative changes were the cause of their increased efforts.

In 1991, an overwhelming 96 percent of the district attorneys reported that convictions were not affected by the 1984 Act. There were no changes in sentencing (most said that first offenders got

suspended sentences and/or fines and subsequent offenders were put in jail/prison). In contrast, by 1996, almost half of the district attorneys reported an increase in convictions and most of them attributed this to the 1984 and 1992 Acts. District attorneys reported stiffer sentencing in 45 percent of the convictions, including a 75 percent increase in jail sentences. This could have been even higher but prison overcrowding in one jurisdiction necessitated automatic probation for thefts valued under $20,000. Other benefits of the 1984 and 1992 Acts include: district attorneys working more closely with law enforcement agencies; auto theft prevention authorities being established to prevent, arrest, and prosecute auto theft cases; and greater success in catching violators.

Surveys of Law Enforcement Agencies

The surveys of law enforcement agencies done in 1991 and 1996 did not reveal dramatic changes in their attitudes about the deterrent effect of parts marking. In 1991, most auto theft investigators at law enforcement agencies anticipated no effect in reduction of auto thefts for chop shop operations. They felt that if there was a demand for a part, even if marked, thieves would steal the part. Nevertheless, about 45 percent of the investigators felt that parts marking might make professional thieves more cautious or even completely deter them. Another one-third of the investigators thought that auto thieves looked upon parts marking as an inconvenience. All investigators thought that parts marking had no effect on amateur thieves. The 1996 survey was also split. Half the investigators felt that parts marking did deter professional auto thieves and the other half did not. Those who thought parts marking was beneficial felt that it had the greatest effect on chop shop operators because it did increase the cost of "doing business".

However, the surveys showed that the agencies had even more positive attitudes about parts marking as a tool for arresting and prosecuting thieves in 1996 than in 1991. In 1991, while most law enforcement officers said there was no effect on thefts, arrests, and prosecution of auto thieves as a result of the 1984 Act, most of them did feel that parts marking did assist in identifying and recovering stolen parts and vehicles. There were no cases reported that were prosecuted under the sections of the 1984 Act. By 1996, arrests and prosecutions had changed dramatically. About three fourths of the law enforcement agencies in the big cities surveyed (31

of 32 of the largest cities in the U.S. were surveyed) said that parts marking helped in arresting both chop shop owners and professional auto thieves for these reasons:

- Labels make it possible to detect stolen parts/vehicles
- Missing, damaged, counterfeit, miss-matched VIN's on parts is sufficient evidence for officers to seize parts as evidence and make subsequent arrests.
- Without labels serving as "red-flags", investigators would have no reason to suspect cars or parts are stolen.
- In many inspections of restored salvage vehicles, labels have led to evidence of stolen parts or the total vehicle.

Surveys of Motor Vehicle Administrations

Surveys for the 1991 report to Congress and again in 1996 show that since 1983 to the present there has been little or no change in monitoring body shops. Lack of funds for inspectors is the primary cause for this even though the 1984 and 1992 Acts have given more methods for inspectors to detect stolen parts being used by body shops.

Motor vehicle administrations have continuously increased their investigative efforts. In 1991, one fourth reported increased effort as a result of the 1984 Act. By 1996, almost 45 percent of reporting administrations indicated increased investigative effort.

From the surveys of district attorneys, auto theft investigators, and motor vehicle administrations, advances in apprehending, arresting, prosecuting, convicting, and sentencing as a result of the 1984 and 1992 Acts seem evident.

Insurance Premiums

Motor vehicle thefts are covered under the comprehensive portion of insurance policies. Comprehensive also includes coverage for floods, fires and vandalism - events not related to collisions. At the time of the 1991 report, based on information from insurers, thefts represented

about 40 percent of the cost of comprehensive claims. By 1995, according to the Insurance Information Institute, this proportion had dropped to one-third of the cost of those claims. As stated in the preceding section on "The Economic Cost of Auto Theft," comprehensive premiums amounted to $12.954 billion in the United States in 1995. Thus, $4.318 billion of those premiums were used to process and pay theft claims.

The 1984 Theft Act specifies insurer reporting requirements including an explanation of the basis for setting comprehensive insurance premiums and premium penalties for motor vehicles considered as most likely to be stolen. The following is a summary of the insurer's explanations.

Many insurers establish comprehensive rates on a statewide basis using total comprehensive loss experience -- the theft component is not identified. This is done because the insurers' theft loss experience is insufficient for rate setting. In fact, some insurers' total loss experience is inadequate to serve as a basis for comprehensive rates. These insurers rely on the aggregate of many companies, compiled by a rating organization such as the Insurance Services Office, Inc. (ISO).

Statewide rates are established by individual makes and models based on rating symbols. These designations reflect the new vehicle price and its damageability/repairability. The individual rating symbols may be adjusted up or down for the state, based on combining collision losses with all losses covered by comprehensive insurance. Since the bulk of the total cost experience comes from physical damage arising from collisions, adjusted rating symbols correlate more closely to collision experience rather than theft experience. Rates are further adjusted for: the location where the vehicle is driven, the vehicle age, and driver and vehicle use characteristics. Other elements for premium rates and penalties include vehicle size, design, performance, sportiness and production levels.

In addition to the aforementioned factors for rate setting, some states require that rates be submitted for information only; others approve rates before they can be used, and in a few states the insurance commissions actually set the premium rates. Before establishing the premium rates for comprehensive coverage, most insurance companies determine how much is needed statewide

to cover their anticipated claims, expenses and profit. Then they adjust for the difference between what they collect currently and what they need to collect from policies in the state.

While theft losses amount to 33 percent of comprehensive claim payments and only six percent of all auto insurance claims, they do constitute an implicit basis for setting rates. Insurance claim payments were analyzed for the 1991 report to the Congress. No significant difference was found between marked cars and unmarked cars. That analysis was based on 1983 through 1988 claim payment data for marked and unmarked cars. The Highway Loss Data Institute (HLDI), a part of the Insurance Institute for Highway Safety, was the source of the claim data. This data base is not available to NHTSA beyond 1989, and the analysis in the 1991 report has not been updated.

Insurance Claim Payments for Recovered Vehicles Before and After Inception of Parts Marking

Highway Loss Data Institute (HLDI) collects information from insurance companies on the number of thefts, the number of insurance claims, and the average dollar amount paid by the insurance company for unmarked and marked vehicle lines or vehicles with factory installed anti-theft devices. Data on recovery condition is available after 1989 but the average claim data were not reported after that year. However, the data available for 1990-1992 are not comparable to previous data and were not included in the analyses.

Average theft claims paid for recovered cars were compared for cars without marked parts, cars with marked parts, and for cars with factory installed anti-theft devices and their predecessors. Table 4 presents the average claim amounts in 1995 dollars and number of claims paid for the three categories of passenger cars for the period prior to parts marking (1983-1986) and the period after parts marking took effect (1987-1989).

For parts marking to be successful in reducing the proportion of thefts by professional thieves, it would be expected that the average theft claim cost for recovered marked vehicles would drop. One might expect the same result for vehicles with factory installed anti-theft devices. While the average theft claim costs for current model year marked vehicles did decrease by 4.8 percent for the three year period after the marking program began, claim costs for unmarked vehicles for the

same time period were reduced even further by 7 percent. Claim payments for the vehicles with factory installed anti-theft devices rose by 3.6 percent for the same time period.

For parts marking to have resulted in a decrease in claim payments, marked vehicles would have to have experienced a larger drop in payments than the unmarked vehicles. This is based on the assumption that thieves are aware of the vehicle lines that were covered by the marking standard. However, average claim payments for unmarked vehicles dropped even further than those for the marked vehicles. There was a reduction in claim payments after implementation of the standard, but it is not clear that parts marking was the cause of the reduction for both marked and unmarked vehicles. If thieves were not aware of which lines had marked parts and simply reacted to the standard, then parts marking may have been responsible for the overall drop in claim payments after implementation of the standard.

Claim payments for vehicles with factory installed anti-theft devices increased at about the same percent as the other two dropped. It is possible that the vehicle lines with factory installed anti-theft devices are recognized more easily. Thieves may be finding it easier to bypass the devices and are stealing them more than other vehicles.

TABLE 4. AVERAGE THEFT CLAIM PAYMENTS & NUMBER OF CLAIMS FOR CMY MARKED & UNMARKED AND ANTI-THEFT PASSENGER CARS

CALENDAR YEAR - CURRENT MODEL YEAR VEHICLES										
Reported In 1995 Dollars	1983 - 1986 Pre-Standard		1987 - 1988 Post-Standard		1989 Post-Standard		1987 - 1989 All Post-Standard Yrs		Difference in Avg. Amt. Pd. 1983-1986 vs 1987-1989	
	Avg Amt Paid	Number of Claims	Avg Amt Paid	Number of Claims	Avg Amt Paid	Number of Claims	Avg Amt Paid	Number of Claims	Dollar Difference	Percent Change
Unmarked	$12,175	2,026	$11,262	1,300	$11,370	951	$11,316	2,551	-$859	-7.1%
Marked	$15,625	4,250	$14,456	3,269	$15,288	775	$14,872	4,044	-$753	-4.8%
Anti-Theft	$19,873	559	$19,485	2,787	$21,677	66	$20,581	2,853	+$708	+3.6%

The absolute number of claims declined for marked cars, but increased for unmarked and antitheft cars when comparing the four prestandard years to the three post standard years of claims.

Used Replacement Parts

The 1984 Act requires the insurance industry to respond to the Department of Transportation's questions on their used part policies. Their responses since the enactment of the 1984 and 1992 Acts have shown little change regarding their policies on used replacement parts. These are their responses from 1986 through 1992:

- Between 69 and 87 percent of those reporting encourage the use of used parts for auto crash repairs.
- One-half to two-thirds of the insurance companies rely on repair shops to obtain parts from reputable sources.
- Less than one percent of the reporting insurers have any actual policy regarding checking used parts for VIN markings and/or checking with the NICB or law enforcement agencies if the VIN shows up in theft records.
- In 1986 and 1987, one percent of the responding insurance companies required documentation of the source of used parts -- name, address, etc. In 1989 and 1990, this had increased to 17 percent, but returned to less than one percent in 1991 and 1992. The 1989 and 1990 increase in companies requiring documentation may be a reporting variation, because in those years, twice the number of companies submitted reports as compared to the other two time periods.

Insurance companies seem to favor having repair shops fix vehicles with used parts, but do not seem to have incurred the added expense of having a system to verify that the used parts are obtained legitimately.

The Condition of Recovered Vehicles

Parts Marking and Insurance Claims. The 1984 and 1992 Theft Acts require major motor vehicle parts be marked with the VIN. If the program is effective in deterring theft of major parts, there

should be fewer stolen marked vehicles that are recovered with these parts missing. If the program is even more effective, there might be a spill over for unmarked stolen vehicles being recovered. These vehicles would also have less major parts missing. With this in mind, the 1984 Act required the collection of data on recovered stolen vehicles in three categories: intact (no parts missing but with damage from unauthorized entry), in-part (major parts, which for marked vehicles would have VIN markings, missing), and in-whole (other motor vehicle parts that are not required to be marked are missing).

If the parts marking program aids in reducing the number of vehicles stolen for their parts, then the percent of marked vehicles which were recovered in-part (i.e., major parts missing) should decrease after parts marking began. Highway Loss Data Institute (HLDI), with vehicle condition from the NICB, provides insurance data which includes the number of claims and average payment for vehicles recovered: in-part (i.e., vehicle recovered with one or more major parts missing at the time of recovery); intact (i.e., vehicle recovered with no major parts missing at the time of recovery); or in-whole (i.e., vehicle recovered with no major parts missing but may have other parts missing at the time of the recovery or with damage in addition to that sustained during unauthorized entry and operation).

Insurance data were compared for pre- (1986) vs. post- standard (1987 - 1989) years. Table 5 shows the intact, in-part, and in-whole percent of claims and average payment for marked and unmarked vehicles. The pre-standard year (1986) is compared to the post-standard years (1987-1989). Only one additional year of claim payment data by recovery condition (1989) was available since the 1991 report to Congress. That year is compared to the 1987-1988 data to determine any continuing or changing trends. Data on recovery condition for insurance claims but without claim payment amount was collected after 1989, but this data is not comparable to the 1986 through 1989 data for several reasons: samples were collected from different insurance companies, the coding identifiers for vehicle condition had been changed and it doesn't appear that they were consistently applied, motor vehicles were incorrectly placed in vehicle classes. Therefore, the analysis of recovered stolen vehicle condition had to be based on 1986 through 1989 data.

Percent of Claims. In-part claims have dropped from the pre- standard year 1986 through the post-standard years 1987-1989. The percent of in-part claims for marked vehicles decreased 46 percent from the pre- vs. the two post-standard years (i.e., 1986 vs. 1987-1988). The trend continued and dropped another 33 percent from 1987-1988 to 1989. In-part claims accounted for 15 percent of claims in 1987-1988 and 10 percent in 1989. At the same time, in-part claims for unmarked vehicles experienced an overall drop of 52 percent for the pre- vs. the three post-standard years. This trend included drops from 22 percent in 1986 to 11 percent in 1987-1988 and to 10 percent in 1987-1988.

In comparison, the number of in-whole claims have increased by 32 percent for marked and 27 percent for unmarked vehicles during the pre- to three year post-standard time frame. The increase also continued in 1987-1988 vs. 1989 post-standard time frames from 76 to 80 percent for marked and 77 to 80 percent for unmarked vehicles. This represents a 5.3 percent increase for marked vehicles and a 3.9 percent increase for unmarked vehicles.

The claims also dropped for both marked (27 percent) and unmarked (31 percent) vehicles for that same pre- and post-period time period. Overall intact claims for marked vehicles dropped from 13 percent in 1986 to 9.5 percent in 1987-1989 and for unmarked vehicles from 16 percent to 11 percent for that same time period. From 1987-1988 to 1989, intact claims for marked vehicles increased slightly from 9 to 10 percent and intact claims for unmarked vehicles decreased from 12 to 10 percent.

Claim Payments. Average claim payments from insurance companies have dropped for all but the in-whole marked vehicles. The average claim payments for in-part marked vehicles dropped 2.3 percent while the in-whole payments for unmarked vehicles rose 12.6 percent from the 1986 pre- to the 1987-1989 post-standard years. Unmarked vehicle claim payments dropped 2.6 percent of in-part, 8.8 percent for in-whole and 13.6 percent for intact payments.

Summary. The data show that in-part claims for both marked and unmarked vehicles dropped initially after parts marking was introduced and continued to drop from the post-standard 1987-1988 to 1989 years. Intact claims have also dropped during that period. In comparison, the

number of in-whole claims for both marked and unmarked vehicles has increased over the same time period.

Average payments for all claims except in-whole marked vehicle thefts have also dropped from the pre- to post-standard time period. It would appear that the marking standard has provided a deterrent effect to thieves. These trends suggest the possibility that thieves are less willing to steal major parts from vehicles which may require marking. Instead they are stealing other vehicle parts which are not covered by the marking standard.

TABLE 5. PERCENT OF CLAIMS AND AVERAGE PAYMENTS FOR IN-PART, INTACT, AND IN-WHOLE INSURANCE CLAIMS

Model & Recovery Status	1986 CMY Pre-Standard		1987-1988 CMY Post-Standard		1989 CMY		1987-1989 CMY Post-Standard		Difference 1987-1988 vs 1989		Difference 1986 vs 1987-1989	
	Pct. of Claims	Avg. Payment	Pct. of Claims	Avg. Payment	Pct. Of Claims	Avg. Payment	Pct. of Claims	Avg. Payment	Pct. Of Claims	Avg. Payment	Pct. Of Claims	Avg. Payment
Marked					**IN 1995 DOLLARS**							
In-Part	28%	$15,635	15%	$15,610	10%	$14,927	12.5%	$15,269	33.3% ↓	4.4% ↓	55% ↓	2.3% ↓
Intact	13%	$10,570	9%	$ 8,329	10%	$12,858	9.5%	$10,594	11.1% ↓	54.4% ↑	27% ↓	0.2%↓
In-whole	59%	$ 9,922	76%	$ 9,638	80%	$12,702	78%	$11,170	5.3% ↓	31.8% ↓	32% ↓	12.6 %↓
Unmarked												
In-Part	22%	$12,593	11%	$12,509	10%	$12,028	10.5%	$12,268	9.1% ↓	3.8% ↓	52% ↓	2.6% ↓
Intact	16%	$ 8,578	12%	$ 7,162	10%	$ 7,664	11.0%	$ 7,413	16.7% ↓	7.0% ↓	31% ↓	13.6% ↓
In-whole	62%	$ 8,868	77%	$ 7,883	80%	$ 8,298	78.5%	$ 8,091	3.9% ↓	5.3% ↓	27% ↓	8.8% ↓

Source: HLDI, NICB data

Adequacy of Theft Laws

In the 1991 report to Congress, it was too early to make a definitive statement about the adequacy and effectiveness of the Federal and State laws designed to prevent the distribution of used parts removed from stolen motor vehicles. While effectiveness still cannot be proved with statistical confidence, the laws do seem to have led to an improvement in prosecuting and convicting auto thieves. Comparisons of surveys of district attorneys in 1991 and 1996 show that the 1984 and 1992 Federal Acts increased prosecutions and, especially, convictions. Since the number of cases that are prosecuted is influenced by the total court caseload, it is not surprising that the number of prosecuted theft cases may not have grown as rapidly as might be expected. However, once a theft case is prosecuted, the probability of conviction has been greater since passage of the two Federal Acts. Undoubtedly the Acts have helped by providing prosecutors with better evidence (marked parts) and because they made trafficking in stolen vehicle parts or tampering with VIN marking Federal offenses. Once a thief is convicted, there is a strong likelihood that the sentence will be greater, with increased fines and jail time.

Most of the states surveyed in 1996 made legislative changes between 1993 and 1994 in response to the Federal Acts. For example, the sentencing guidelines were changed and the severity and length of penalties were increased. The survey done for the 1991 report to the Congress did not find any changes in state legislation.

It also is still true, as it was for the 1991 report, that the efforts by various state and local government associations, privately funded organizations, legislators, police agencies, insurance companies and others in the private sector have been instrumental in creating and sponsoring laws and statutes dealing with titling, inspections and licensing of vehicle and parts businesses. It is anticipated that the Motor Vehicle Titling, Registration and Salvage Advisory Committee report of 1994, as its recommendations are implemented, will also help achieve better and more uniform statutes dealing with these subjects. The end result will be to make it more difficult for thieves and forgers to traffic in stolen vehicles and parts.

The Adequacy of Tracking Systems for Theft Investigators

Motor vehicle theft investigators were surveyed for both the 1991 report to Congress and this report. In 1991, law enforcement officials said that professional thieves appeared to be more cautious when deciding which vehicles to steal, but that they stole cars with marked parts and took measures to make it difficult for law enforcement to find the stolen car or its parts. The parts marking standard had not been in effect long enough to be a deterrent to thieves stealing cars.

By 1996, about half the auto theft investigators interviewed felt that parts marking was effective in deterring thieves. Professional thieves know which cars have marked parts and won't steal a vehicle unless there is a safe and sure place to sell/dispose of the vehicle or its parts. Labels won't deter some thieves but some body shops won't purchase parts with missing labels and they demand paperwork documenting the parts' source.

A 1996 survey of repair facilities indicated similar benefits for parts marking. Salvage yards are reluctant to accept or keep parts without labels. Chop shops now do things differently because there is an increased threat of being inspected and they can be caught for having parts with missing labels. Legitimate body shops keep records of who brought in parts and honest businesses very frequently report suspicious parts. They know that they can go to jail if their business receives stolen unlabelled parts, so there is an incentive for thieves to avoid selling stolen parts to these businesses.

While some investigators surveyed at seaports felt that labelling deterred crating and exporting stolen vehicles, others reported that the labels had no impact on exports. None of the reporting cities included in the survey, however, were located near the borders with Mexico or Canada.

Several investigators volunteered that, even if labels do not have a deterrent effect on auto theft, they do increase the "cost of doing business" to thieves. Stolen parts have to have their labels removed. That takes time and money and increases the risk of arrest. The extra time thieves need to select cars without labels also complicates their operations.

Labels also reduce the investigative burden. If the VIN's on the labels match the VIN on the dash, this can reduce the checking process. This saved time may enable investigators to devote more time to catching thieves. All surveyed investigators found that the labels resulted in more productive labor on their part.

Benefits of Parts Marking to Other Classes of Motor Vehicles

The statistical analyses of the effectiveness of parts marking in the "high theft" passenger car lines did not produce specific quantitative estimates of their effect in deterring thieves, but the data seem to suggest that parts marking has had benefits, quite possibly beyond the break-even point with the cost of producing the labels and putting them on the designated parts. Because of the timing of this report and the rulemaking process, data were not available for "low theft" car lines and multipurpose vehicles that have been marked beginning with the 1997 model year.

Surveys confirm the benefits of parts marking as an important component of the 1984 and 1992 Acts. Auto theft investigators report that labels on parts have saved them investigative time so they can be more productive. Prosecutors are getting more convictions because of better evidence with marked parts and additional statutes for charging criminals. Convicted auto thieves are getting longer jail sentences, thus keeping them off the streets and acting as a better deterrent to auto theft. All these are benefits of the parts marking system, but they are difficult to measure in quantitative terms.

One shortcoming of current markings is that they can be obliterated. More permanent methods of marking parts might substantially improve effectiveness. Since current markings cost less than $5 per car and the Act allows a cost up to $22 per car (in 1995 dollars), there is considerable room for developing more effective markings, even if they carry some additional cost. Any improvement in the permanence of marking parts would have to result in better effectiveness in deterring thefts or increasing recoveries. At the maximum allowed cost per car of $22, parts marking with more permanence would have an upper effectiveness bound of seven percent to pay for additional cost of marking.

Given that parts marking appears to be effective in the passenger car lines currently marked, there is little reason to doubt that it could also have benefits for other passenger vehicles: currently unmarked car lines, light duty pickup trucks and multipurpose passenger vehicles (MPV's), since those vehicles are stolen for similar reasons, including chop shop operations. Parts marking is less likely to be effective for heavy trucks, buses and motorcycles, vehicle types that generally do not pass through chop shops.

In 1984, passenger cars represented 73 percent of stolen motor vehicles. Light trucks (pickup trucks, vans and SUV's) were 14 percent of the stolen vehicles in 1984 followed by motorcycles at 8 percent and heavy trucks at 5 percent. In 1995, passenger cars still represented 71 percent of stolen vehicles but light trucks had increased to 24 percent, with motorcycles shrinking to 3 percent and heavy trucks to 2 percent. Obviously, light trucks, because of their growing market share, account for a growing proportion of motor vehicle thefts. Although theft rates for both passenger cars and light trucks have dropped since 1989-90, they have nevertheless increased from 1984 to 1995 by 25 percent and 14 percent respectively. In the other two vehicle categories, heavy trucks and motorcycles, theft rates have decreased over 50 percent and 20 percent respectively. Since cars and light trucks account for an increasing proportion of thefts, they are more in need of countermeasures than heavy trucks and motorcycles.

APPENDIX A

EFFECT OF PARTS MARKING AND ANTITHEFT DEVICES ON THEFT AND RECOVERY RATES

A key requirement of the Antitheft Act of 1984 was that a large number of model year 1987 passenger cars would have marked parts or antitheft devices. By now, these cars have been on the road for a long time. Their theft and recovery rates can be tracked for several years and compared to the corresponding rates for cars without marked parts or factory-installed antitheft devices - potentially allowing an evaluation of the effectiveness of those remedies. At the time of the 1991 Report to the Congress, a comprehensive evaluation was impossible simply because there were not enough data on cars with marked parts or antitheft devices. Now there are many data, but biases in the data still obstruct the evaluation. The analyses described herein cannot go so far as to attribute a specific percentage reduction in thefts or increase in recoveries to parts marking or a single effectiveness number for antitheft devices. Nevertheless, they do suggest that parts marking quite possibly had **some** effects at times. They also demonstrate that at least one group of antitheft devices has been highly effective in reducing thefts. Since even a small benefit of parts marking would be sufficient to justify its low cost, these fragmentary analysis results can be viewed positively - especially in the context of the all-encompassing finding of this report: overall theft rates, which grew in the earlier 1980's, leveled off in the late 1980's and declined in the mid 1990's. Parts marking and antitheft devices are elements of the 1984-92 battery of measures to deter theft. They are components of a process that has, on the whole, experienced success.

Potential Effects of Parts Marking or Antitheft Devices

Before proceeding with the analyses, it is appropriate to consider what sorts of effects might be expected for parts marking and antitheft devices, how large those effects might possibly be, and how that magnitude compares to the effectiveness level needed for those remedies to have societal benefits commensurate with their costs. Fundamentally, if the remedies are effective, they ought to **reduce** theft rates **and/or increase** recovery rates. They should reduce the number of unrecovered stolen vehicles per million registered vehicles. To the extent that many of the vehicles stolen by professional thieves - for chop shops, salvage switch and retag, or export - are never recovered, this

"**unrecovered theft rate**" may be considered as a sort of surrogate for the unknown "professional" theft rate. (The data do not and usually cannot describe why a car was stolen, but if that car is not recovered, it was quite probably stolen by a professional thief.) If the remedies change all three rates in the right direction, so much the better, but even if they change just one, especially the unrecovered theft rate, it might be good enough.

These goals would be accomplished through **direct** effects and **deterrent** effects. A direct effect of marked parts or antitheft devices would be to allow identification or location of a stolen car (or parts of a car), thus assisting the prompt recovery of the car - i.e., an increase in the recovery rate. Above all, certain types of antitheft devices might make it hard to steal a car at all - i.e., a reduction in theft rates. A direct consequence of parts marking would be evidence to help convict the people involved in stealing the cars and put them out of the theft business While there have been numerous cases where parts marking helped recover cars or convict thieves, it is probably safe to say that the deterrent effects are potentially far larger, in quantitative terms, than the direct ones.

The deterrent effect would be to dissuade thieves from stealing cars with marked parts (and possibly other cars). But many types of thieves are unlikely to be deterred by marked parts. People who steal a car for joyriding, or to commit another crime, and intend to abandon it, intact, after a few hours or days, have little to fear from parts marking: the marked parts merely duplicate the VIN that can readily be seen on the intact VIN plate. In fact, many of them might not even know that parts marking exists, let alone what models have it. The activities most likely to be deterred by parts marking are chop shops and fraud that involves a change in the reported VIN (salvage switch and retag for resale). Here, parts marking could reveal the true source of the parts, or the original VIN of the retagged vehicle. However, the 1991 report suggests that these activities account for only about 20-30 percent of all car thefts. Thus, even if parts marking were a highly successful deterrent, it could not reasonably be expected to reduce overall theft rates by more than 20-30 percent and, in all probability, only a fraction of that reduction can reasonably be expected.

On the other hand, only a small reduction in theft is needed to make parts marking cost effective. As discussed in the main report in "The Cost of Marking Parts," a relative reduction in the overall theft rate of just 2 percent would already pay for parts marking.

Antitheft devices, whose costs exceed parts marking by an order of magnitude, would need to show substantially higher benefits. On what vehicles would the deterrent effect apply? Most immediately, on the specific cars that actually had marked parts. In particular, on the make-models that got parts marking in 1987, there should be a reduction in the model year (MY) 1987 theft rate, relative to the MY 1986 theft rate for the same models (when they did not yet have marked parts). In other words, thieves who steal for chop shops might have been instructed to avoid the specific cars with marked parts. The statistical analysis of the theft data would be easy if this were the only place where an effect could be expected.

However, there could likely be other deterrent effects, possibly exceeding in magnitude the narrowly focused MY 86-87 effect described above. There might be fewer thefts in those make-models that got parts marking even in the model years before the parts were marked. A car thief does not always have time to inspect the VIN plate carefully and find the exact model year. It might be expedient to avoid stealing cars of the lines that got parts marking, even if their model years are somewhat earlier than 1987. Conversely, there might be a delayed effect, for example, as body shops gradually become more careful about the source of their used parts.

As a consequence, there might be a dual impact on theft rates in the make-models that got parts marking in MY 1987: a discernable one-time reduction in the theft rate for MY 1987 (with parts marking) vs. MY 1986 (without parts marking) and, perhaps, a more diffuse, gradual reduction in the model years slightly before and after 1987, both resulting in a permanent reduction of the theft rate during the 1980's model years.

Furthermore, the effect is not necessarily limited to the make-models that got parts marking, but could spill over to the lines that were never marked - and it is not clear if the spillover would be positive or negative. On the one hand, parts marking, along with other measures of the 1984 and 1992 laws, might discourage professional car thefts of all types, resulting in a long-term reduction

of theft rates in all makes and models. On the other hand, parts marking on selected make-models could motivate discriminating thieves to concentrate their activities on the unmarked lines, with little change in overall theft rates.

The deterrent effect might impact the recovery rate as well as the theft rate. If parts marking deters thefts for chop shops (where the recovery rate is relatively low), but has little effect on joyriding, etc., (where it's usually high), the overall recovery rate might be expected to rise after parts marking.

The Confounding Effect of "Regression to the Mean"

The analysis of the effectiveness of parts marking and antitheft devices would have been easier if the make-models slated for parts marking in 1987 had been picked on a random basis. In that case, prior to 1987, the make-models slated for parts marking would have had the same average theft rate as other make-models. Any theft reduction in the marked make-make models during or after MY 1987, relative to the rates in the make-models that never got the remedy, could reasonably be attributed to the parts marking. Unfortunately for the analyst, the models were not selected on a random basis. Instead, the make-models that had the highest theft rates **in MY 1983-84** were slated to get parts marking **in MY 1987**.

It is a basic characteristic of any population that "what goes up must come at least part of the way down." For example, in a population of 1000 people, the 100 who are the heaviest today will almost certainly not be the 100 heaviest a year from today. For example, some of those 100 might have a condition that makes them heavy this year, but will soon return to their normal weight. These 100 will probably still be heavier next year, on the average, than the other 900, but they will not be the 100 heaviest individuals. With each passing year, that original group of 100 will have an average weight closer to the average for the other 900. This tendency is called "regression to the mean." Now, if these original 100 had been given some kind of diet treatment, even if that treatment had been worthless, they still would have exhibited a steady weight loss relative to the other 900, because of the "regression to the mean" phenomenon.

The same thing happens with theft rates. The make-models slated for parts marking in MY 1987 were the ones with the highest theft rates in 1983-84. They included some make-models with

chronically high theft rates, but other make-models that, for whatever reason, were highly desirable to thieves in 1983-84 but soon lost that special attraction. Times change, tastes change, even in car thefts. Even if parts marking had never been implemented, these make-models would undoubtedly have experienced a reduction in theft rates (relative to the trend in theft rates for other make-models) as early as 1985, and would have continued to experience reductions in 1986, 1987, 1988... However, just as it is difficult to predict how quickly tastes change, it is difficult to predict how quickly the theft rates for the 1983-84 high-theft models ought to regress to the mean, or even to predict that the regression will be steady from year to year.

Under these circumstances, it will be difficult to discern the specific effect of parts-marking from the general, uneven regression-to-the-mean trend, unless the former is large relative to the latter. If parts marking has reduced thefts by, say, 2 or 3 percent (which would make it highly cost-beneficial), that effect could hardly be distinguished from kinks and bends in the regression-to-the-mean trend. In short, with these fundamentally biased data, even if none of the analyses were to show an effect for parts marking, it could still not be concluded that the measure was ineffective, or that it was not cost-beneficial.

Preview of the Analyses

The choice of analyses is influenced by the manner in which parts marking and factory-installed antitheft devices were implemented in the passenger car fleet and by the types of theft, recovery and registration data that are available.

The principal introduction of parts marking took place in model year 1987. Based on theft rates in 1983-84, a group of make-models with high theft rates, accounting for about 40 percent of passenger car registrations, was slated for parts marking from 1987 onwards. A few high-theft make-models, fewer than 5 percent of car registrations, were exempted from parts marking and slated to receive factory-installed antitheft devices no later than 1987 (and in some cases they got the devices earlier than 1987). The remaining, low-theft make-models, over 55 percent of registrations, would get neither countermeasure.

In 1988 and subsequent years, a small number of additional make-models got parts marking or antitheft devices. Most of them were new make-models, introduced at that time, and never produced without the countermeasure. However, during 1989-92 several groups of domestic make-models, accounting for about 10 percent of car sales in the United States, received antitheft devices in place of, or in addition to parts marking. Finally, during 1993-95, generally too late to provide data for these statistical analyses, there were some additional introductions or shifts to parts marking or antitheft devices.

The principal data base was assembled by NHTSA's contractor from the theft and recovery records of the National Crime Information Center (NCIC) and vehicle registration files of R.L. Polk. It enumerates how many cars were registered, stolen and recovered, by make-model, model year and calendar year. The data base covers calendar years 1984-95, and it includes cars from 0 to 15 years old. The following analyses will be performed on the NCIC/Polk data base:

(1) Long-term trends in theft rates, MY 1976-95, make-models that got parts marking or antitheft devices in 1987 vs. those that were never marked

(2) Long-term trends in recovery rates and unrecovered theft rates

(3) MY 1984-89 trends in theft rates, focusing on changes from MY 86 to 87, make-models that got parts marking in 1987 vs. those that were never marked

(4) MY 1984-89 trends in recovery rates and unrecovered theft rates: parts marking in 1987 vs. never marked

(5) MY 1986-94 trends in theft rates, domestic make-models that switched from parts marking to antitheft devices in 1989-92 vs. control-group make-models

(6) MY 1986-94 trends in recovery rates and unrecovered theft rates, domestic make-models that switched from parts marking to antitheft devices in 1989-92 vs. control-group make-models

(7) Trends in the theft rates of other make-models that got antitheft devices before 1995

Another file was boiled down from data assembled by the Highway Loss Data Institute (HLDI) from theft and recovery records supplied by the National Insurance Crime Bureau (NICB). It enumerates how many cars were stolen and recovered, by make-model, model year and calendar year, and it enumerates how many of the recoveries were "in part," "in whole," or "intact." Registration data are not included. The data base is complete only for calendar years 1986-91, and in most of those years it only includes cars from 0 to 2 years old. The following analysis will be performed on the HLDI-NICB data base:

(8) MY 1984-89 trends of "in-part" recoveries vs. other types of recoveries, focusing on changes from MY 86 to 87, make-models that got parts marking or antitheft devices in 1987 vs. those that were never marked

Long-Term Theft and Recovery Rates (Model Years 1976-95)

Figure A-1 compares the theft rates, by model year, of two groups of passenger cars. The "0" data points are the theft rates for make-models that existed in 1984 and did **not** get parts marking or antitheft devices at any time. The "1" data points are the theft rates for make-models that existed in 1984 and were selected to get parts marking or antitheft devices **starting in 1987** (and possibly switched from one to the othet in a subsequent year).

The "theft rate" is the logarithm of (thefts/registration years). Cars up to 10 years old are included in the rates (e.g., the 1984 data point comprises the theft rate of MY 1984 cars throughout CY 1984-94). The theft rates are derived from the NCIC-Polk file, which was available for calendar years 1984-95 (thus, for example, information on MY 1980 cars is only available from CY 1984 onwards, i.e., from age 4 onwards). However, for vehicles of the current year (MY = CY), the Polk registration count is multiplied by 1.495, as recommended by the contractor who developed the data base; the purpose of this "annualization factor" is to make the Polk data for current-year cars (which only includes cars registered during the first half of the year) compatible with the NCIC data, which include any car stolen during the year, regardless when it was registered.

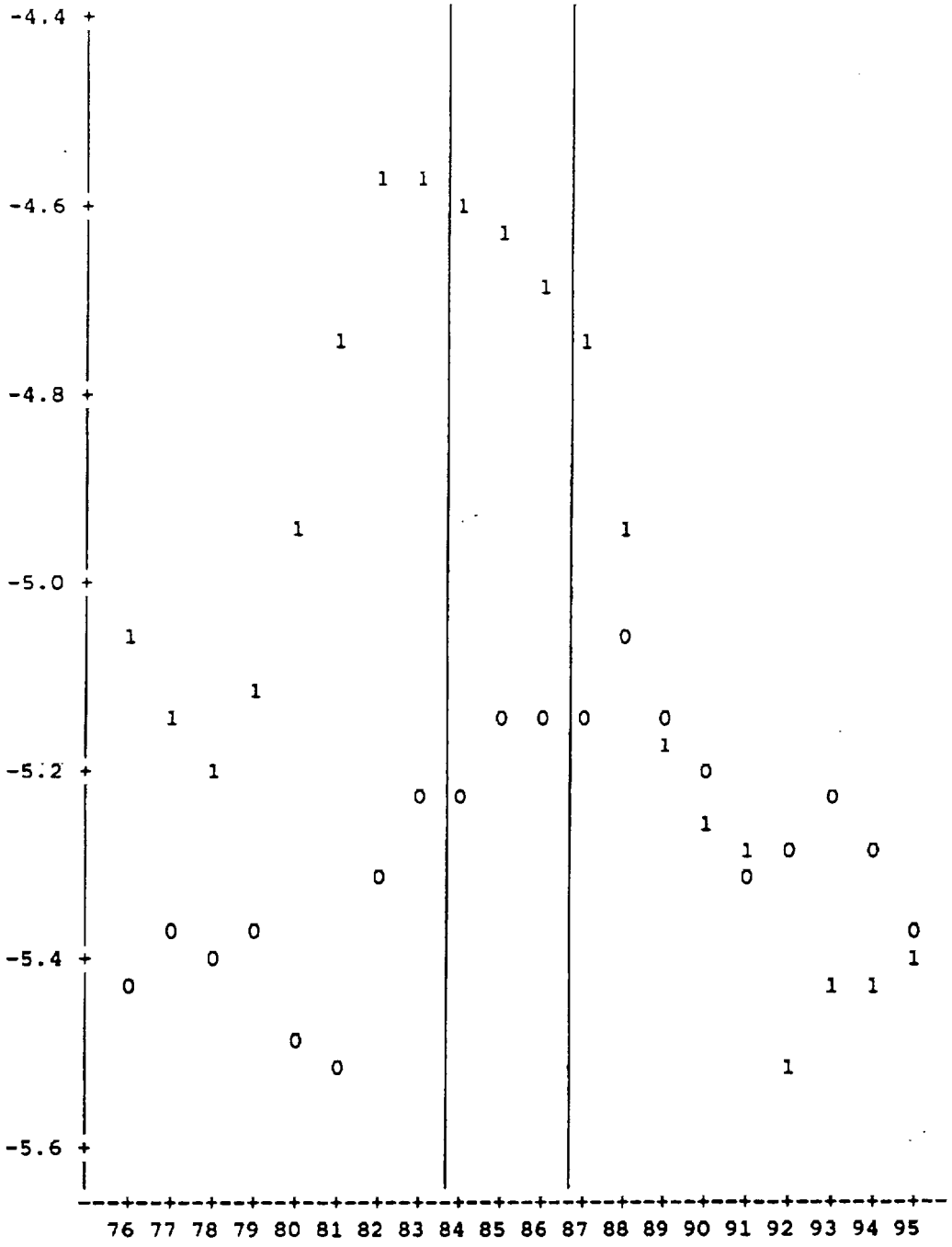
FIGURE A-1

PASSENGER CAR THEFT RATES BY MODEL YEAR, 1976-95

make-models that existed from 1984 or earlier until 1989 or later; 0-10 year old cars

"1" = make-models that got parts marking or antitheft devices in 1987
"0" = make-models that did not get parts marking or antitheft devices at any time

log(thefts/registrations)



MODEL YEAR

Figure A-1 includes only those make-models that were in production throughout MY 1984-89, plus any earlier or later model years that those make-models existed. Included, for example, are:

- Chevrolet Caprice, MY 1976-95, no parts marking or antitheft devices
- Ford Mustang, unmarked 1976-86, marked 1987-95
- Pontiac Firebird, unmarked 1976-86, marked 1987-89, antitheft 1989-95
- Dodge Aries, unmarked 1981-86, marked 1987-89 (produced only in 1981-89)
- Nissan Sentra, produced 1982-95 and never marked, etc.

Figure A-1 **excludes** make-models that first got parts marking/antitheft devices in 1986, 1988, 1989 or 1990 (most of those were models that did not exist prior to 1987). It also excludes make-models that were not produced in all the "core" years 1984-89. Excluded, for example, are:

- Oldsmobile Cutlass Supreme: first got parts marking in 1988
- Ford Taurus: first produced in 1986 (but not in 1984 or 1985)
- VW Scirocco: last produced in 1988 (but not in 1989)
- Dodge Caravan: not a passenger car

Two vertical lines are drawn on Figure A-1: one between 1983 and 1984, when the selection was made as to what models would get parts marking or antitheft devices, and one just before 1987, when the models actually got those remedies.

Figure A-1 shows some very strong patterns, but not necessarily anything to establish the effectiveness of parts marking. The theft rate for the make-models that got parts marking or antitheft devices (the 1's) reaches a majestic peak in MY 1983-84. That is hardly surprising: the countermeasures were specifically applied to the make-models that had the highest theft rates in 1983-84. Their theft rate immediately begins to drop off in 1985-86, even **before** parts marking, exhibiting "regression to the mean," and continues to drop sharply in 1987-89, after parts marking/antitheft devices. Their theft rates in 1979-83 are practically the mirror image of the pattern for 1985-89: the steep increase is unrelated to parts marking (which did not exist before 1987) but an exhibit of "digression from the mean," as it were. The theft rate for these make-models is relatively stable in 1976-79 and 1991-95.

By contrast, the theft rates for the make-models that never got parts marking (the 0's) are low during 1976-79, rise steadily during 1980-89 until they meet the 1's, and are slightly higher than the 1's during 1990-95.

Figure A-2 graphs the **difference** in the theft rates for the models that eventually got parts marking or antitheft devices and those that didn't (the 1's and the 0's in Figure A-1). It contains some principal findings of the long-term analysis The difference reaches a peak around 1981 and begins to drop steadily in 1982, five years before the actual implementation of parts marking. It continues to drop until 1990, when it levels off slightly below zero (i.e., the cars with parts marking or antitheft devices have **lower** theft rates that the models that did not get either remedy). Similarly, the difference drops off as you work backwards from 1984, and it levels off at about 0.3 in 1976-79. Thus, the main effect in Figure A-2 is regression to and from the mean, and most of it (1980-86) occurred during years when no cars had parts marking.

Nevertheless, there is another pattern visible in Figure A-2. The average difference for the four years 1976-79 was + 27, but it was -.12 for 1991-95. **In the long term**, the models that got parts marking or antitheft devices ended up with lower theft rates (**relative** to the cars that never got either) than they had before the whole process started. Quantitatively, the relative reduction is

$$1 - \exp(-.12 - .27) = 32 \text{ percent}$$

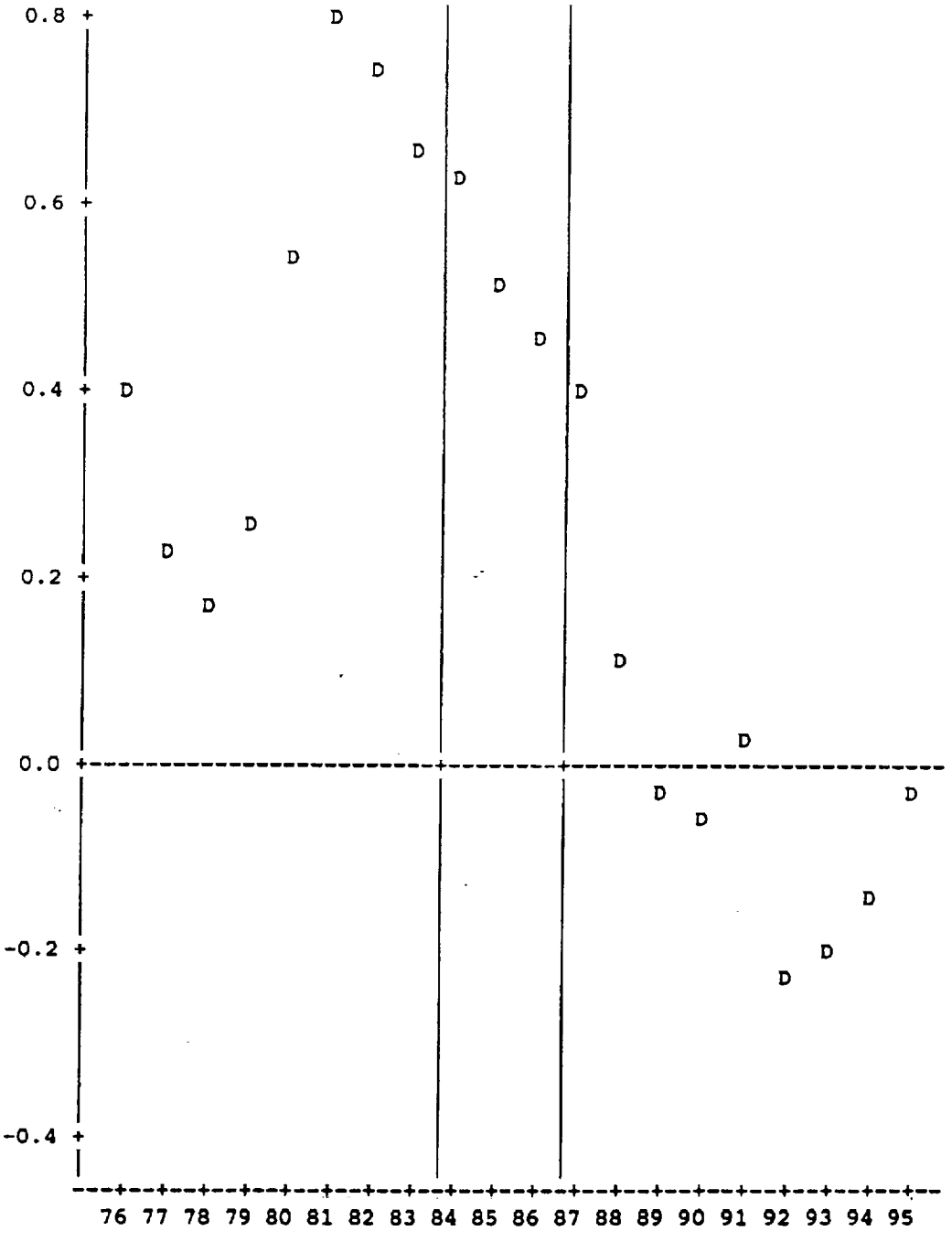
The result is "in the right direction" for the hypothesis that parts marking and antitheft devices deterred thefts, or at least shifted the thefts from the marked to the unmarked models. However, it would be foolhardy, without additional analysis, to attribute all or even part of this 32 percent long-term reduction to parts marking or antitheft devices. There are simply too many other factors that could be affecting theft rates. Although the make-models in the analysis had the same names throughout 1976-95, most of them changed a good deal during that period. There is no reason that a model with high appeal for thieves in the 1970's would necessarily have the same appeal in the 1990's.

Although the principal hypothesis was that parts marking or antitheft devices would reduce theft rates, another hypothesis was that recovery rates could **increase** if parts marking makes it possible to track down the stolen vehicle or if it **deters** the types of thefts that are least likely to

FIGURE A-2 THEFT RATE DIFFERENTIAL, MY 1976-95
MAKE-MODELS THAT GOT PARTS MARKING OR ANTITHEFT DEVICES IN 1987
VERSUS MAKE-MODELS THAT NEVER HAD THEM AT ANY TIME

make-models that existed from 1984 or earlier until 1989 or later; 0-10 year old cars

log of the theft rate for models that got parts marking or antitheft devices minus
log of the theft rate for models that didn't



be recovered while having little effect on other thefts (e.g., joyriding). This hypothesis would not necessarily be valid for antitheft devices; in fact, they may be especially useful in deterring the non-professional thefts that are easiest to recover.

Figure A-3 shows the recovery rates [log(recoveries/thefts)] during MY 1976-95 for make-models that had parts marking or antitheft devices from MY 1987 onwards (1's) vs. make-models that never had either (0's). The selection of make-models is the same as in Figures A-1 and A-2. Here, however, low rates are "bad" and high rates are "good." Figure A-3 does not exhibit the "regression to the mean" pattern of Figure A-1. Since make-models were selected for parts-marking based on their theft rates in 1983-84, not their recovery rates, there is no *a priori* reason that the one group should have higher recovery rates than the other. Indeed, throughout MY 1976-84, both groups have quite similar recovery rates, both rising gradually during those years. However, during MY 1985-95, the recovery rate for the cars without marked parts stays almost unchanged, while the rate for cars that got parts marking or antitheft devices decreases rather sharply.

Figure A-4, which graphs the difference in the recovery rates for the models that got marked parts or antitheft devices and the models that didn't, confirms the negative trend, especially from MY 88 onwards, while the difference was close to zero up through MY 87. Given the hypothesis that recovery rates could increase with parts marking, this long-term result does not appear favorable for parts marking. Nevertheless, there is little basis for attributing the unfavorable effect to parts marking. No substantial change is visible from MY 86 to 87, when the cars first got marked parts. The subsequent trends may be associated, to some extent, with antitheft devices that are especially effective in reducing the most easily recovered thefts, or they may be due to other factors unrelated to parts marking or antitheft devices.

A better impression of the long-term trend in professional thefts can be gained by studying the "unrecovered theft rate," - i.e., the logarithm of [(thefts-recoveries)/registration years]. It is a sort of composite of the theft rate and the recovery rate. Figure A-5 shows that the rate was practically constant during model years 1976-95 for the make-models that did not get marked parts or antitheft devices (the 0's). The make-models that got either of those devices in 1987 had a strong peak in 1981-85, with a sharp drop on either side of the peak (regression to the mean). Before and after this

peak, in 1976-79 and 1991-95, the 1's are moderately higher than the 0's. Figure A-6 graphs the difference in the unrecovered theft rates. Basically, the relative risk ends up where it started. The average difference for 1976-79 was +.304, and for 1991-95 it was +.307. In the long term, the unrecovered theft rates of the models that got parts marking or antitheft devices did not change relative to the cars that never got either.

Parts Marking and Theft Rates Just Before and After Model Year 1987

Figure A-2 showed that the difference in the theft rates for cars that got parts marking or antitheft devices and the rates for never-marked cars shrank rather steadily from its peak value in MY 1981 to zero in MY 1989, largely due to "regression to the mean" but also, perhaps, as a consequence of the remedies. The next analyses concentrate on those crucial model years, 1984-89, to see if the shrinkage was really steady. Specifically, was there a larger-than-usual effect from MY 1986 to MY 1987, when parts marking was actually introduced in the cars, than in the other years?

Figure A-7, as it were, cuts out and enlarges the MY 1984-89 section of Figure A-1. The 1's are the theft rates [log(thefts/registration years)] of make-models that got parts marking in 1987 and the 0's are the theft rates of models that never got parts marking or antitheft devices. The vertical line down the middle of Figure A-7 separates MY 1984-86, when neither group of make-models had parts marking, from MY 1987-89, when the 1's had parts marking and the 0's did not. To limit biases in the analysis as much as possible, the following restrictions were imposed on the data used to generate Figure A-7, although not necessarily Figure A-1:

- Just as in Figure A-1, each of the make-models included in the analysis had to be produced throughout 1984-89. However, since Figure A-7 only looks at theft rates in MY 1984-89, the effect of this restriction is that **exactly** the same make-models are used to calculate each of the 1's in Figure A-7, (and the same is true of the 0's).

- As in Figure A-1, the relatively few make-models that first got parts marking in 1988 or 1989, rather than 1987, are excluded from the analysis. Most of these were new make-models that did not exist during 1984-87.

FIGURE A-3

PASSENGER CAR RECOVERY RATES BY MODEL YEAR, 1976-95

make-models that existed from 1984 or earlier until 1989 or later; 0-10 year old cars

"1" = make-models that got parts marking or antitheft devices in 1987
"0" = make-models that did not get parts marking or antitheft devices at any time

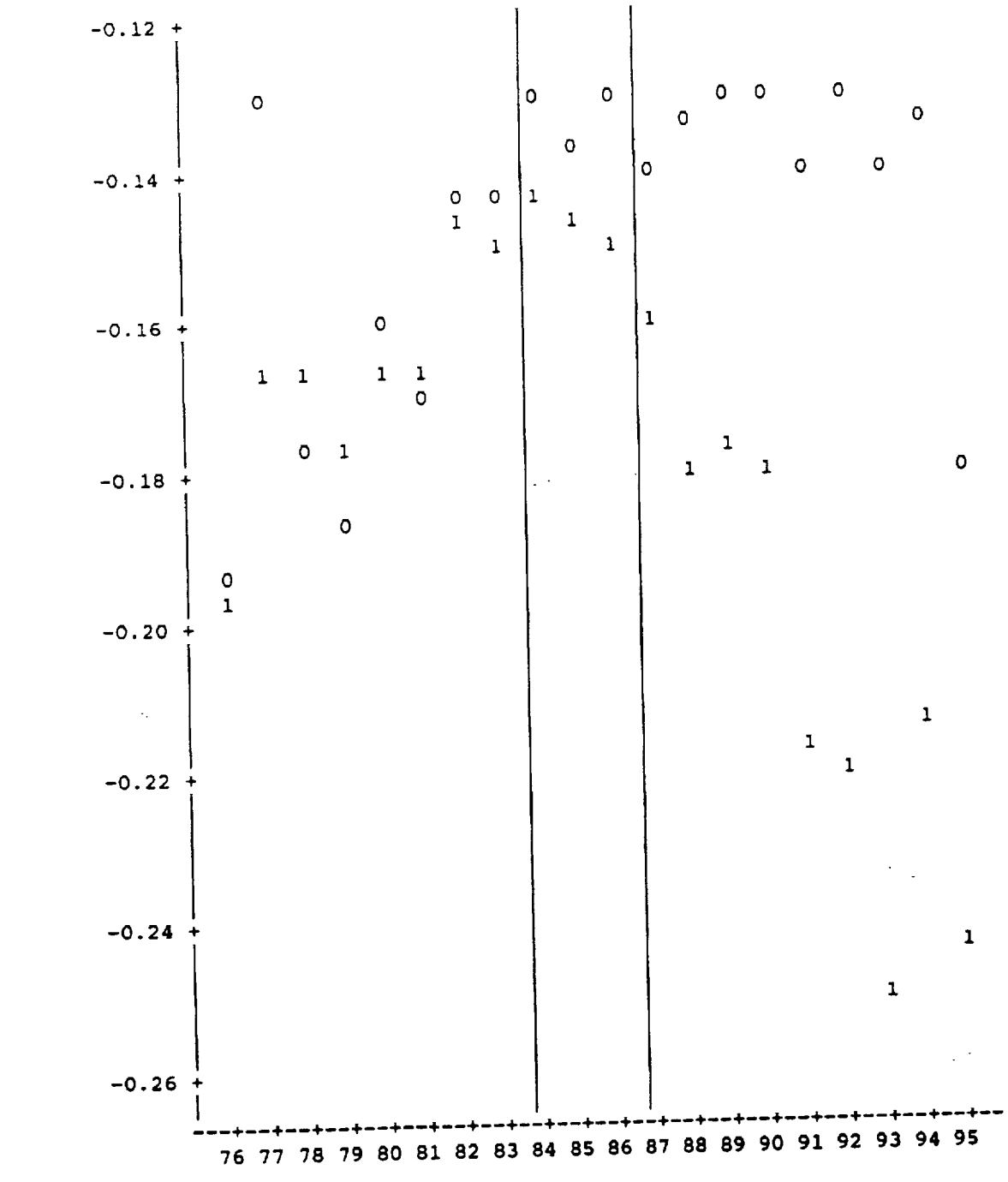
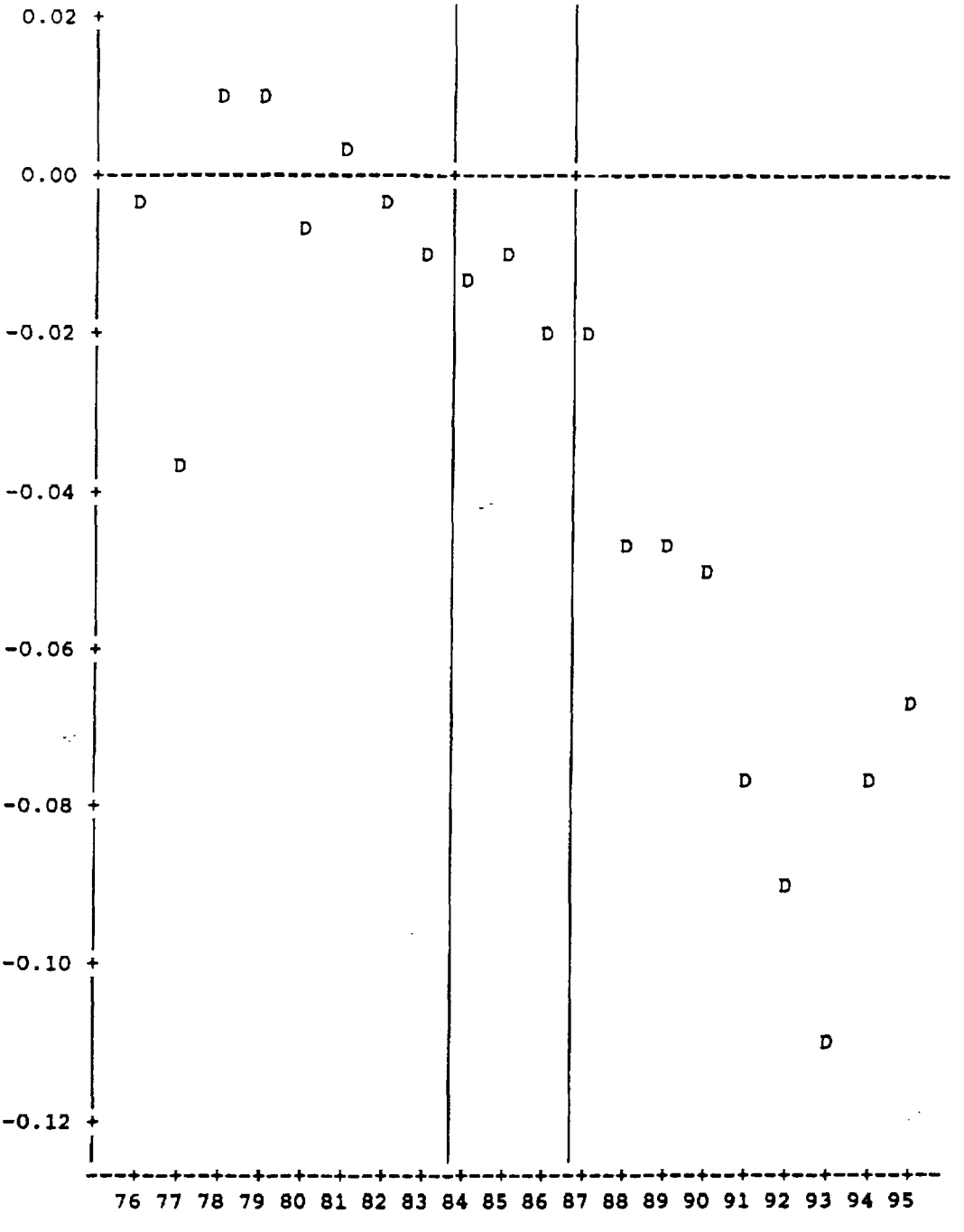


FIGURE A-4 RECOVERY RATE DIFFERENTIAL, MY 1976-95
MAKE-MODELS THAT GOT PARTS MARKING OR ANTITHEFT DEVICES IN 1987
VERSUS MAKE-MODELS THAT NEVER HAD THEM AT ANY TIME

make-models that existed from 1984 or earlier until 1989 or later; 0-10 year old cars

log of the recovery rate for models that got
parts marking or antitheft devices minus
log of the recovery rate for models that didn't



MODEL YEAR

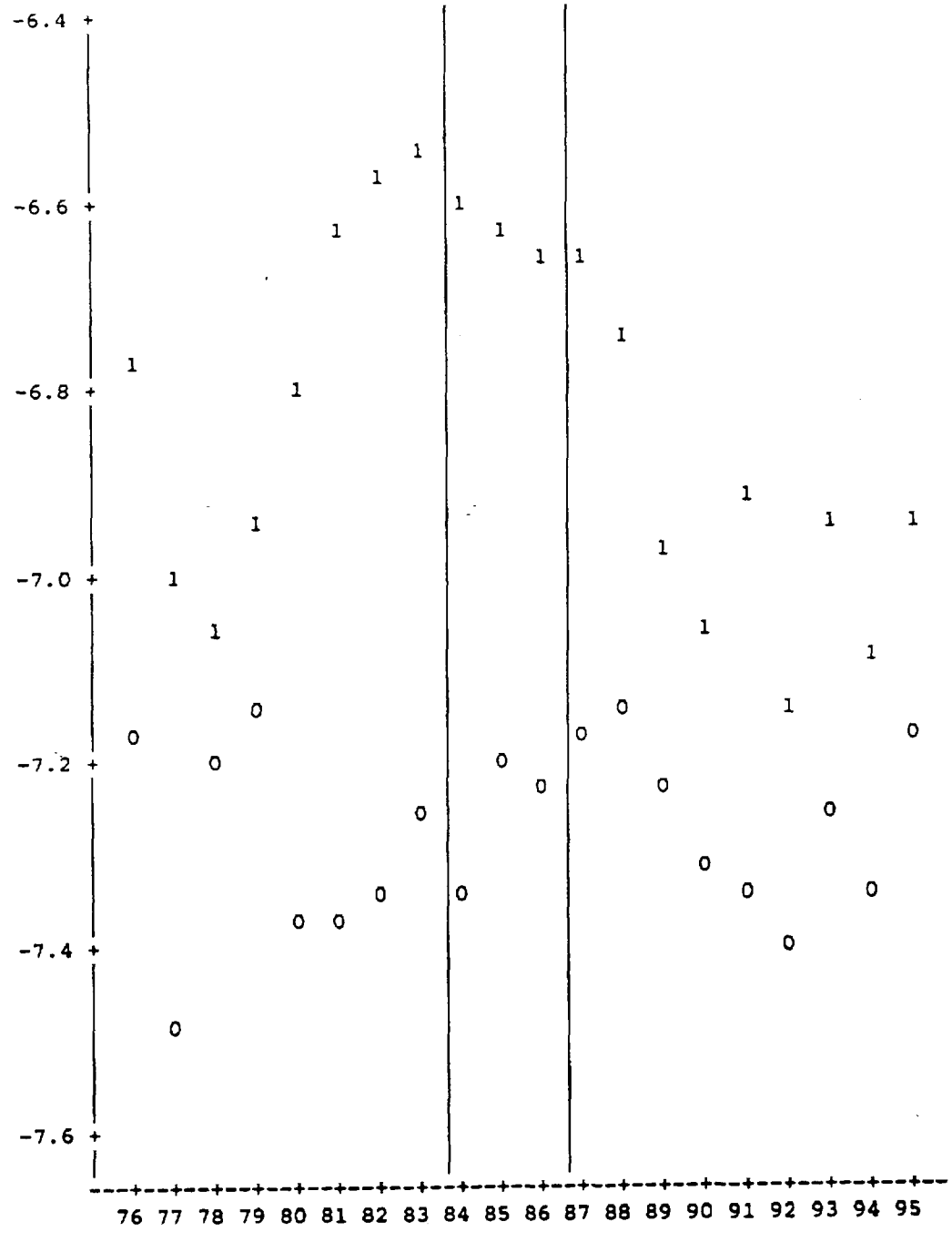
FIGURE A-5

UNRECOVERED THEFT RATES BY MODEL YEAR, 1976-95

make-models that existed from 1984 or earlier until 1989 or later; 0-10 year old passenger cars

"1" = make-models that got parts marking or antitheft devices in 1987
"0" = make-models that did not get parts marking or antitheft devices at any time

log([thefts-recoveries]/registrations)

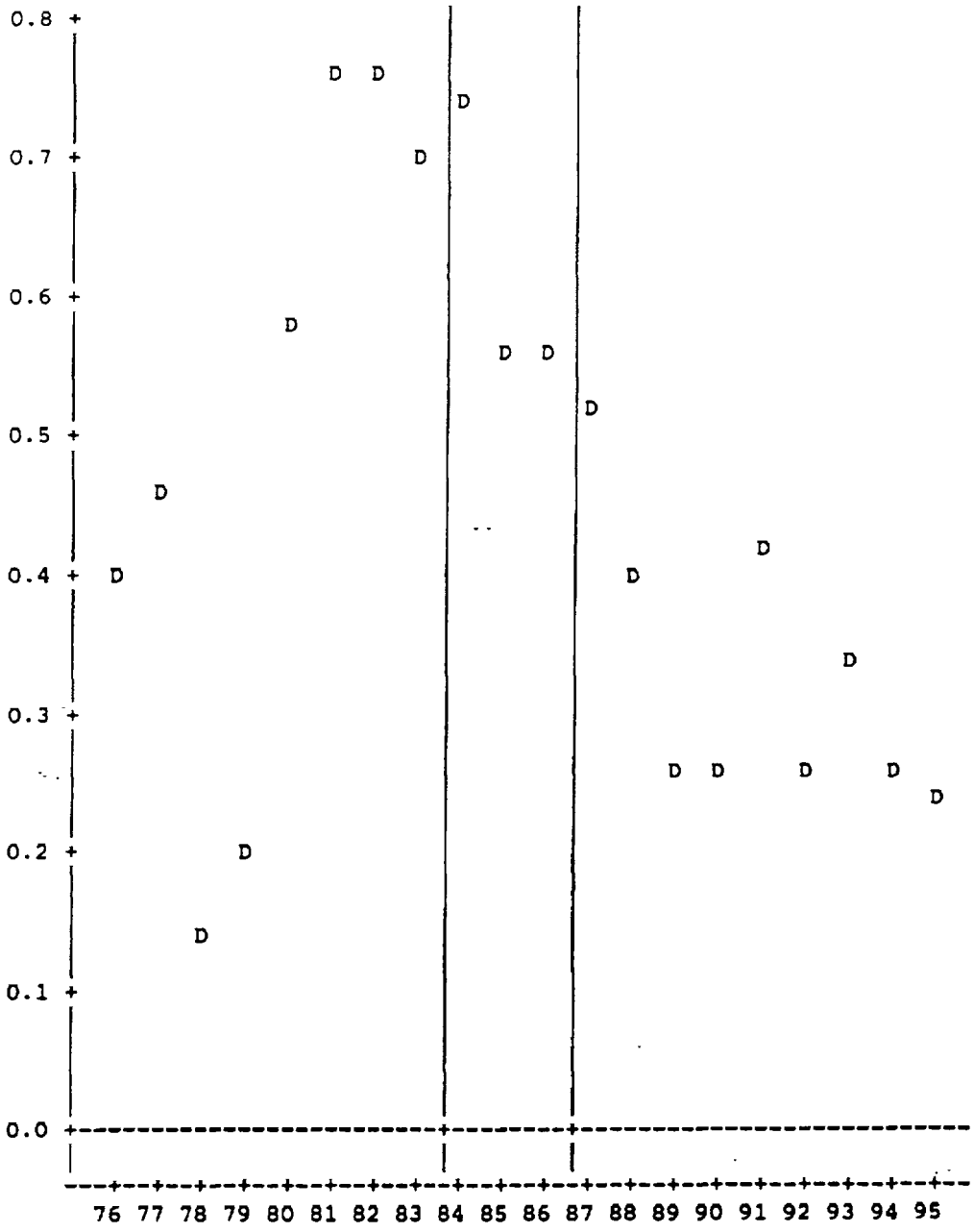


MODEL YEAR

FIGURE A-6 UNRECOVERED THEFT RATE DIFFERENTIAL, MY 1976-95
MAKE-MODELS THAT GOT PARTS MARKING OR ANTITHEFT DEVICES IN 1987
VERSUS MAKE-MODELS THAT NEVER HAD THEM AT ANY TIME

make-models that existed from 1984 or earlier until 1989 or later; 0-10 year old cars

log of the unrecovered theft rate for models that got
parts marking or antitheft devices minus
log of the unrecovered theft rate for models that didn't



MODEL YEAR

- Make-models that got antitheft devices at any time during 1984-89 are not included in the 1's of Figure A-7 (although many were included in Figure A-1). Figure A-7 is **purely** an analysis of parts marking.

- Since relatively new cars account for a disproportionate share of the consumer losses associated with auto theft, Figure A-7 is limited to cars **0-3 years old**. CY 1984-92 NCIC/Polk files, together, provide data for this age range for every MY from 1984 to 1989. (Figure A-1 had to include cars up to 10 years old, or there would have no theft rates for pre-1981 cars, given that the NCIC data only were available from CY 1984. Even so, no data are available for the pre-1984 cars when they were brand new, etc.)

- Since theft rates for imported cars are more variable than those of domestic cars (more discussion below), and to avoid biases due to market shifts from domestic to imported cars, or vice-versa, Figure A-7 is limited to **domestic** cars (including "captive imports").

The make-models included in Figure A-7 that did **not** get parts marking or antitheft devices during 1984-89 are the following:

Buick Century	Buick Skyhawk	Chevrolet Caprice/Impala
Chevrolet Cavalier	Chevrolet Celebrity	Chrysler New Yorker
Dodge Colt	Dodge Colt Vista	Dodge Omni
Ford Crown Victoria	Ford Escort	Ford EXP
Ford Tempo	Mercury Grand Marquis	Mercury Topaz
Oldsmobile Ciera	Plymouth Colt	Plymouth Colt Vista
Plymouth Horizon	Pontiac 6000	Pontiac J2000/Sunbird

The make-models included in Figure A-7 that got parts marking **in 1987** and did not get antitheft devices in 1984-89 are the following:

Buick Electra	Buick LeSabre	Buick Riviera
Cadillac DeVille	Chevrolet Monte Carlo	Chrysler Lebaron
Dodge Aries	Dodge Daytona	Dodge Diplomat
Ford Mustang	Ford Thunderbird	Lincoln Continental
Lincoln Mark 7	Lincoln Town Car	Mercury Cougar
Oldsmobile Delta 88	Oldsmobile 98	Oldsmobile Toronado
Plymouth Gran Fury	Plymouth Reliant	Pontiac Bonneville

Figure A-7 shows that the theft rate for make-models that got parts marking (the 1's) remained fairly constant during MY 1984-89. The theft rate for make-models that did not get parts marking or antitheft devices (the 0's) climbed steadily during MY 1984-88 and leveled off in 1989.

Figure A-8 tracks the difference between the 1's and the 0's in Figure A-7. It is a "close-up" of the 1984-89 trend in the log-theft-rate difference between the models that got parts marking and those that didn't. That difference shrinks from 0.66 in 1984 to 0.2 in 1988-89. In MY 1984, theft rates of the make-models that were selected to get parts marking was nearly twice as high as the rate for make-models that wouldn't get it; by MY 1989, the theft rate of the models that had gotten parts marking was only 20 percent higher than those that hadn't gotten it. Of course, the principal reason for the dramatic shrinkage in the observed difference is the regression-to-the-mean effect, very strong during 1984-89, as a consequence of the completely nonrandom basis for selecting the make-models that would get parts marking.

FIGURE A-7

PASSENGER CAR THEFT RATES BY MODEL YEAR, 1984-89

domestic make-models that existed from 1984 or earlier until 1989 or later; 0-3 year old cars
"1" = make-models that got parts marking in 1987 (no antitheft devices)
"0" = make-models that did not get parts marking or antitheft devices during 1984-89

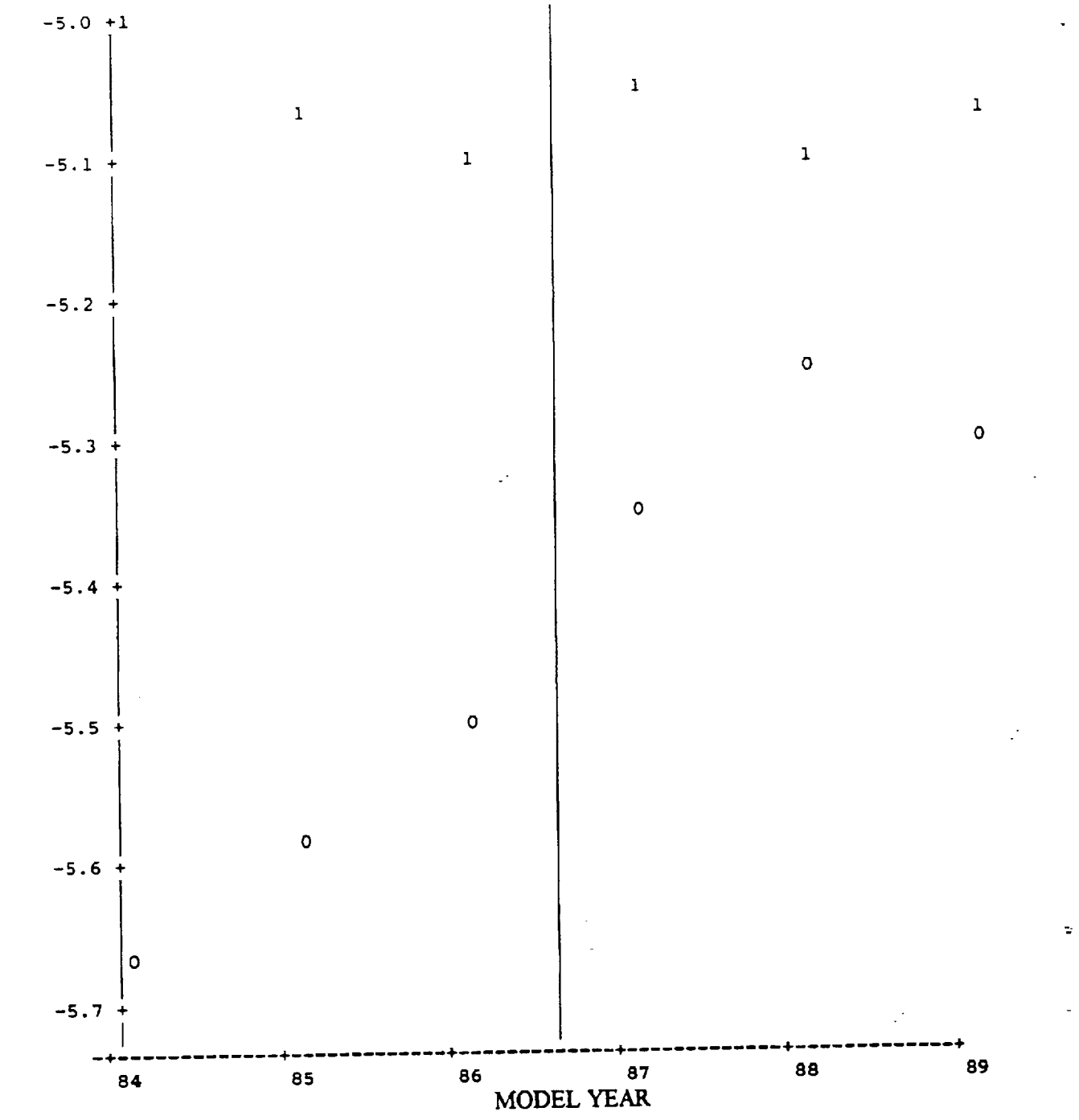
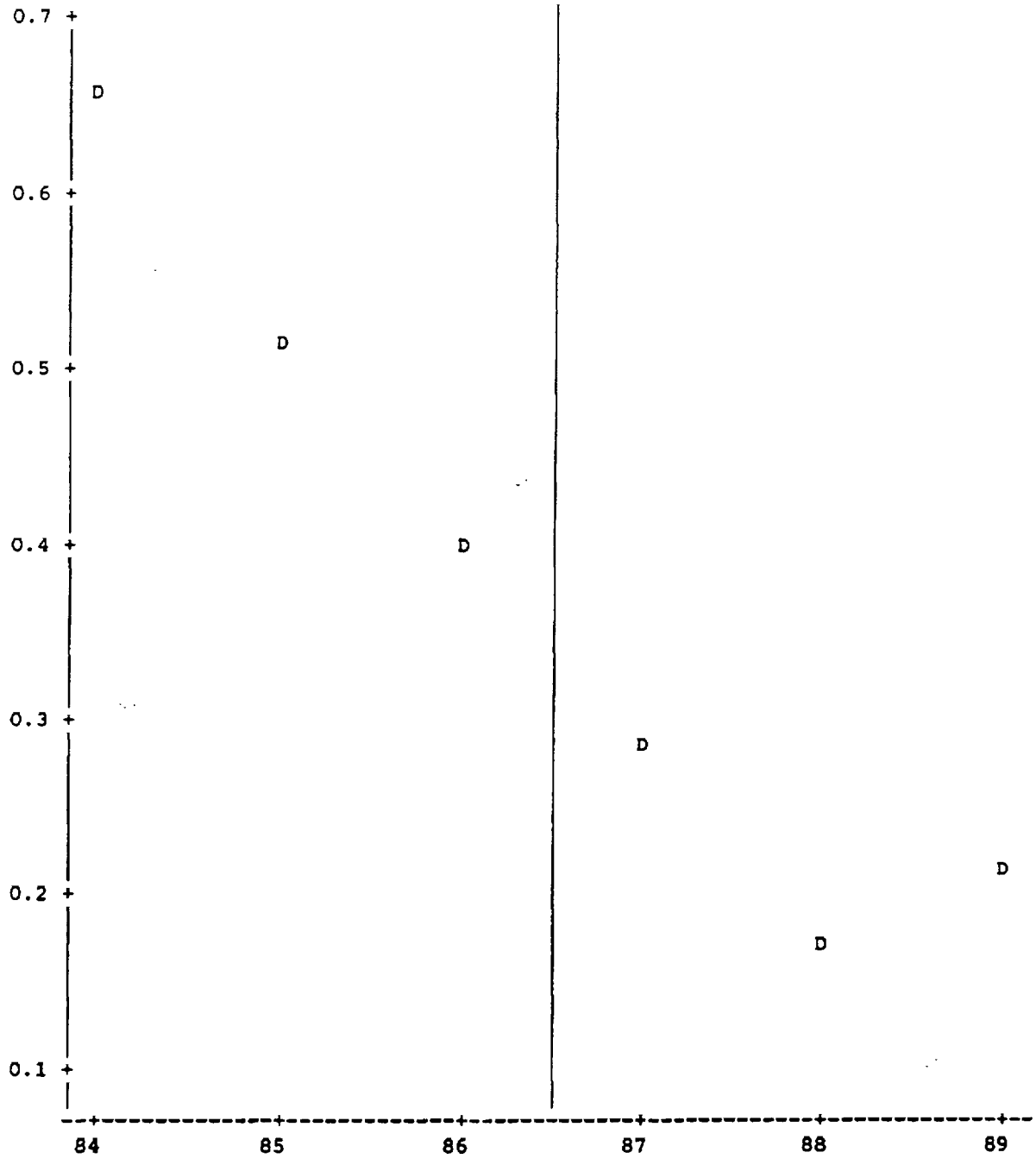


FIGURE A-8

THEFT RATE DIFFERENTIAL, MY 1984-89
MAKE-MODELS THAT GOT PARTS MARKING IN 1987 VERSUS
MAKE-MODELS WITHOUT PARTS MARKING OR ANTITHEFT DEVICES IN 1984-89
domestic make-models that existed from 1984 or earlier until 1989 or later; 0-3 year old cars

log of the theft rate for models that got parts marking
minus log of the theft rate for models that didn't



The question is whether any additional effect due specifically to parts marking can be measured within that overall trend. The measurement procedure entails two assumptions:

(A) The regression-to-the-mean effect ought to be linear - i e , the D's in Figure A-8 ought to drop by equal amounts from year to year.

(B) The effect of parts marking ought to be concentrated on the MY 1986-87 change, because parts marking was introduced in MY 1987 (if it was introduced at all), in the make-models included in this analysis.

In other words, the drop in the D's from 1986 to 1987 is measured and compared to the average drop in the other years, when the parts marking status of the various make models did not change: 1984-85, 1985-86, 1987-88, 1988-89.

An inspection of Figure A-8 reveals that the 1986-87 drop is **not conspicuously larger** than the reductions in the other years. On the contrary, the 1987 data point is nearly collinear with the 1984-86 and 1988 data points. Nevertheless, the slight 1988-89 increase will pull down the average drop for the other years. The arithmetic for the shrinkage in theft rate differentials works out as follows:

	Shrinkage
1984-85	.147
1985-86	.123
1986-87	**.102**
1987-88	.126
1988-89	- .055
Average excluding 1986-87	.085
Excess of 1986-87 over average drop	**.017**

In other words, given the preceding assumptions, the data suggest that the shrinkage in the theft rate differential from MY 1986 to 1987 was 1 7 percent beyond the "average" annual regression to the mean. That looks like a nice, plausible result. a 1.7 percent reduction in thefts with parts marking, approximately equal to the amount needed for the measure to be cost-beneficial.

Unfortunately, this estimate cannot be accepted for three crucial reasons. (1) It relies on two assumptions that are quite probably untrue, and possibly not even close to the truth. (2) The estimate is not robust. (3) The shrinkage in the theft rate differential need not represent a "pure" reduction of thefts of marked cars, but might just be a shift of thefts from marked cars to unmarked cars. These issues will now be examined in turn.

The assumption that the regression to the mean "ought to" take place at a constant rate, equal from year to year, might make sense if the data included a large number of make-models (e.g., hundreds), each having relatively small sales. Instead, there are only 42 distinct domestic make-models in the analysis, differing widely in sales. A significant redesign or sales shift for a few of the really high-sales models in a particular year could change theft rates substantially more (or less) than usual that year. An unsteady "regression to the mean" trend can intuitively be expected.

The assumption that the effect of parts marking ought to be concentrated in the 1986-87 change is also questionable. Unlike a static crashworthiness device, such as a high-penetration-resistant windshield, which accomplished its effect as soon as it was installed (in MY 1966 cars and all subsequent years) and obviously had no effect when it was not installed (MY 1965 and earlier), a measure such as parts marking mostly works indirectly by creating a deterrent effect in the minds of thieves, and this effect could be diffused over several model years, as was discussed above. The analyst's frustration with the data in Figure A-8 is that any "diffuse" effect of parts marking is undoubtedly lost within the "regression to the mean" effect, and even the "concentrated" 1986-87 effect of parts marking could be obscured by any "lumpiness" in the "regression to the mean effect."

One of the best defenses of the validity of an analytic model is that the results are robust - e.g., that similar trends and effects are seen in various subgroups of the data as in the entire data set. Unfortunately, the procedure described above is as robust as gelled desserts and quaking aspens.

Prima facie, if the 1988-89 change had not been included in the preceding calculations, the 1986-87 shrinkage would have been less than any of the others, and the effect attributed to parts marking would have been negative.

Additionally, the procedure was run separately on five manufacturer groups of cars: GM, Ford, Chrysler, Japanese, European. The results differed greatly (far more than would be expected by chance, given the sample sizes), both in the average year-to-year regression to the mean and in the specific 1986-87 change. The only consistent pattern was that GM, Ford and Chrysler had fairly similar, close to 0.1, average year-to-year regression to the mean (which is another reason why the analysis in Figures A-7 and A-8 was limited to domestic cars). The incremental 1986-87 effect did not converge on .017 at all, but ranged from quite positive to quite negative.

Another important finding was that, even among the domestic cars, the effect "attributed" to parts marking varied according to the age of the car. If the data used in Figures A-7 and A-8 are subdivided into cohorts of new cars, 1-year-old cars, etc. (and additional data are obtained for cars up to 6 years old), the analysis procedure yields the following results:

Vehicle Age	Gross 1986-87 Shrinkage	Avg. Regression to the Mean (Excl. 1986-87)	Net 1986-87 Shrinkage
0	.249	.054	.195
1	.167	.095	.072
2	.009	.100	-.091
3	-.010	.090	-.100
4	-.049	.084	-.133
5	-.042	.075	-.117
6	-.065	.065	-.130

The results are nearly identical for cars age 2-6 and quite different for brand-new cars and, to a lesser extent, 1-year-old cars. Moreover, even within each manufacturer group, nearly the same vehicle-age trend was seen (even though the net 1986-87 shrinkage had different starting points for different manufacturers, it kept getting worse up to age 2 and then leveled off). Thus, there is a robust pattern in a mass of results that are, on the whole, not robust.

The data suggest that parts marking had a quite strong effect in model year 1987 cars when they were less than a year old, a much less strong effect when they were one year old, and negative effects after that. The observed effect for the brand new cars is so strong that it can hardly be due to chance, or even an artifact of the "lumpiness" in the year-to-year regression-to-the-mean. In each model year, about 15,000 brand-new cars were stolen among the models that got parts marking, and another 15,000 among those that didn't. Thus, the "gross 1986-87 shrinkage" is a statistic derived from a ratio of ratios of rates, involving four rates, each based on about 15,000 thefts. The coefficient of variation of each of the four rates is less than 1 percent, and for the ratio of ratios, less than 2 percent. In other words, the confidence bounds on the net effect in brand new cars is about ± 4 percent; the observed effect of 20 percent is highly significant, deserving a detailed examination.

Figure A-9 is identical to Figure A-8, except that it is limited to cars of **vehicle age 0**, i.e., the CY of the theft is the same as the MY of the car (whereas Figure A-8 included 0-3 year old cars). The naked eye can clearly detect that the drop in the theft differential from MY 1986 to 1987 is about 0.25, while all the other year-to-year changes (except 1984-85) are negligible. At first glance, the MY 1986-87 effect of parts marking is far stronger than the "regression to the mean" trend.

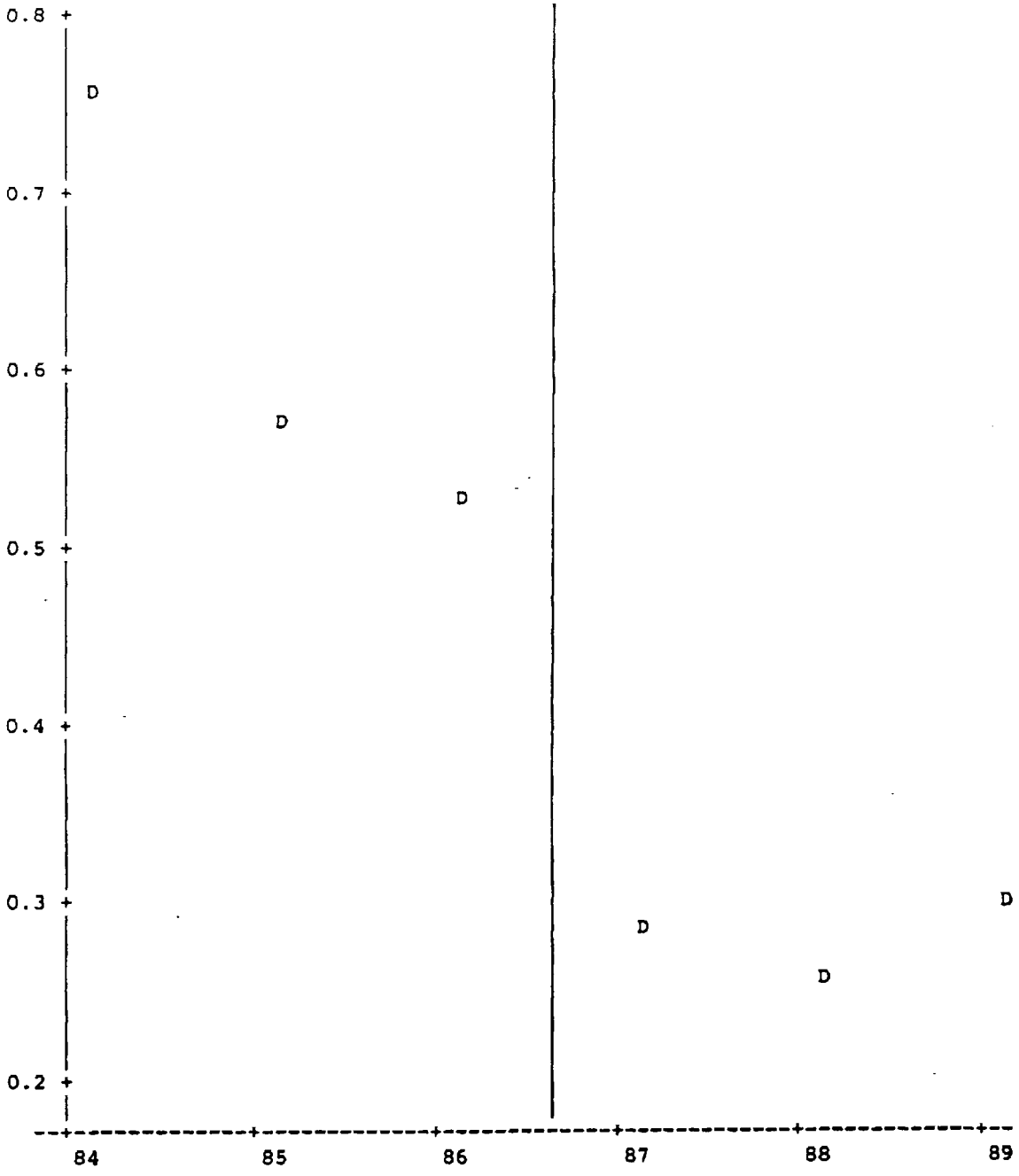
More insight is gained by looking separately at the theft rates in the models that got parts marking and those that didn't. Figure A-10 is identical to Figure A-7, except that it is limited to cars of age 0. The four theft rates that explain the 1986-87 effect are the two 1's and the two 0's on either side of the vertical line. The MY 1987 cars with marked parts clearly had a lower theft rate than might be expected from the trend in the 1's. However, these same make models in their last year before parts marking (1986) had a slightly higher-than-expected theft rate. Conversely, themodes that never got marked parts had just slightly more thefts than expected in 1987 and slightly fewer than expected in 1986. With all four of these numbers going in the "right" direction, the 1986-87 change in the relative difference is substantial.

FIGURE A-9

THEFT RATE DIFFERENTIAL, MY 1984-89, **BRAND-NEW CARS**
MAKE-MODELS THAT GOT PARTS MARKING IN 1987 VERSUS
MAKE-MODELS WITHOUT PARTS MARKING OR ANTITHEFT DEVICES IN 1984-89

domestic make-models that existed from 1984 or earlier until 1989 or later; **MY=CY**

log of the theft rate for models that got parts marking
minus log of the theft rate for models that didn't

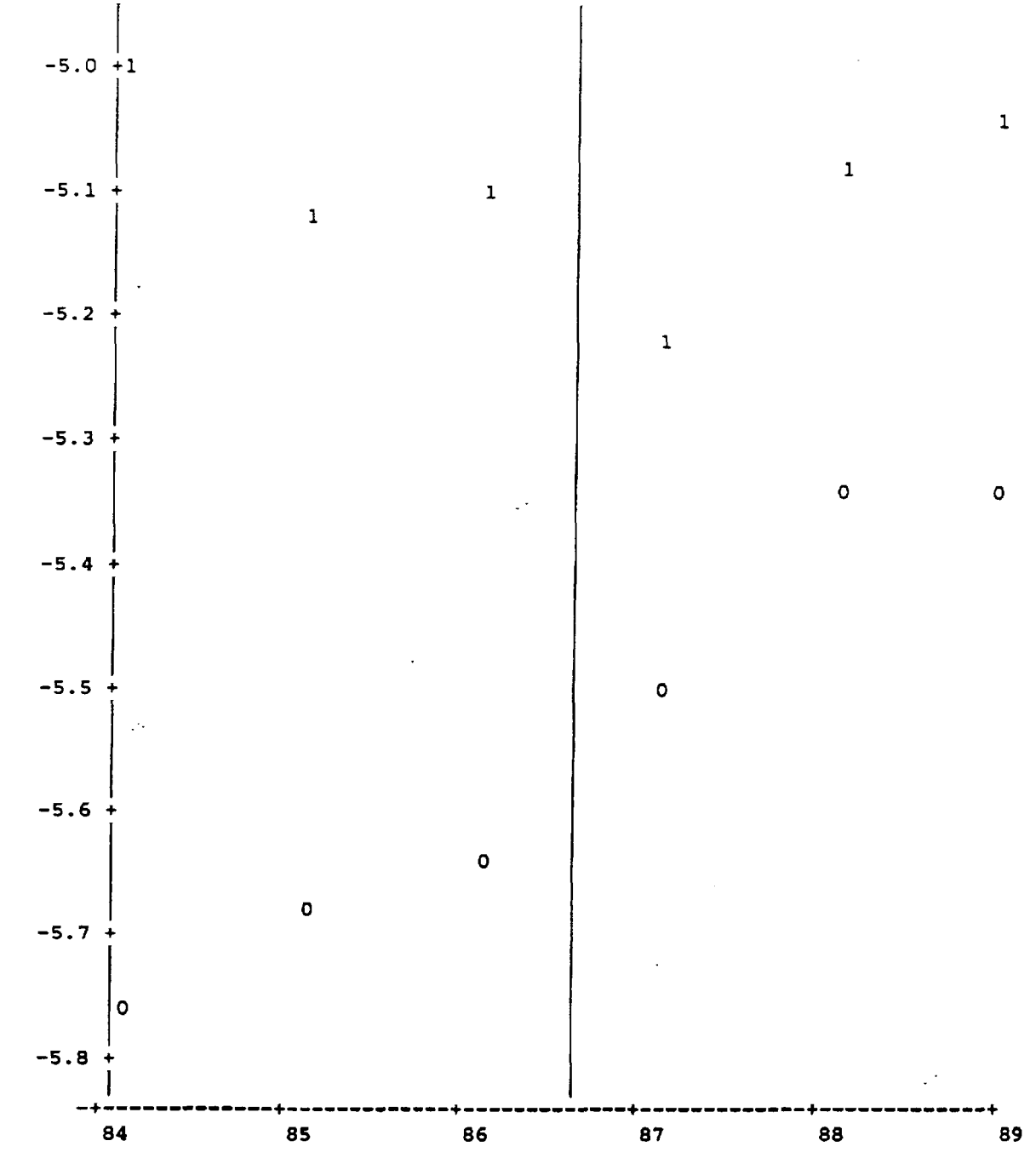


MODEL YEAR

FIGURE A-10

BRAND-NEW PASSENGER CAR THEFT RATES BY MODEL YEAR, 1984-89

domestic make-models that existed from 1984 or earlier until 1989 or later; **MY=CY**
"1" = make-models that got parts marking in 1987
"0" = make-models that did not get parts marking or antitheft devices during 1984-89



In other words, in 1987, thieves stole fewer of the models with parts marking and shifted their attention to the models with unmarked parts. By contrast, in 1986, they stole some extra cars of the makes and models that were slated to get parts marking in 1987, but did not yet have it in 1986. They were, so to speak, "stockpiling" parts from these car lines during the last year when it was "safe" to steal them. (Of course, all of this is just statistical evidence. From the rates themselves, it is impossible to determine whether thieves **consciously and deliberately** "stockpiled" 1986 parts or shifted their 1987 theft choices. It can only be concluded that the actual theft patterns shifted in those directions.)

If the effect was so strong for brand-new cars, why did it drop off so quickly as the cars became older. Several possible explanations can be suggested: (1) The unique opportunity to "stockpile" parts at a time when **no** car on the road yet had parts marking was available only in calendar year 1986. In subsequent years, even though the MY 1986 cars were still unmarked, it became harder to tell them apart from later, marked cars of the same make-models. (2) As cars get older, they become of considerably less interest to professional thieves; more of them are stolen by nonprofessional thieves, unlikely to be deterred by parts marking. (3) As time passed, the deterrent effect of parts marking became more diffuse and less concentrated on MY 1987 vs. 1986 cars; the statistical procedure used above would be less likely to detect an effect. (4) If professional thieves learned how to defeat parts marking, or at least became less worried about getting caught as a result of parts marking, they were not as reluctant to steal cars with marked parts. Only explanation (4) suggests that parts marking became less effective; the other explanations merely suggest that effects of parts marking subsequently escaped detection by the statistical procedure used here.

It has been mentioned several times that the shrinkage in the theft rate differential need not represent a "pure" reduction of thefts of marked cars, but might just be a shift of thefts from marked cars to unmarked cars. Figure A-11 presents the combined, overall theft rate for the 42 domestic make models listed above, by model year, when the cars were brand new. It shows thefts of MY 1984 cars in CY 1984, MY 1985 in CY 1985, etc. This composite theft rate rose every year from 1985 to

1989, by an average of about 6 percent a year - commensurate with the annual increases in thefts of cars of all ages in the United States during the mid-1980's (see the main report). The increase from MY 1986 to 1987, 4 percent, is about par for the course. Clearly, the 20 percent shrinkage in the theft rate differential between marked and unmarked cars was caused by a shift of thefts from marked to unmarked models, rather than an absolute reduction in thefts. However, that is not necessarily an unfavorable sign; if **all** cars on the road had been marked, thieves would have been unable to shift from marked to unmarked cars, and it is conceivable that thefts would have declined in absolute terms.

Parts Marking, Recovery Rates and Unrecovered-Theft Rates Before/After MY 1987

The same data base that was used to analyze possible interactions between parts marking and theft rates can also be used to study recovery rates. The two major differences are (1) the "good" outcome is an increase in recovery rates (whereas for theft rates, a drop was desirable); (2) there is no overwhelming "regression to the mean" after 1984, since the models that got parts marking were selected because of their high theft rates, not low recovery rates (compare Figures A-1 and A-3).

Figure A-12 displays the recovery rates of 0-3 year old domestic cars during MY 1984-89. As above, it is based on make-models that were produced throughout 1984-89. The 1's are the recovery rates [log(recoveries/thefts)] of make-models that got parts marking in 1987 and the 0's are the recovery rates of models that never got parts marking or antitheft devices. The vertical line down the middle of Figure A-12 separates MY 1984-86, when neither group of make-models had parts marking, from MY 1987-89, when the 1's had parts marking and the 0's did not.

Figure A-12 shows slightly higher recovery rates throughout 1984-89 for the unmarked models than for the make-models that got parts marking. Both groups' recovery rates had a slight downward drift during those years. Obviously there is no dramatic change in the relation of the 1's to the 0's in 1987; nevertheless the gap between 0 and 1 is slightly smaller

in 1987 than in the preceding or the following year (an indication of a result in the "right" direction).

Figure A-13 tracks the difference between the 1's and the 0's in Figure A-12. Since the 1's were always lower than the 0's, the difference is consistently negative. If parts marking increases recovery rates, the difference ought to be less negative in MY 1987 than in MY 1986 - the data point for MY 1987 should be higher than the one for MY 1986 - and indeed it is. The climb from 1986 to 1987 is in the opposite direction of a somewhat inconsistent but generally downward trend.

If, as in the preceding section, the change in the D's from 1986 to 1987 is measured and compared to the average change in the other years, when the parts marking status of the various make models did not change, the arithmetic for the changes in recovery rate differentials works out as follows:

	Change
1984-85	+ .0027
1985-86	- .0078
1986-87	**+ .0036**
1987-88	- .0221
1988-89	+ .0069
Average excluding 1986-87	- .0051
Departure of 1986-87 from prevailing trend	**+ .0087**

In other words, given the assumption of a constant trend in the recovery rate differential, the data suggest that the implementation of parts marking in MY 1987 was associated with a 0.9 percent increase in the recovery rate, relative to the trend line.

FIGURE A-11

BRAND-NEW PASSENGER CAR OVERALL THEFT RATES BY MODEL YEAR, 1984-89

includes: unmarked cars + marked cars
excludes: models with antitheft devices at any time in 1984-89
domestic make-models that existed from 1984 or earlier until 1989 or later; **MY=CY**

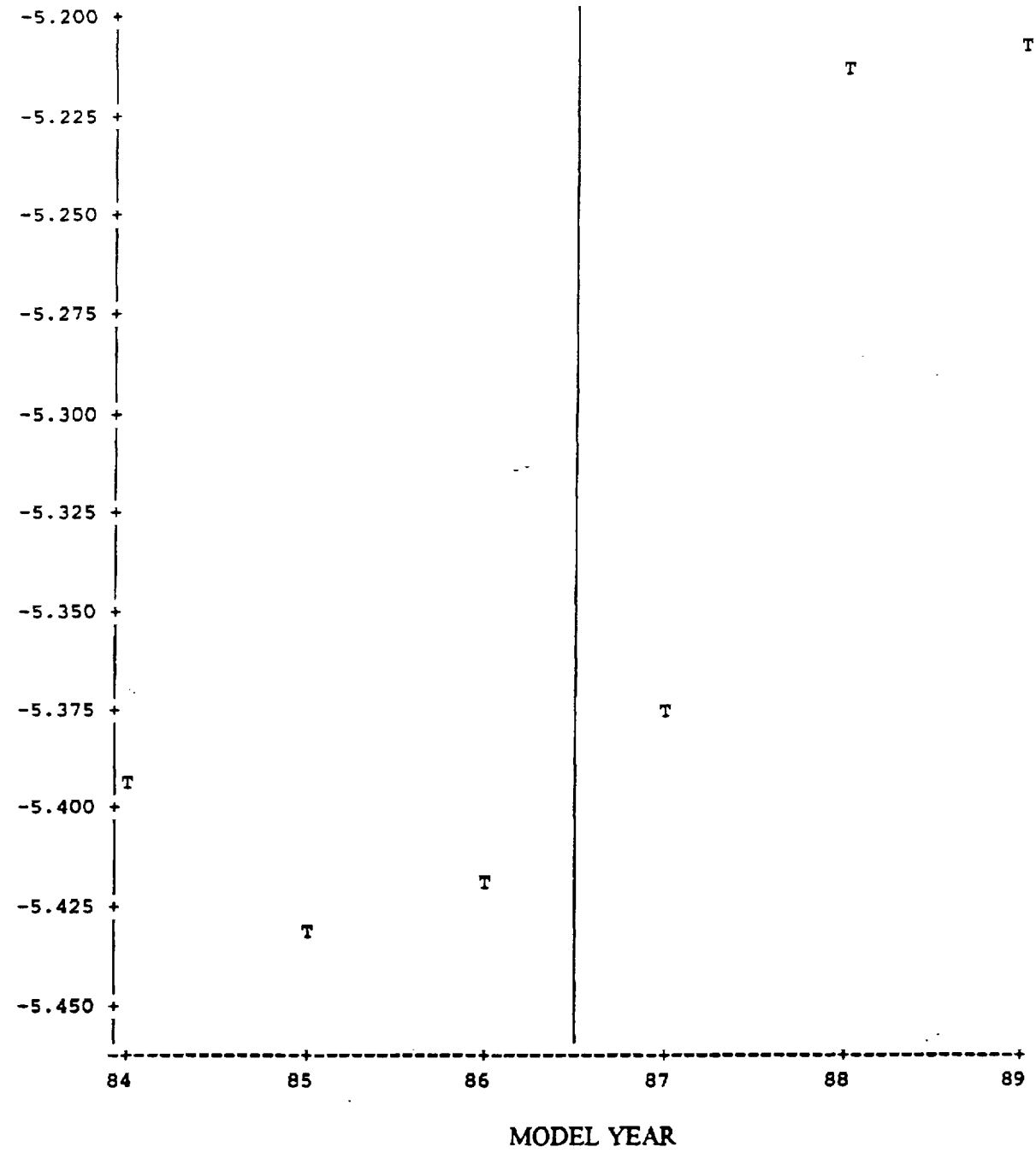
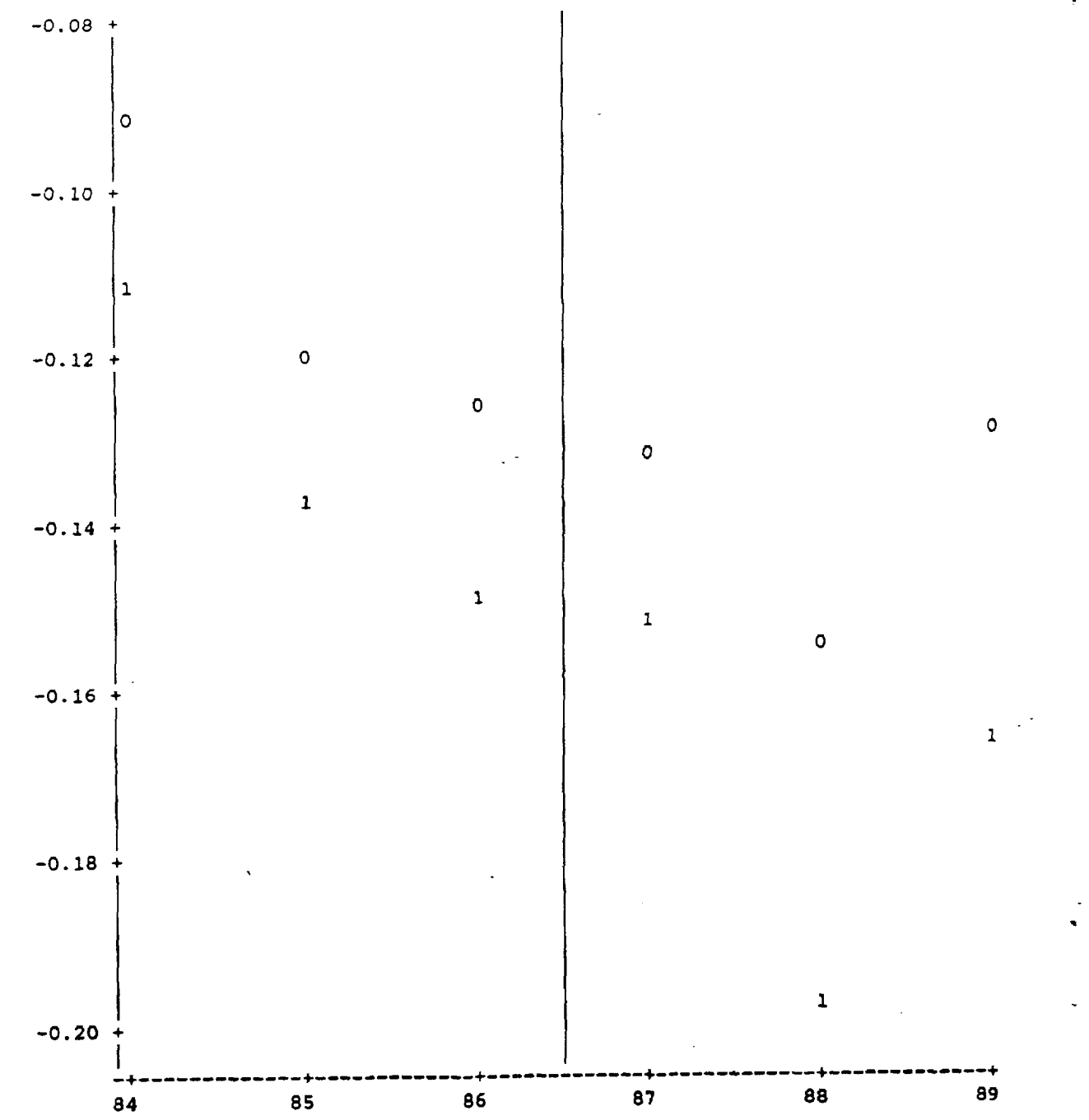


FIGURE A-12

PASSENGER CAR RECOVERY RATES BY MODEL YEAR, 1984-89

domestic make-models that existed from 1984 or earlier until 1989 or later; 0-3 year old cars

"1" = make-models that got parts marking in 1987
"0" = make-models that did not get parts marking or antitheft devices during 1984-89



Unlike the 1986-87 effect on theft rates, which was strong only for brand new cars and disappeared after the cars were 2 years old, the observed effect on recovery rates remains uniformly favorable, even for vehicles as old as 6 years:

Brand new	+ .010
1 year old	+ .006
2 years old	+ .002
3 years old	+ .019
4 years old	+ .047
5 years old	+ .027
6 years old	+ .034

In summary, the results on recovery rates are mixed. On the one hand, Figures A-4 and A-13 show that, in the long term, the recovery rates of models with parts marking have steadily gotten worse than those of the models that never got parts marking. On the other hand, in 1987, the specific year that parts marking was introduced, those models had an increase in the recovery rate, contrary to the long-term trend. There does not appear to be any satisfactory explanation for the adverse long-term trend. Of course, if it has any causal relationship to parts marking, it far outweighs the one-time 1986-87 improvement. But if the long-term trend is not causally related to parts marking - e.g., if it is an artifact of the specific make-models that were selected for parts marking, and it would have occurred even if those models had never been marked - then the positive effect in 1986-87 might stand as a benefit for parts marking. Once again, the analysis is frustrated because make-models were selected for parts marking on a highly nonrandom basis, and there could be all sorts of trends unrelated to parts marking.

To the extent that many of the vehicles stolen by professional thieves - for chop shops, salvage switch and retag, or export - are never recovered, the **unrecovered theft rate**, defined as

log [(thefts - recoveries)/registration years]

is a sort of surrogate for the "professional" theft rate, and it is a primary goal of parts marking to lower this rate. Obviously, when the theft rate goes down and the recovery rate goes up, the unrecovered-theft rate decreases. However, even small increases in the recovery rate, such as those attributed to parts marking in the preceding analysis, can have substantial effects on the unrecovered-theft rate: e.g., if the recovery rate increases from 90 to 91 percent, unrecovered thefts are reduced by 10 percent.

Figure A-14 tracks the differential in the unrecovered-theft rates of 0-3 year old domestic cars that got parts marking in MY 1987 and those that did not. In general, the models that got parts marking had initially higher unrecovered-theft rates, but the difference shrank throughout 1984-89 (regression to the mean). The differential was 0.85 in MY 84 and 0.45 in MY 89. The drop from 1986 to 1987, although not dramatically larger than the reductions in the other years, is nevertheless greater than average (and it is exceeded in magnitude only by the 1984-85 drop). That suggests a positive effect for parts marking; the arithmetic works out as follows:

	Shrinkage
1984-85	.207
1985-86	.077
1986-87	**.133**
1987-88	.039
1988-89	-.057
Average excluding 1986-87	.067
Excess of 1986-87 over average drop	**.066**

In other words, given the preceding assumptions, the data suggest a

$$1 - \exp(-.066) = 6.4 \text{ percent}$$

reduction of unrecovered thefts with parts marking. At first glance this reduction seems large in comparison to the amount needed for parts marking to be cost-beneficial. However, the result falls short of being conclusive, given the fragility of the assumptions and the rather tentative effect demonstrated in Figure A-14.

In one sense, however, the results on unrecovered thefts are more robust than the findings on the theft rate: the positive effect does not vanish as the cars get older:

Vehicle Age	Reduction Attributed to Parts Marking (%)
Brand new	25.8
1 year old	23.0
2 years old	- 14.8
3 years old	- .9
4 years old	20.9
5 years old	4.
6 years old	8.8

2

Initially, the effect is strong because thefts are down and recoveries are up. The observed benefit disappears when the cars are 2-3 years old, but subsequently returns to the positive, because the improvement in the recovery rate overshadows the observed negative effects on the theft rate. Figure A-15 illustrates the substantial benefit of parts marking on the unrecovered-theft rates of **brand-new** cars in MY 1987.

Effects of Antitheft Devices Introduced in My 1989-92 Domestic Cars

One domestic manufacturer gradually introduced factory-installed antitheft devices as standard equipment in a substantial number of make-models during 1986-94. In most of the vehicles, the equipment included a specially designed ignition key. A computer in the vehicle reads an encoded capsule embedded in the key and compares it to a microchip within the computer. The ignition system is shut down if the codes do not match, or it is attempted

to "hot-wire" the car. A partial list of make-models that have received these devices includes:

1986	Chevrolet Corvette (system upgraded in 1990)
1989	Chevrolet Camaro, Pontiac Firebird, Cadillac Eldorado, Cadillac Seville
1990	Cadillac DeVille, Buick Riviera, Oldsmobile Toronado
1991	Buick Park Avenue, Oldsmobile 98
1992	Buick LeSabre, Oldsmobile 88, Pontiac Bonnevile
1994	Chevrolet Caprice (partial phase-in began in 1993)

The effects of the antitheft devices on theft, recovery and unrecovered-theft rates will be studied for the preceding list of make-models with 1989-92 introductions. The Corvette and Caprice are not included because their analysis is complicated by the two-stage introduction of the devices, as well as an insufficient amount of data. It is noteworthy that the antitheft device was not necessarily introduced in the same year that the Government granted these vehicles an exemption from parts marking; as a result, some cars have parts marking **and** antitheft devices in some model years.

As in the three preceding sections, rates for the make-models that got antitheft devices will be compared to rates for control groups of domestic make-models of a similar market class, produced in the same model years, that did not get antitheft devices in those years, and did not change their parts-marking status after 1987. The five cohorts of cars with antitheft devices, and their control groups are:

Antitheft Cars	Control Group Cars
Camaro, Firebird	Mustang, Daytona, Thunderbird, Cougar
Eldorado, Seville	Lincoln Mark, Continental
DeVille, Riviera, Toronado	Town Car, Mark, Continental
Park Avenue, Olds 98	Crown Victoria, Grand Marquis
LeSabre, 88, Bonnevile	Taurus, Sable

Figure A-16 compares the theft rates of 0-3 year old LeSabres, Olds 88s and Bonnevilles to the rate for Taurus and Sables during MY 1988-95. It is based on the same NCIC-Polk data

files that were used in the preceding section (data up through CY 1995). The 2's denote the aggregate theft rate [log(thefts/registrations)] for LeSabre, 88 and Bonneville, which received antitheft devices in 1992 (and had parts marking in 1987-91; LeSabre and 88 also in 1992). The 0's denote the combined theft rate for Taurus and Sable, which did not have parts marking or antitheft devices during 1988-95.

Figure A-16 leaves no room for doubt about the effectiveness of the antitheft devices. The log of the theft rate for the GM cars (the 2's) is reasonably close to -5.25 in MY 1988-91; it drops to about -7 in 1992, when the devices were introduce, and it stays there in later model years. A drop of 1.75 on the logarithmic scale suggests a very substantial reduction in the actual theft rate, as will be confirmed below. The theft rate for the control group cars (Taurus and Sable) shows a comparatively modest decreasing trend in 1988-91 and a modest increase in 1992-95. Interestingly, the theft rate for the GM cars shows a similar decrease from 1988 to 1991, and a similar, modest increase from 1992 to 1995, but, of course, a very large drop from 1991 to 1992.

Figure A-17 tracks the theft rate differential - the difference between the 2's and the 0's in Figure A-16. This differential is relatively constant and close to 1.00 during MY 1988-91, and it drops abruptly to a relatively constant -0.75 in MY 1992-95. The drop clearly coincides with the introduction of antitheft devices in the GM cars. Figure A-17 should be contrasted with Figure A-8, a corresponding analysis of the effect of parts marking. In Figure A-8, the small effect of parts marking (if any) is obscured by a steady downward trend throughout 1984-89 (regression to the mean). In Figure A-17, the effect of antitheft devices is so large as to completely overshadow any other trends, such as regression to the mean.

If the procedure for calculating effectiveness that was employed in the analyses of parts marking is applied to the data in Figure A-17, the results are:

	Shrinkage
1989-90	- .074
1990-91	.076
1991-92	**1.780**
1992-93	- .027
1993-94	.205

Average excluding 1991-92	.045
Excess of 1991-92 over average drop	1.735

In other words, the data suggest a

$$1 - \exp(-1.735) = 82 \text{ percent}$$

reduction of the theft rate by the antitheft devices in LeSabre, Olds 88 and Bonneville.

Figure A-18 tracks the recovery rate differential for these same groups of cars. For recovery rates, the "right" direction is the opposite of theft rates: we want them to go up. Thus, the results in Figure A-18 are definitely in the wrong direction, since the differential drops from about .10 to zero with antitheft devices. This finding, however, should not come as a surprise. Unlike parts marking, which is primarily intended to deter the professional thief and probably his little effect on "casual" thefts such as joyriding, a successful antitheft device should reduce all types of theft substantially. But it will probably have the greatest impact on the casual thefts, the types that are most easily recovered. Thus, even though thefts are greatly reduced, the ratio of recoveries to thefts (the recovery rate) may actually decrease rather than rise.

Nevertheless, the decrease in the recovery rate is negligible relative to the decrease in the theft rate. Even though the number of unrecovered cars grows in proportion to the number of thefts, it will drop relative to vehicle registrations. The differential in the **unrecovered theft rate**, defined as

$$\log [(\text{thefts} - \text{recoveries})/\text{registration years}]$$

is graphed in Figure A-19. It shows a strong reduction with antitheft devices, from about 0.2 in 1988-91 to about -0.8 in 1992-95. By the computation method used throughout this

appendix, the data in Figure A-19 correspond to a 58 percent reduction in the unrecovered-theft rate.

The trends in theft and recovery rates, relative to their respective control groups, are quite similar for the other four cohorts of domestic make-models that got antitheft devices at some time between 1989 and 1991. (The results for the Eldorado-Seville cohort are based on substantially fewer data than the others and subject to correspondingly higher uncertainty.) The effectiveness estimates for the antitheft devices in each group of cars are as follows:

Percentage Reduction by Antitheft Devices

	Theft Rate	Unrecovered Theft Rate
Camaro, Firebird	68	50
Eldorado, Seville	11	36
DeVille, Riviera, Toronado	47	58
Park Avenue, Olds 98	78	66
LeSabre, Olds 88, Bonnevile	82	58

A "best estimate" for the effectiveness of these antitheft devices can be obtained by combining the data for the five make-model groups. The rates are not graphed by absolute model years, but by the model year relative to the implementation date for antitheft devices. For example, in Camaro and Firebird, year "0" is model year 1989, when those cars got the devices. MY 1988 becomes year "-1" and MY 1990 becomes year "1." Thus, also, for their control group of Mustang, Daytona, etc. But in LeSabre, Olds 88 and Bonneville (and for their control group cars, Taurus and Sable), MY 1992 becomes year "0," MY 1993 is year "1," etc.

Figure A-20 tracks the theft rate differential for the five make-model groups combined.- the difference between the GM cars and the control group cars. This differential is .75 or larger during the four model years prior to the installation of antitheft devices in the GM cars (i.e., the control group models originally had a lower theft rate). It drops abruptly to a relatively constant -.5 in the year that the GM cars got the antitheft devices, and it stays there (i.e., from that point on, the GM cars have the lower theft rate). Figure A-21 shows a similarly strong effect of antitheft devices in lowering the unrecovered theft rate. Here are the calculations of effectiveness based on the data in Figures A-20 and A-21:

	Shrinkage in the Rate Differential	
	All Thefts	Unrecovered Thefts
3rd MY before to 2nd MY before antitheft	.138	.346
2nd MY before to last MY before antitheft	.309	.146
Last MY before to first MY with antitheft	**1.342**	**.974**
First MY with to 2nd MY with antitheft	.138	.201
2nd MY with to 3rd MY with antitheft	- .097	- .261
Average excluding year of transition	.122	.108
Excess of transition drop over average drop	**1.220**	**.866**

In other words, the data attribute to these antitheft devices:

- 1 - exp(-1.220) = 70 percent reduction of the theft rate
- 1 - exp(-0.866) = 58 percent reduction of the unrecovered-theft rate

Although these antitheft devices may be especially beneficial in reducing "casual" thefts for purposes such as joyriding or temporary transportation, they also appear to be highly effective in reducing "professional" thefts. To the extent that the unrecovered-theft rate can serve as a surrogate for professional thefts, these antitheft devices are far more effective than parts marking (which was associated with perhaps a 6 percent reduction of the unrecovered theft rate). Of course, when comparing effectiveness, it should not be forgotten that the antitheft devices cost far more. Also, the roles of antitheft devices and parts marking are complementary, not redundant. The former makes it hard to steal a car; the latter acts as a deterrent because it aids in the apprehension and conviction of thieves.

The reductions in thefts persist as the cars get older, and they persist in later model years. For example, in Camaro and Firebird (the first high-sales make-models to get antitheft devices), theft rates are low for every model year from 1989 to 1995. Rates have remained low for the MY 1989 cars even in calendar year 1995, when they were six years old.

Effects of Factory-Installed Antitheft Devices in Other Cars

Since 1984 a number of other manufacturers have introduced factory-installed antitheft devices as standard equipment in selected make-models. Since the devices vary considerably in design and function, it is not unreasonable to expect a corresponding variation in their effectiveness. However, since none of these devices were introduced in numbers anywhere near as large as the system analyzed in the preceding section, it is difficult to estimate their effectiveness accurately. The analysis in this section will be limited to inspecting the general trends in the theft rates of 0-5 year old cars of some of those models. (Even the accuracy of these "general trends" cannot always be assured, since the data base may have been incomplete for some of the low-sales, imported make-models.)

FIGURE A-13

RECOVERY RATE DIFFERENTIAL, MY 1984-89
MAKE-MODELS THAT GOT PARTS MARKING IN 1987 VERSUS
MAKE-MODELS WITHOUT PARTS MARKING OR ANTITHEFT DEVICES IN 1984-89

domestic make-models that existed from 1984 or earlier until 1989 or later; 0-3 year old cars

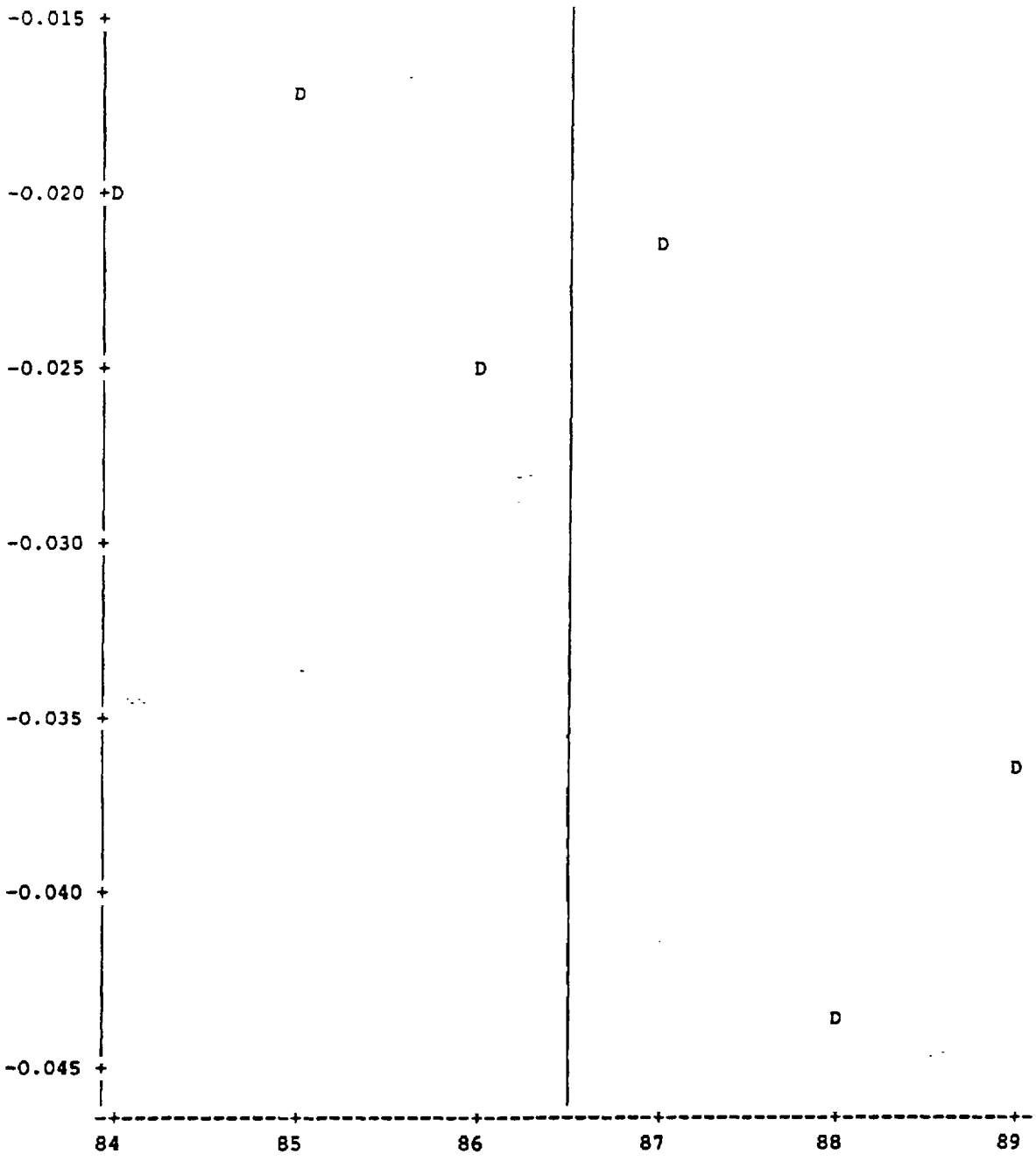


FIGURE A-14

UNRECOVERED THEFT RATE DIFFERENTIAL, MY 1984-89
MAKE-MODELS THAT GOT PARTS MARKING IN 1987 VERSUS
MAKE-MODELS WITHOUT PARTS MARKING OR ANTITHEFT DEVICES IN 1984-89

domestic make-models that existed from 1984 or earlier until 1989 or later; 0-3 year old cars

log of the unrecovered theft rate for models that got parts marking
minus log of the unrecovered theft rate for models that didn't

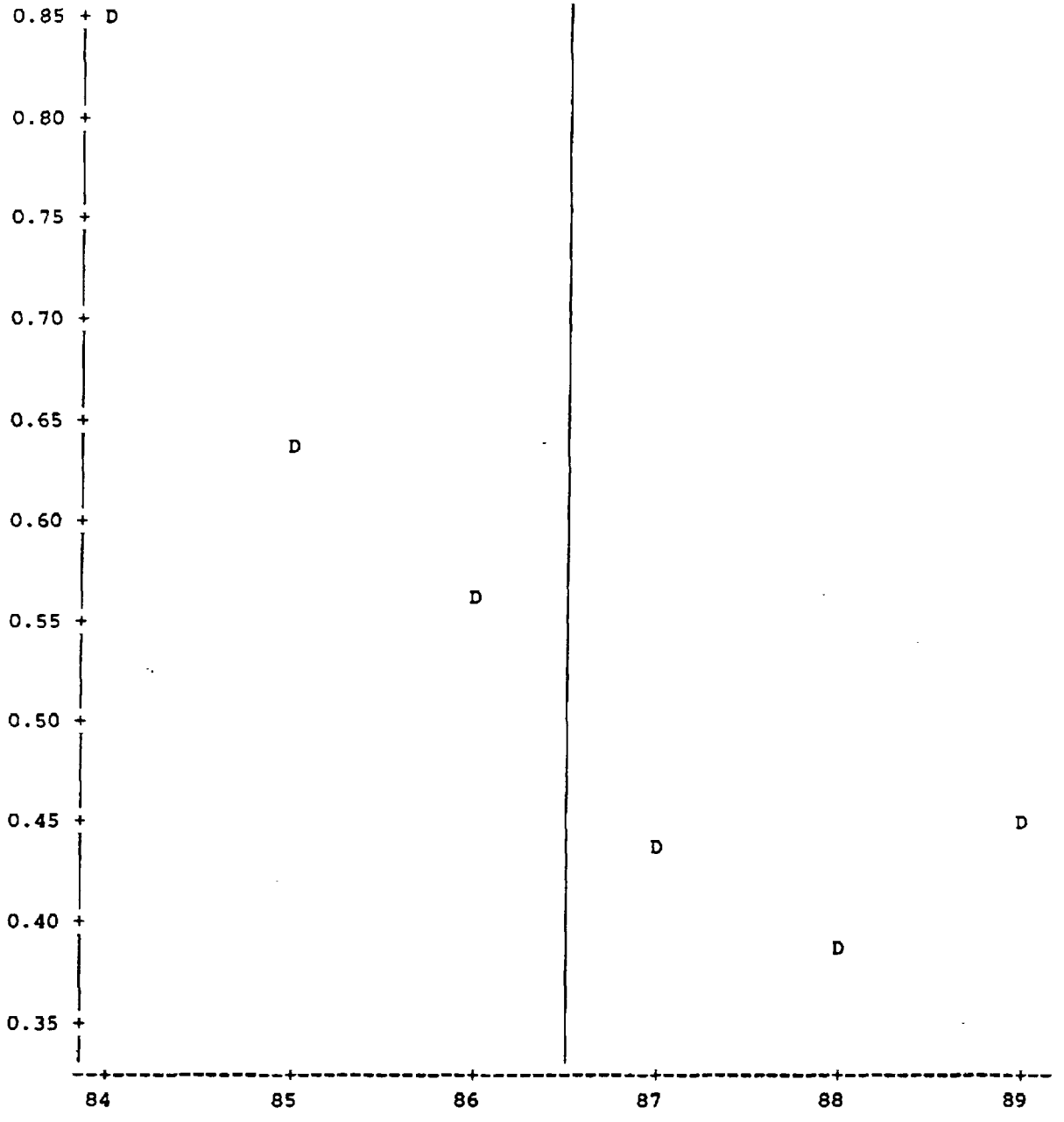
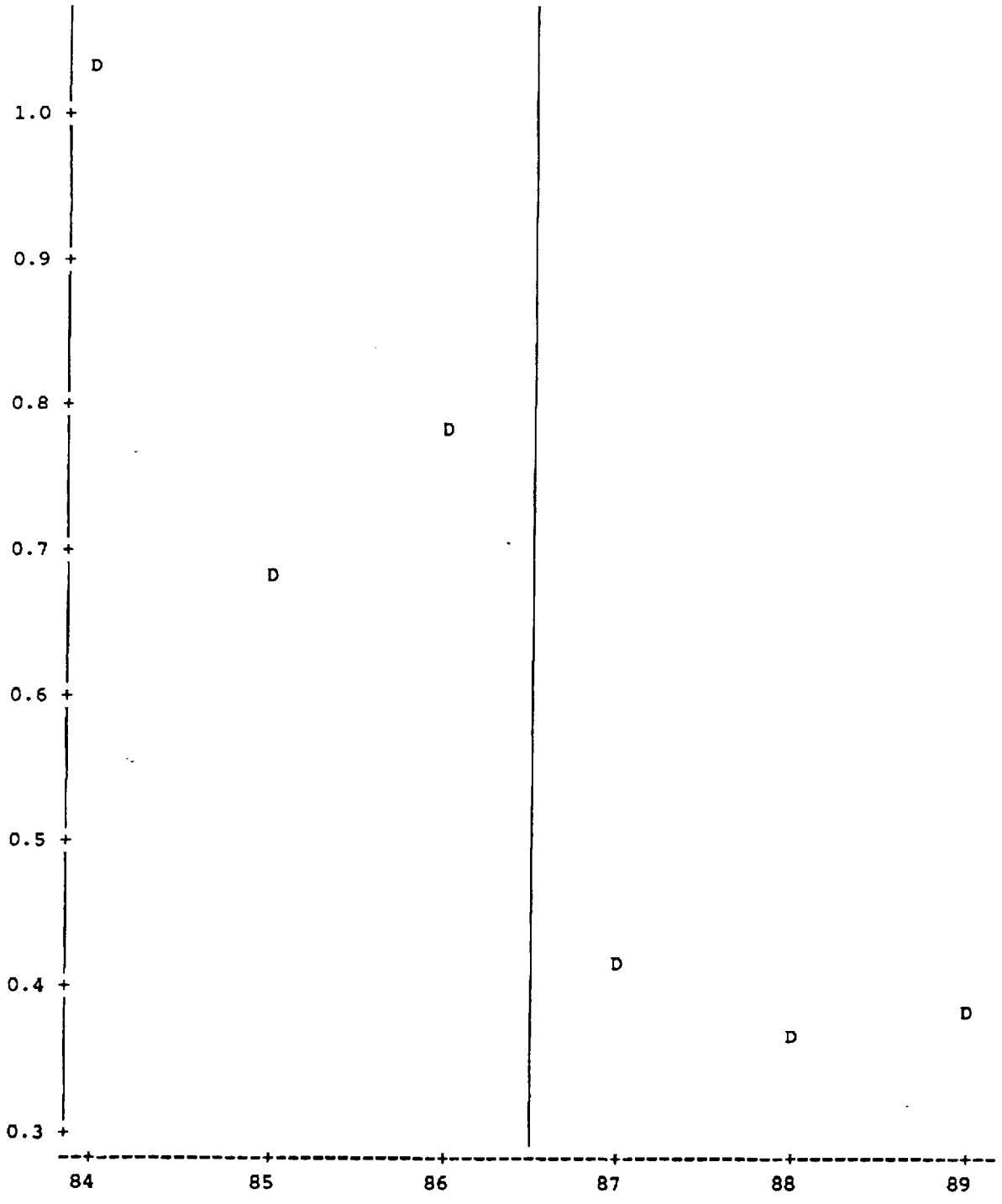


FIGURE A-15: UNRECOVERED THEFT RATE DIFFERENTIAL, MY 1984-89,
BRAND-NEW CARS, MAKE-MODELS THAT GOT PARTS MARKING IN 1987 VERSUS
MAKE-MODELS WITHOUT PARTS MARKING OR ANTITHEFT DEVICES IN 1984-89
domestic make-models that existed from 1984 or earlier until 1989 or later; **MY=CY**

log of the unrecovered theft rate for models that got parts marking
minus log of the unrecovered theft rate for models that didn't



MODEL YEAR

According to NHTSA's *Auto Theft-Resistance Study*, a report to the Congress dated April 1992, the Nissan 300ZX received antitheft devices in 1984 and the Maxima in 1985. The device disables the starting mechanism and sounds an alarm when somebody attempts to enter the car without a key. An inspection of the theft rates for these make-models indicates a 25-35 percent reduction in MY 1984-85. In subsequent years, however, the theft rate climbed back to the pre-1984 level.

BMW passenger cars received a system in 1985 consisting of a key-activated alarm and an optional code pad requiring the driver to key in a sequence of numbers. Later, the 7-series cars also received a device to disable the starter mechanism. Theft rates showed a decrease of about 10-20 percent in MY 1985 and 1986; by 1987-90, theft rates had largely returned to pre-1985 levels

BMW passenger cars received a system in 1985 consisting of a key-activated alarm and an optional code pad requiring the driver to key in a sequence of numbers. Later, the 7-series cars also received a device to disable the starter mechanism. Theft rates showed a decrease of about 10-20 percent in MY 1985 and 1986; by 1987-90, theft rates had largely returned to pre-1985 levels.

Toyota Supra and Cressida received antitheft devices in 1985 with functions similar to the BMW systems. Later (by 1987?) they received devices to disable the starter mechanism. Theft rates for these relatively low-sales vehicles do not follow clear trends; nevertheless, there appears to be a substantial reduction in the Supra (55 percent) and a smaller reduction in the Cressida (10-20 percent). In subsequent years, theft rates stayed at the lower levels.

Starting in 1987, certain make-models were exempted from the parts marking requirement if they carried antitheft devices that, as a minimum, included a mechanism to disable the starter and trigger an audio or visual alarm after unauthorized entry. Whereas this device may have been installed in a model year earlier than the effective date of the exemption (e.g., in the domestic cars analyzed in the preceding section), it was, at the latest, installed during the exemption year.

Chrysler Conquest and Mitsubishi Starion, two make-models of similar design, received exemptions from parts marking in 1987. Their theft rates increased steadily throughout the model years that they were produced (1983-89). Unless the antitheft devices were already present in the first year that

these models were produced, it may be concluded that they had no obvious beneficial effect on the theft rate.

Audi 5000S/100/200, Mitsubishi Galant and Isuzu Impulse received exemptions in 1987, and Saab 9000 received one in 1989. Each of these make-models shows steady, gradual reductions in the theft rate during the model years after the exemption. Typically, the cumulative reduction in the theft rate was about 50 percent over a 5-year period. Since there was no concentrated drop in a specific year, it is difficult to judge if the long-term reductions were due to the antitheft devices or to other factors that may have made these models less enticing to thieves.

Acura Legend received an exemption in 1991. Theft rates, however, steadily increased throughout the years this model was produced (1986-94). Unless the antitheft devices were already present in 1986, it may be concluded that they had no obvious beneficial effect on the theft rate.

Volkswagen Jetta gained an exemption in 1994. At that time, or shortly earlier, they received an antitheft system rather similar to the one in the domestic cars analyzed in the preceding section. There was a dramatic 63 percent reduction in the theft rate from MY 1992 to 1994.

While the above discussion of theft rates does not pretend to have generated specific estimates of the effectiveness of antitheft devices in any of the individual make-models, it is safe to draw one conclusion from the great variation of the results from model to model: the mere presence of an "antitheft device" does not guarantee an immediate, spectacular reduction of the theft rate. It all depends on the type of antitheft device.

FIGURE A-16

PASSENGER CAR THEFT RATES BY MODEL YEAR, 1988-95

make-models that got **antitheft devices in 1992** vs. control group; 0-3 year old cars

"2" = LeSabre, 88, Bonneville: antitheft devices in 1992-95
"0" = Taurus, Sable: no parts marking or antitheft devices in 1988-95

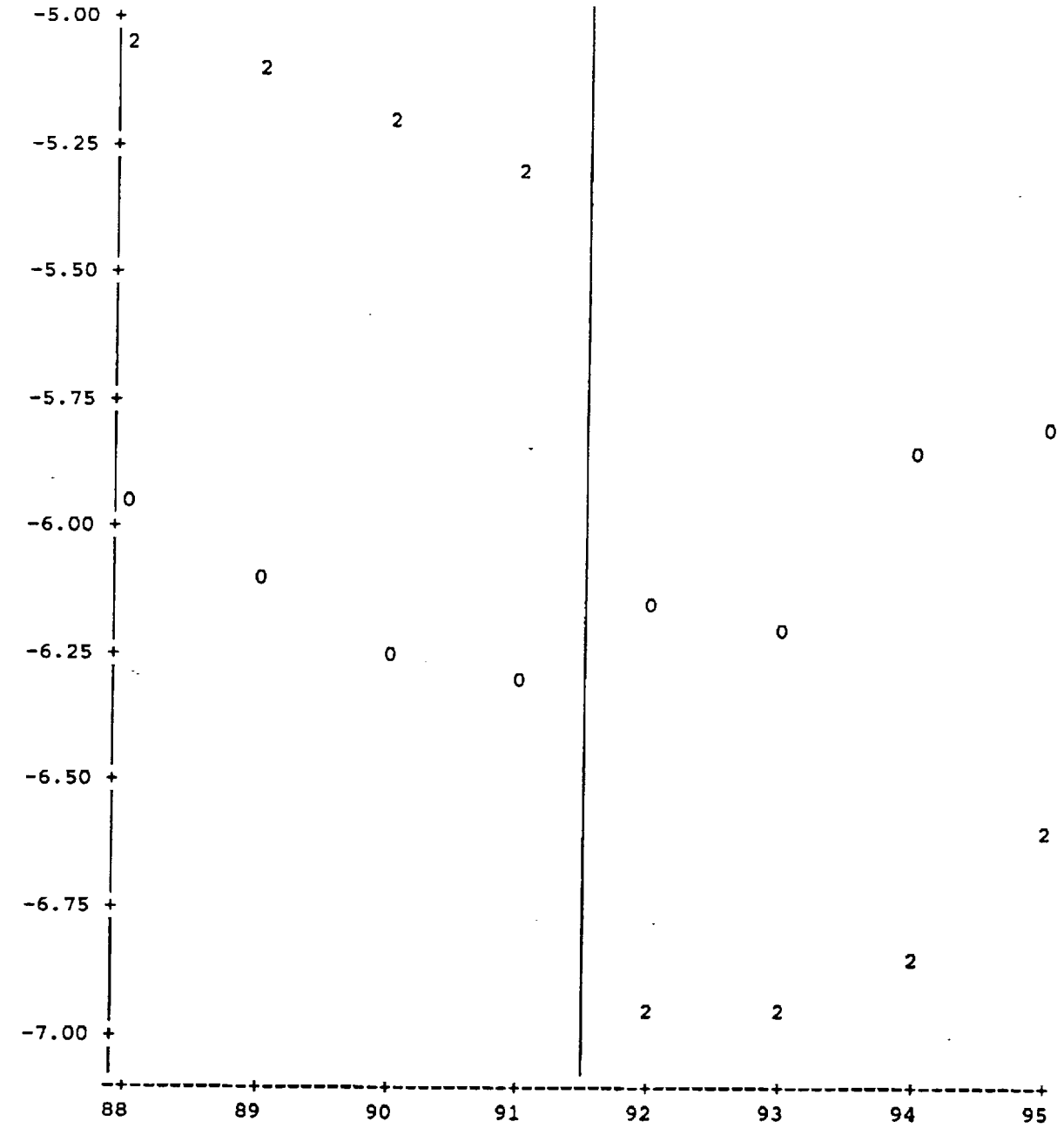


FIGURE A-17: THEFT RATE DIFFERENTIAL, MY 1988-95
LeSABRE + 88 + BONNEVILLE (ANTITHEFT DEVICES IN 1992-95) VERSUS
TAURUS + SABLE (NO PARTS MARKING OR ANTITHEFT DEVICES IN 1988-95)
0-3 year old cars

log of the theft rate for models that got antitheft devices
minus log of the theft rate for models that didn't

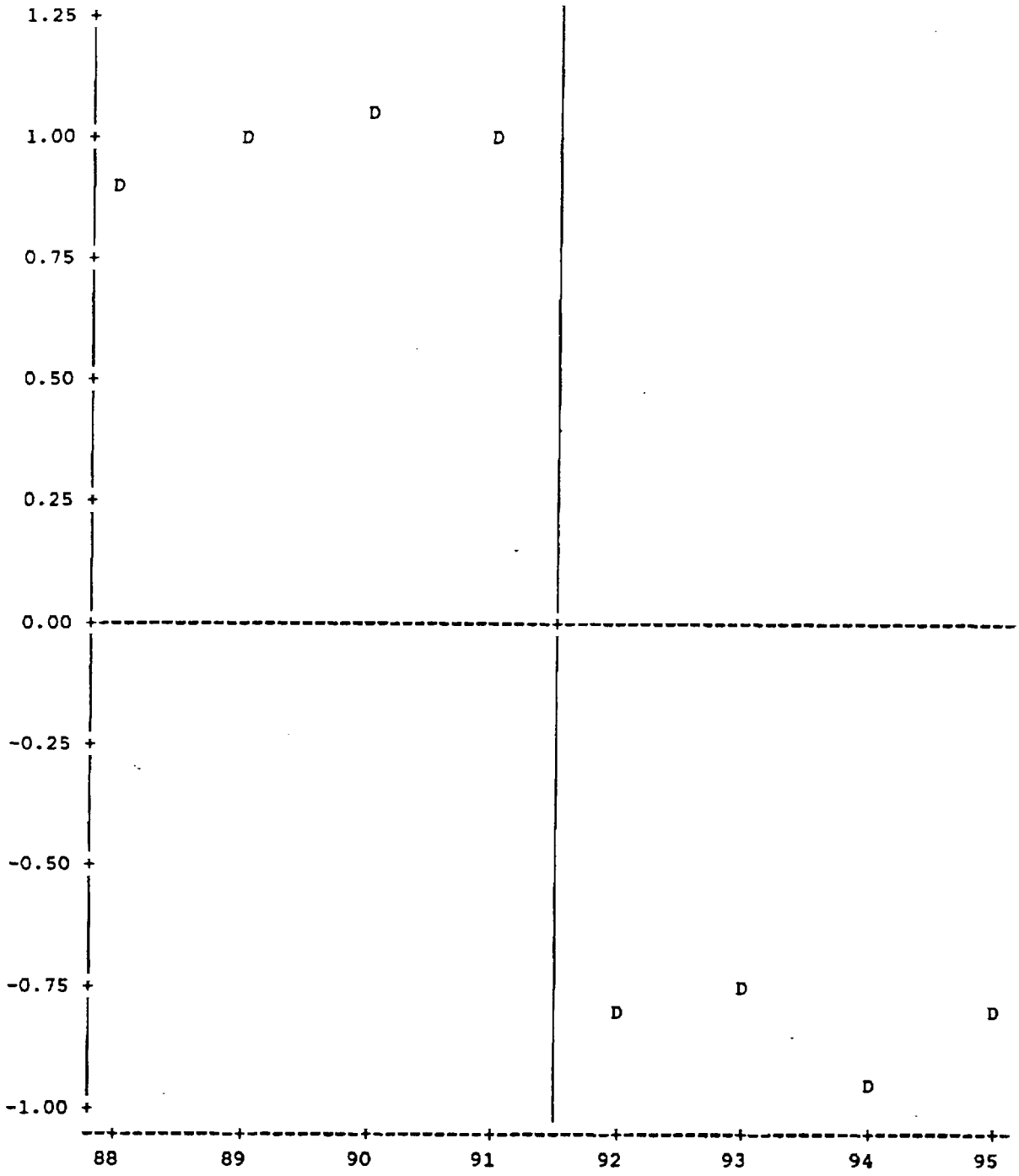


FIGURE A-18: RECOVERY RATE DIFFERENTIAL, MY 1988-95
LeSABRE + 88 + BONNEVILLE (ANTITHEFT DEVICES IN 1992-95) VERSUS
TAURUS + SABLE (NO PARTS MARKING OR ANTITHEFT DEVICES IN 1988-95)

0-3 year old cars

log of the recovery rate for models that got antitheft devices
minus log of the recovery rate for models that didn't

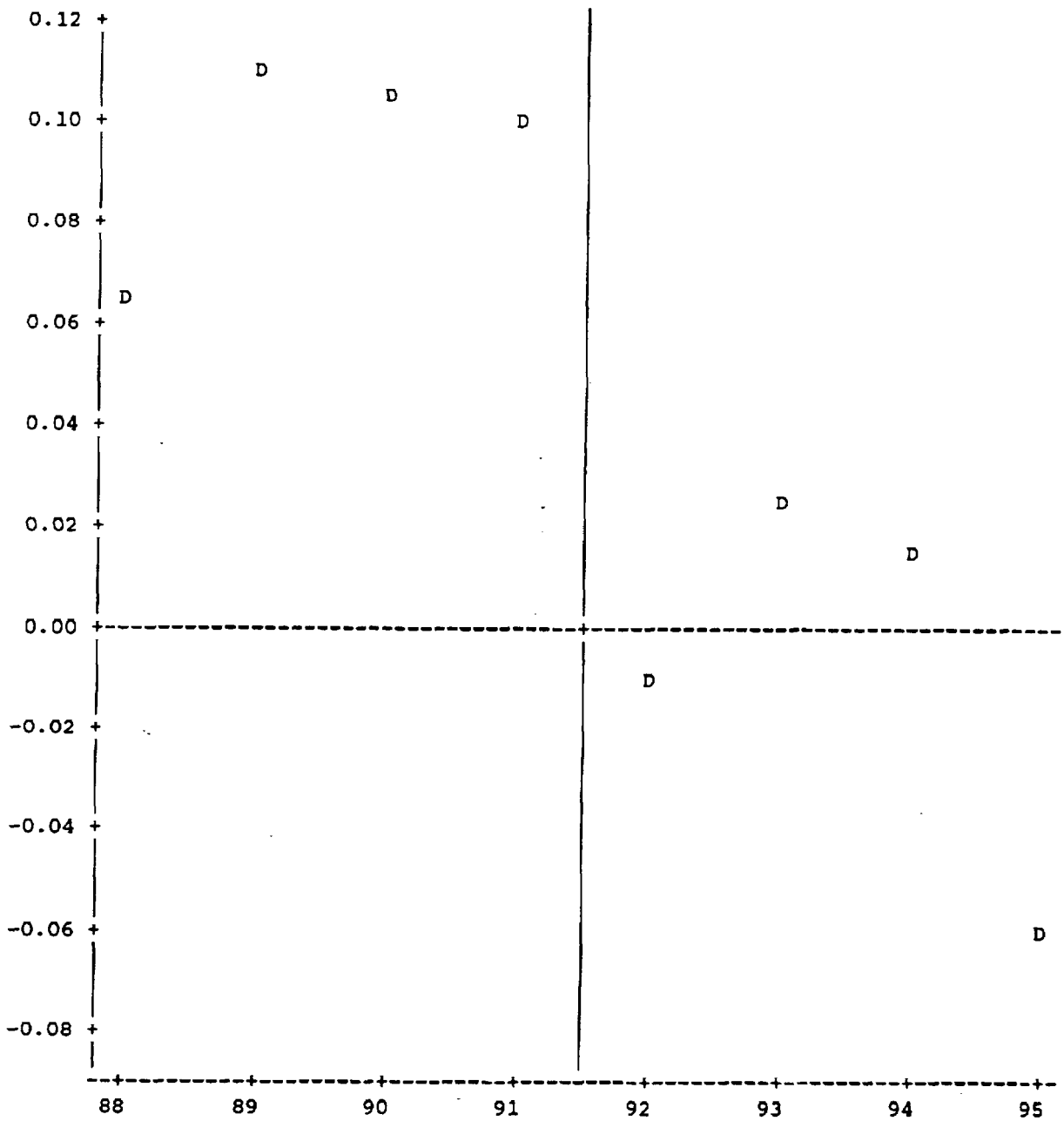
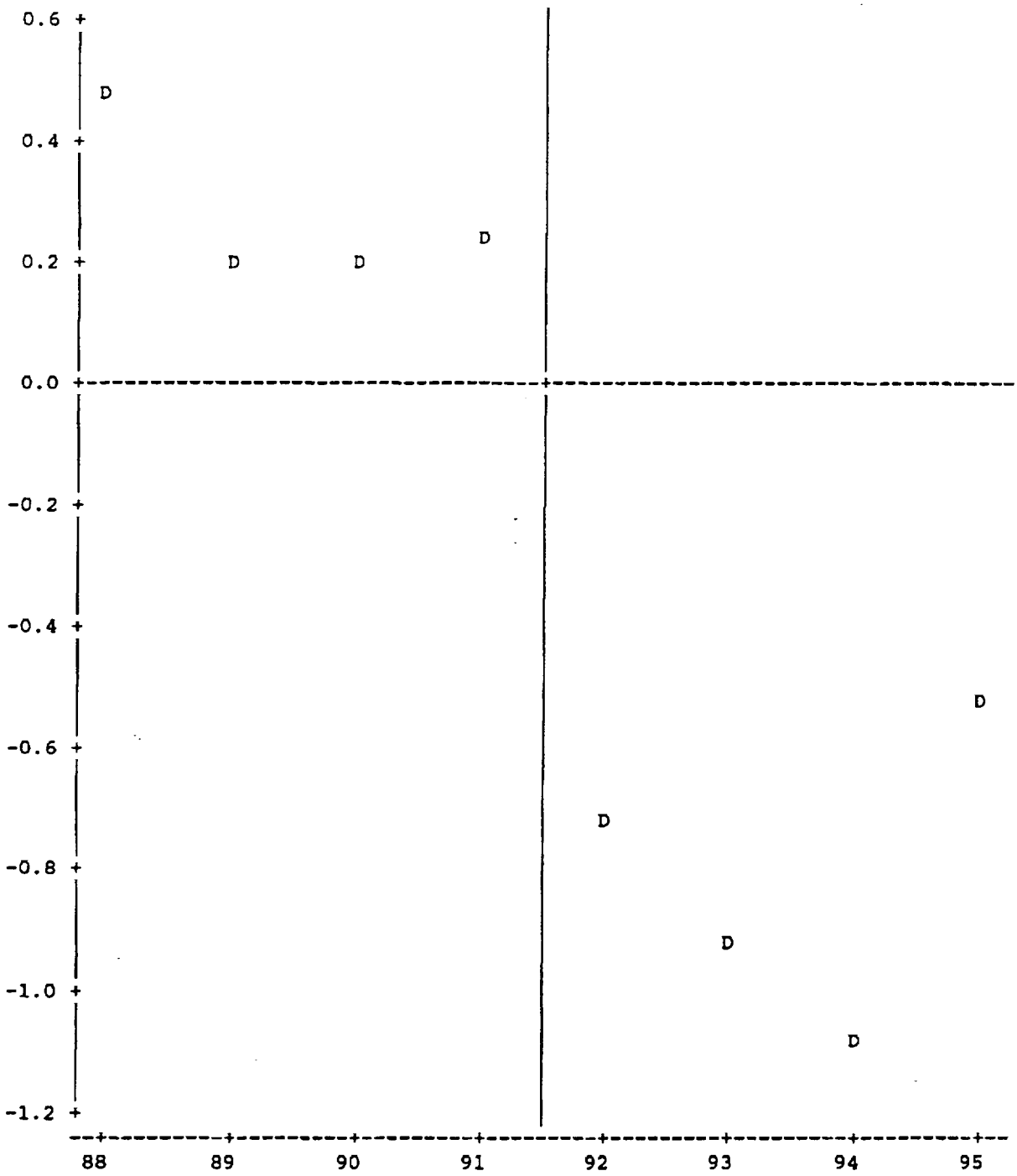


FIGURE A-19: UNRECOVERED-THEFT RATE DIFFERENTIAL, MY 1988-95
LeSABRE + 88 + BONNEVILLE (ANTITHEFT DEVICES IN 1992-95) VERSUS
TAURUS + SABLE (NO PARTS MARKING OR ANTITHEFT DEVICES IN 1988-95)

0-3 year old cars

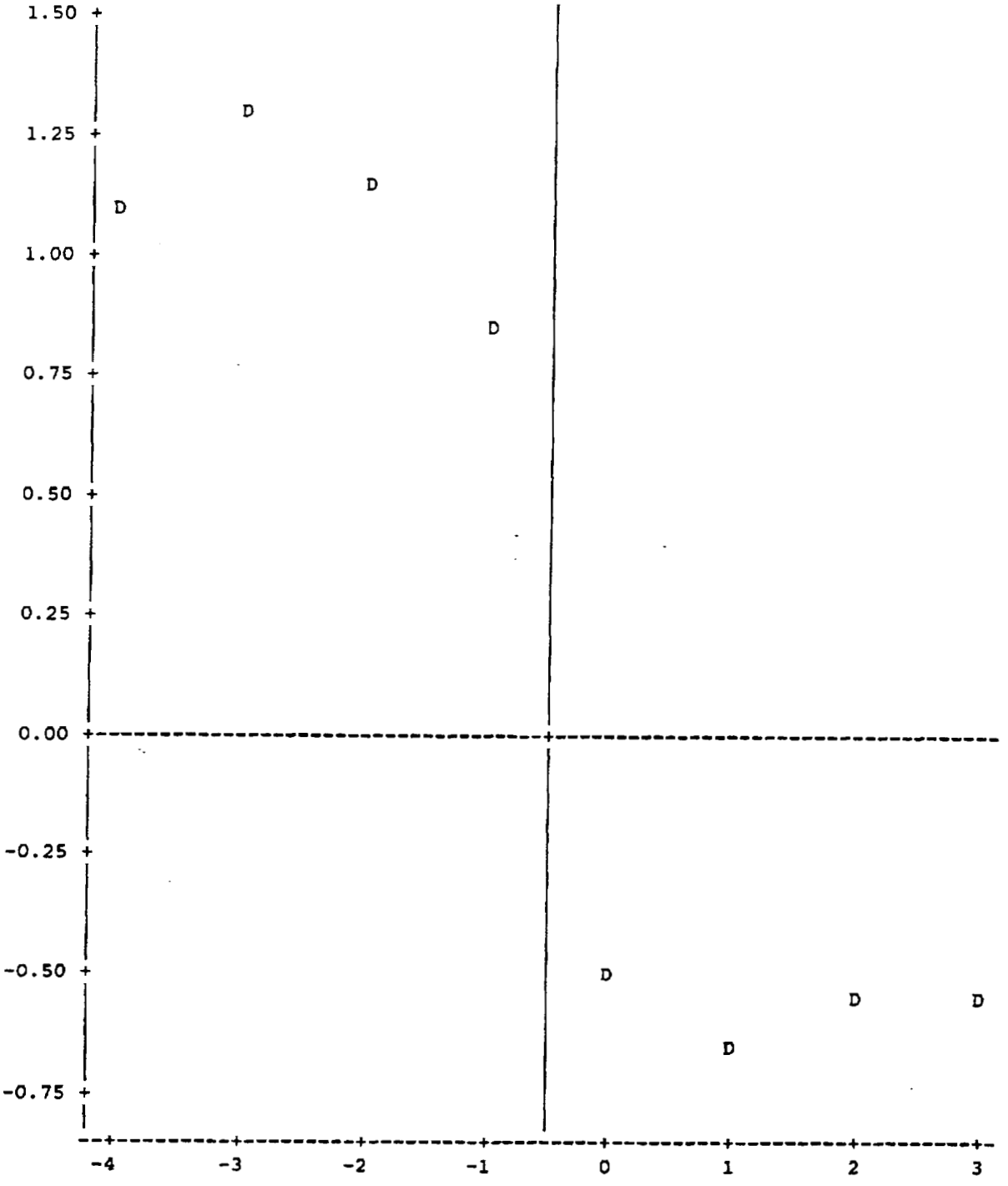
log of the unrecovered-theft rate for models that got antitheft devices
minus log of the unrecovered-theft rate for models that didn't



MODEL YEAR

FIGURE A-20: THEFT RATE DIFFERENTIAL
GENERAL MOTORS CARS THAT GOT ANTITHEFT DEVICES, STARTING IN 1989-92
VERSUS CONTROL GROUP CARS THAT DID NOT GET ANTITHEFT DEVICES IN 1985-95
0-3 year old cars

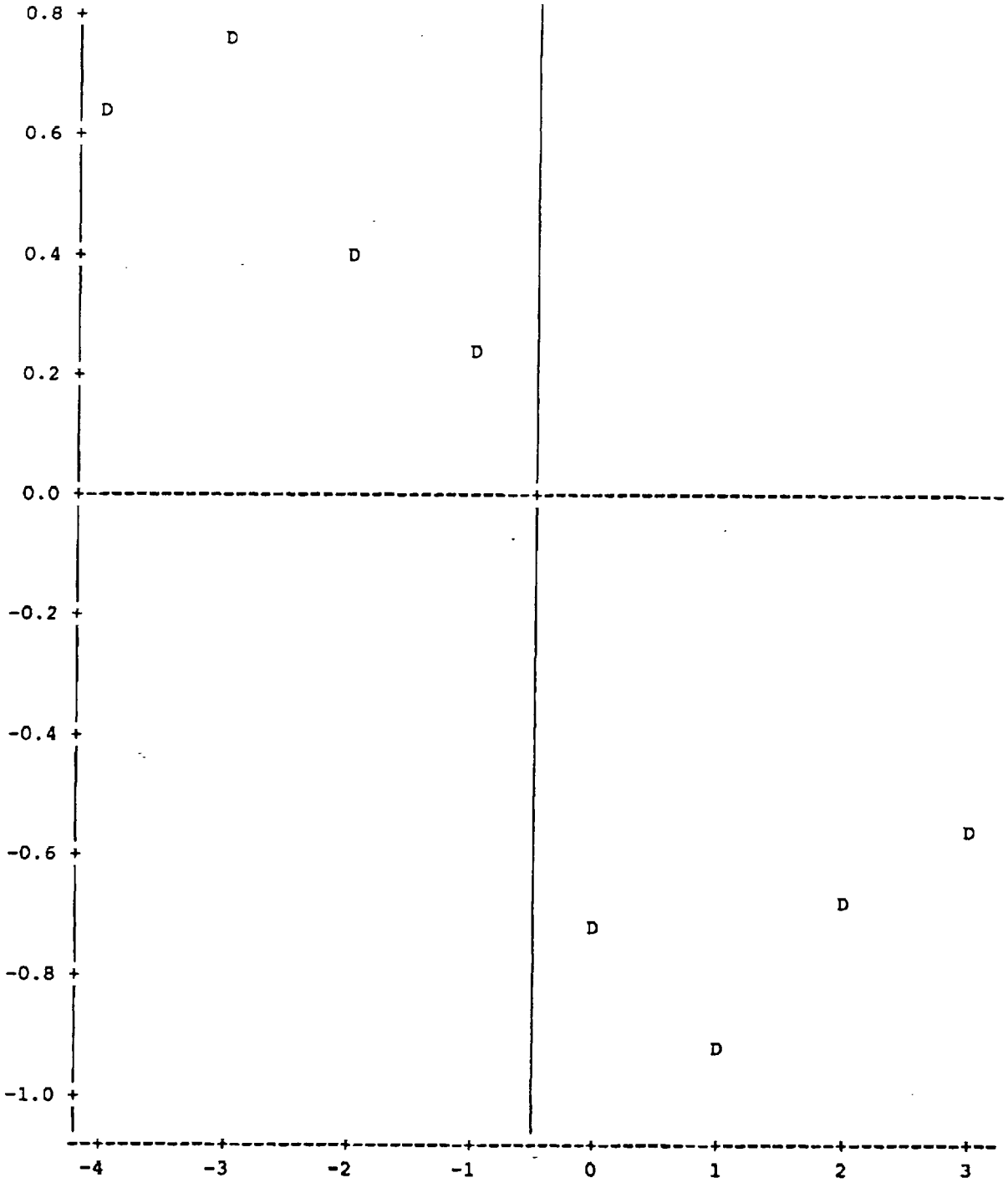
log of the theft rate for models that got antitheft devices
minus log of the theft rate for models that didn't



MY AFTER THE ANTITHEFT DEVICES WERE INSTALLED IN GM CARS

FIGURE A-21: UNRECOVERED-THEFT RATE DIFFERENTIAL
GENERAL MOTORS CARS THAT GOT ANTITHEFT DEVICES, STARTING IN 1989-92
VERSUS CONTROL GROUP CARS THAT DID NOT GET ANTITHEFT DEVICES IN 1985-95
0-3 year old cars

log of the unrecovered-theft rate for models that got antitheft devices
minus log of the unrecovered-theft rate for models that didn't



MY AFTER THE ANTITHEFT DEVICES WERE INSTALLED IN GM CARS

"In-part" Recovery Rates Just Before and After Model Year 1987

The file assembled by the Highway Loss Data Institute (HLDI) from data supplied by the National Insurance Crime Bureau (NICB) not only specifies what percentage of stolen cars was recovered, but also what percentage of the recoveries were "in part," "in whole," or "intact." A vehicle is recovered "in part" if "major" parts are missing (viz., marked parts, or parts that would have been marked if the car had parts marking). It is recovered "in whole" if only "minor" parts, such as the radio, are missing, or if the car was damaged but nothing was missing. The recovery is "intact" if the car was essentially undamaged and no parts were missing. The type of recovery perhaps, but not necessarily says something about the motive for the theft. In general, cars that have been stolen by nonprofessional thieves for joyriding or other temporary transportation would more often be recovered intact or in whole, whereas cars worked over by a chop shop, if they are recovered at all, would more likely be recovered in part. If parts marking or antitheft devices have a deterrent effect on chop shop operations, and professional thieves generally - while having little deterrent effect on joyriders and other nonprofessional thieves - a reduction in the frequency of "in part" recoveries might be expected, relative to "in whole" and "intact" recoveries. Throughout the analyses that follow, a **reduction** of "in part" recoveries is a change in the "right" direction.

At first glance, the HLDI-NICB data are strongly consistent with that hypothesis. These data are complete from CY 1986 to 1991, and in each of those years include at cars that are 0-2 years old (and in a few years, some older cars as well). In the analyses that follow, the data have been limited to 0-2 year old cars of model years 1984-89. They are further limited to the specific make-models of passenger cars that were included in most of the NCIC/Polk data analyses: make-models produced throughout 1984-89 that (1) got parts marking in 1987 and did not get antitheft devices in 1984-89, (2) got exemptions from parts marking in 1987 because antitheft devices were installed in 1987 or earlier, (3) got parts marking in 1987 and antitheft devices in 1989, or (4) did not get parts marking or antitheft devices throughout 1984-89. For these cars, the overall recovery rate [recoveries/thefts] in the HLDI-NICB data shows a gradual downward trend throughout 1984-89, no different from the preceding NCIC/Polk data analyses. However the percentage of in-part recoveries [i.e., in-part recoveries/total recoveries] shows a much stronger downward trend, especially for the make-models that got parts marking or antitheft exemptions in 1987:

Percent Recovered "In Part"

MY	Parts Marking in 1987	Antitheft Exemption in 1987	P. M. in 87 A-T. D. in 89	Neither
84	19.1	10.0	23.9	13.2
85	19.5	11.1	22.8	12.8
86	15.7	11.2	21.4	11.7
87	11.6	7.1	18.2	9.1
88	10.2	8.2	17.3	9.3
89	10.3	8.1	14.3	10.7

At first glance, these results appear to have all the desired characteristics: the reduction is stronger from MY 1986 to 1987, when parts marking was first installed, than in other years. The downward trend is substantially stronger for cars that got parts marking (from 19 to 10 percent) than for cars that did not get parts marking or antitheft devices (13 to 10 percent). It looks like a focused deterrent effect for cars that got parts marking in 1987, with spillover to other cars and subsequent years.

Unfortunately, the HLDI-NICB data are subject to the same bias as all data on parts marking (regression-to-the-mean effect due to the nonrandom selection of the make-models that got parts marking) plus possible additional biases of their own. The first indication of possible bias emerges when the rates are presented by **calendar year** rather than by model year. Since the data base is limited to cars 0-2 years old, there is a strong relationship between MY and CY (e.g., data on the MY 1989 cars are derived only from CY 1989-91, while data on the MY 1984 cars are from CY 1986). The apparent MY effects in the preceding table might, to some extent, be CY effects:

Calendar Year	Percent Recovered In Part - All Cars
86	18.6
87	17.2
88	11.3
89	10.0
90	10.1
91	12.9

It is immediately apparent that the strong drop of "in part" recoveries takes place in CY 1988, and not in CY 1987 as might be expected if the effect were really due to parts marking and antitheft devices. It might be argued that the effect was delayed for a year because it took time for an awareness of parts marking to "sink in" with professional thieves. Frankly, a more plausible explanation (although this analyst does not have detailed knowledge of the HLDI-NICB data base to prove the point) is that the 1988-91 data are not directly comparable with the 1986-87 data; that the definition of an "in part" recovery may have explicitly or implicitly changed. After all, the analysis of NCIC/Polk theft data (Figure A-9) showed an immediate effect for parts marking in 1987, not a delayed effect.

The strength of the calendar year effect, relative to the model year effect, is evident if the rates are computed by CY and MY:

CY	MY	Percent Recovered in Part - All Cars
86	84	18.1
	85	18.5
	86	19.7
87	85	17.2
	86	18.4
	87	15.4
88	86	10.9
	87	11.4
	88	12.1
89	87	9.9
	88	10.5
	89	9.3
90	88	10.6
	89	9.4
91	89	12.9

In any CY, the in-part recovery rate is essentially the same for every MY. Specifically, in CY 1988, the in-part recovery rate is low even for MY 1986. The only hint of a model year effect is that in CY 1987, the in-part recovery rate is somewhat lower for MY 1987 than for MY 1985 or 1986 (although not nearly as low as the rates for any MY in CY 1988). This modest MY effect for MY 1987 in CY 1987 raises a hope that parts marking has played a role. However, a further classification of the rates by CY, MY and make-model group (parts marking in 87 vs. no parts marking; models that got antitheft devices at any time in 1984-89 are excluded from the table) dashes this hope while creating others:

		Percent Recovered In Part	
		Parts Marking	No Parts
CY	MY	in 1987	Marking
86	84	19.1	13.2
	85	19.6	13.2
	86	19.7	14.7
87	85	19.5	12.5
	86	19.9	13.9
	87	17.3	10.8
88	86	9.7	8.6
	87	11.1	8.6
	88	11.2	10.1
89	87	9.2	8.7
	88	10.1	8.7
	89	9.9	8.7
90	88	10.0	9.4
	89	9.8	9.2
91	89	11.3	13.6

In both cases where a direct comparison of MY 1986 and 1987 are possible - i.e., in CY 1987 and 1988, the year-to-year reduction is actually greater for the cars that did not get marked parts. In CY 1987, the rate for models without marked parts dropped from 13.9 to 10.8, but for the cars that got marked parts, it only dropped from 19.9 to 17.3. In CY 1988, the rate for cars that did not get

marked parts remained unchanged at 8.6, but it increased from 9.7 to 11.1 for the cars that got marked parts. Thus, there does not appear to be a focused effect for marked parts in the expected direction in 1987.

On the other hand, the preceding table clearly shows a longer-term reduction in the differential between the models that got marked parts and those that didn't.

In CY 1986, the rate for the models that would subsequently get marked parts was consistently 50% higher than for those that would not. That differential got smaller every year, especially in 1988, and by 1991 the cars with unmarked parts had a higher "in part" recovery rate. This long-term trend is perhaps not related to any possible changes in the HLDI-NICB definitions, since such changes ought to affect both make-model groups in the same direction. On the other hand, the long-term trend could well be a reflection of the same regression-to-the-mean pattern that was seen in all the analyses of theft rates - or, optimistically, it could be a true indication that cars with marked parts were becoming less and less attractive to chop shops and professional thieves.

Additional insight on the relative strength of the various factors can be obtained by performing regression analyses on the "in part" recovery rates. One regression that fit the observed rates exceptionally well had the dependent variable DELRIP, the differential in the logs of the recovery rates, which was defined for each of the 15 allowed combinations of CY and MY.

$$DELRIP(CY,MY) = \log(r_{1p}/(r_1-r_{1p})) - \log(r_{0p}/(r_0-r_{0p}))$$

where

r_{1p} = in-part recoveries, make-models that got parts marking
r_1 = all recoveries, make-models that got parts marking
r_{0p} = in-part recoveries, make-models that did not get parts marking
r_0 = all recoveries, make-models that did not get parts marking

The independent variables included certain interactions of

MARKED = 1 if MY is 87-89, 0 if MY is 84-86
CYGE88 = 1 if CY is 88-91, 0 if CY is 86-87
MY_87 = MY-87
CY_88 = CY-88

and the regression weight factor was r_i+r_o. With 15 data points, the regression had an R^2 of .921 and an F value of 29.02 ($p < .0001$). The regression coefficients were

Parameter	Estimate	T for H0: Parameter=0	Pr > |T|	Std Error of Estimate
INTERCEPT	0.4544791569	13.42	0.0001	0.03386093
MARKED	0.1050890833	1.71	0.1185	0.06154310
CYGE88	-.3144454287	-5.25	0.0004	0.05994914
MARKED*MY_87	0.0145630024	0.34	0.7421	0.04304260
CYGE88*CY_88	-.1286890860	-3.57	0.0051	0.03599973

In other words, the excess of the "in part" recovery rate for the models that got parts marking in 1987, relative to the models that did not, was originally quite large (INTERCEPT). It shrank significantly in CY 1988 (CYGE88) and continued to shrink significantly in each subsequent calendar year (CYGE88*CY_88). The direct effect of parts marking was nonsignificant when it was originally introduced in MY 1987 (MARKED), and it changed little in subsequent model years (MARKED*MY_87). By CY 1991, cars with marked parts had slightly lower "in part" recovery rates than cars without marked parts.

Whereas this particular regression fit the actual recovery rates exceedingly well and suggests that the CY effect was strong while the direct parts-marking effect was nonsignificant, it should be noted that other sets of independent variables also fit the data well and some of them showed a stronger parts-marking effect. Thus, it would not be appropriate to draw firm conclusions about the effects of parts marking, especially under the current circumstances, where possible biases inherent in the data limit the utility of any regression model.

Conclusions

The analyses of theft and recovery data were unable to generate reliable quantitative estimates of theft reductions or recovery enhancements attributable to parts marking. They do not even allow an unequivocal conclusion that parts marking has been effective. That was almost inevitable given the highly nonrandom method whereby make-models were selected for parts marking or antitheft devices, resulting in biases in the theft rate trends that would tend to obscure any effects that could reasonably be expected for parts marking.

Nevertheless, the analysis results are not totally inconclusive or neutral. They produced five concrete indications of benefits for parts marking, each one hedged with caveats that made it fall short of a firm conclusion:

(1) Above all, there was a conspicuous shift in theft rates in 1987, the first year of parts marking. Thefts shifted from the 1987 make-models with marked parts to their 1986 predecessors without marked parts, or to other 1987 make-models without marked parts. However, this effect had vanished by the time the cars were two years old; also, the effect was more a shift in what cars were stolen than a reduction of overall theft rates.

(2) Recovery rates for 1987 cars with parts marking were consistently higher than for the same make-models in 1986, the last year before parts marking. Unlike the effect on theft rates, this benefit persisted as the model year 1987 cars got older. On the other hand, the 1986-87 favorable effect was followed by an unexplained but consistent deterioration, starting in model year 1988, in the recovery rates of cars with parts marking relative to other make-models without the markings.

(3) The rate of unrecovered thefts per million registration years is a surrogate for the incidence of "professional" thefts. In calendar year 1987, the unrecovered-theft rate of model year 1987 cars with parts marking was 26 percent lower than expected. As the model year 1987 cars got older, this benefit diminished, but not to zero; it persisted at about 6 percent. That is the closest thing to a specific "effectiveness estimate" for parts marking. However, that observed benefit is within the "noise range" of possible biases in the data and it cannot be attributed to parts marking without considerable doubt.

(4) In the very long term (cars of the early 90's vs. cars of the late 70's), parts marking and antitheft devices appear to be associated with a reduction in theft rates. In other words, the make-models that were selected in 1983-84 to get parts marking or antitheft devices in 1987 historically had higher theft rates than other make-models, even as far back as model year 1976. But from model year 1991 onwards, their theft rates were slightly lower than other make models. Unfortunately, little can be said about the crucial intervening years, the 1980's. The nonrandom selection of high-theft lines for parts marking caused a "regression to the mean" situation that obscured all other trends. It is only possible to compare cars of the late 70's and early 90's, before and after the "regression to the mean" phenomenon. So many other factors could be affecting theft trends over a 20-year period that it would be foolhardy to attribute the observed long-term reduction to parts marking. Additionally, the unrecovered-theft rates did not experience a similar long-term improvement.

(5) There was a strong reduction of "in part" vehicle recoveries, and a corresponding increase of "in whole" and "intact" recoveries in all make-models after parts marking was introduced in 1987, and especially in the make-models that got the markings. The reduction of "in part" vehicle recoveries could be an indication that chop shop operations and some other types of professional car theft are declining. However, a closer examination of the data showed that the reduction did not coincide with the introduction of parts marking, but mostly came 1-3 years later, possibly as a result of factors unrelated to parts marking, such as biases in the data.

By contrast, for at least one type of factory-installed antitheft device, the available data provide unequivocal evidence of effectiveness. One domestic manufacturer installed a system as standard equipment in various car lines during 1989-94. This system was associated with an immediate - and persistent - 70 percent reduction in the theft rate and a 58 percent reduction in the unrecovered-theft rate. In other words, the devices appear to be quite effective in reducing all kinds of thefts, both the "professional" and the "casual" type.

Substantially fewer data were available on the antitheft devices installed by other manufacturers. Specific estimates were not obtained, but the available data suggest considerable variation in effectiveness. With some of the devices, little change was seen in theft rates; with others, there were reductions comparable to those for the domestic manufacturer.

On the whole, the analysis results seem to suggest that the approach of the Anti Car Theft Acts, which view both parts-marking and factory-installed antitheft devices as effective deterrents to automobile theft, has had benefits. Only a small effect, such as a 2 percent reduction of unrecovered thefts is necessary for parts marking to be cost-effective. An effect of that magnitude would have been obscured in the data available for the analyses. However, the positive results described above hint that the effect of parts marking might have been greater than 2 percent, at least at certain times. Antitheft devices, at least those installed in certain vehicles, are many times more effective, but also many times higher in cost. Parts marking and antitheft devices are components of a larger program that has, on the whole, succeeded. As shown in the main report, overall theft rates have leveled off and even began to decline after 1989-90. When the team wins, each of the individual players gets some credit.

Two other issues tie in with the analysis results. It has been mentioned repeatedly that the nonrandom selection of high-theft make-models for parts marking impeded the evaluation, leaving the effectiveness of parts marking in doubt. Hopefully, future introductions of similar countermeasures will be done on a random basis or according to an experimental design that makes it easier to measure effectiveness.

Some of the analyses hinted that parts marking had a short-term effect that may have waned in subsequent years. That's at best a tentative finding, given the uncertainties in all the analyses. However, it corresponds to the view that many professional thieves, before too long, learned how to obliterate the markings. If so, that might encourage consideration of more permanent systems of parts marking, given the high potential for benefits relative to cost.

APPENDIX B

ANALYSIS OF REGRESSION TO THE MEAN IN THEFT RATES OF CARS WITH MARKED AND UNMARKED PARTS

Prepared by Robert F. Cook and Maria T. Woolverton, KRA Corporation under contract with the NHTSA. Some of the specific models with antitheft devices we incorrectly classified which is corrected in Appendix A and the main report. This appendix is retained to illustrate the effect of regression to the mean

The intent behind the introduction of vehicle parts marking (and installation of anti-theft devices) was to reduce vehicle theft rates. While theft rates of marked and anti-theft equipped vehicles have fallen, rates for unmarked vehicles have risen. This analysis examines whether this convergence in theft rates is due to a statistical phenomenon known as regression to the mean.

The phenomenon of regression to the mean can occur as the result of selection of a subgroup from a larger population using a selection criteria that is somehow related to the variable of interest. Comparison is then made of the average value on some measure for the subgroup to the average result from the same subgroup in a later period. The average of the subgroup can change *systematically* for purely statistical reasons that have nothing to do with the phenomenon that is presumably under study. The extent to which this occurs depends upon the correlation of the values of the measure from one period of time to the next in the overall population.

A good example of this phenomenon is pre- and post-test scores in a class. Suppose students are given a test of statistical ability at the outset of a class in statistics. Let us assume that the average grade on the pre-test is 75 percent. Let us further assume, as is often the case, that the class has no effect on the statistical ability of the average student. Therefore, we would expect that the average post-test score would also be 75 percent. This result is not terribly satisfying, so we want to see if the class helped those who were "statistically challenged." We select those students who scored poorly on the pre-test and find that their average score was 60 percent. In the post-test, the same sample of students obtains an average score of 70 percent. Should we conclude that the class "helped" them? The answer is probably not. Since the average score on the two tests remained the same for all students, if this group of students scored better on the post-test, then some other group must have scored worse than they did on the pre-test. In fact, this has to be the case. Had we selected a similarly sized group of those who did well on the pre-test (let us assume an average score of 90 percent), we would have found that, on average, they did worse on the post-test (likely average score 80 percent). Is it possible that the class made them worse off? The answer is that unless the

scores on the two tests are perfectly correlated, we would expect some regression towards the mean of the second test in the average scores of both subgroups. We should not conclude that the class "helped" the low scoring group or "hurt" the high scoring group.

The same phenomenon seems to occur in the case of vehicle parts marking (or the alternate, anti-theft device installation). Cars that were originally required to have marked parts were selected from among those with above-median theft rates in 1983 and 1984. They were first marked in 1987. Conversely, one could say that the cars that remain unmarked were "selected" from among those with lower-than-median theft rates in 1983 and 1984. This latter group is similar to the group in the example above that had below average pre-test scores, and the marked cars could be considered similar to the high scoring subgroup.

Exhibit 1 shows the time trend of theft rates for new unmarked, marked and anti-theft cars over the period from 1984 to 1991. The theft rate of vehicles in 1984 would be equivalent to the pre-test in our example. The theft rate in any other year could be considered a post-test measurement. Given the method by which cars were selected to be marked, we would expect some regression to the mean in the apparent theft rates.

Exhibit 1
Theft Rates for Current Year Cars

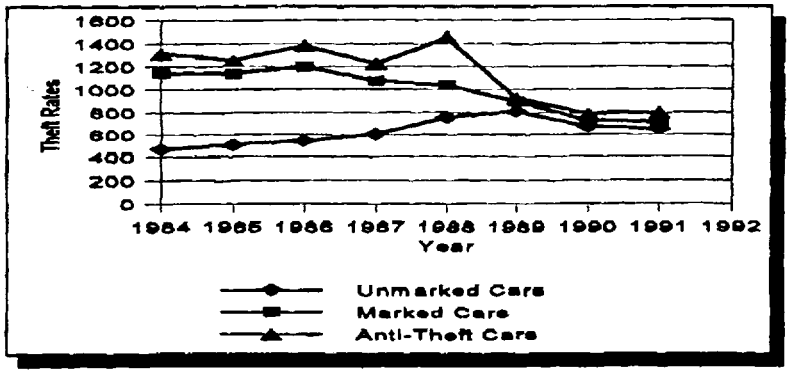


Exhibit 1 appears to show regression to the mean for the marked, anti-theft, and unmarked vehicles. The theft rates of current year marked and anti-theft cars decline and the theft rate of unmarked cars increases until

the groups are roughly equivalent in 1991. This is to be expected if they are selected subgroups of the general population of cars and the theft rates in any two different time periods are not perfectly correlated. The issue then is whether regression to the mean can account for all of the apparent change in vehicle theft rates or whether the requirement of parts marking or installation of anti-theft devices has had an overall effect on vehicle theft.

Estimation of Regression to the Mean Effects

As alluded to in the above example, the extent of regression to the mean of observed results for a given selected subgroup (e.g., marked cars) from the population depends upon the correlation between the two measures (e.g., theft rates) in time in the overall population. If the scores on the pre and post measures are uncorrelated, then any difference in the average score of a particular subgroup is purely random. If this is the case, then the most likely value on a second measure is the average for the population, that is, complete regression to the mean of the population. If, on the other hand, scores on the two tests are perfectly correlated (r = 1.00), the most likely value for the average theft rate of a subgroup of cars is the same as in the pre-test (e.g., the average theft rate of the subgroup in 1984). In this case there would be no regression to the mean (average) of the population.

It follows from the above that, if the correlation of the two scores (theft rates) for the entire population is known, as well as the average scores for the population on each measure and the average score of the subgroup for the first measure, we can calculate the expected regression to the mean. In the current example, if the average theft rates for all passenger vehicles at both points in time and the correlation between the two theft rates are known, as well as the theft rate of the subgroups, it is possible to estimate what the theft rate of the subgroup of vehicles would be at a second point in time if it were due only to the regression to the mean phenomenon.

The formula for the percentage regression to the mean is as follows:

$$P_{rm} = 100(1 - r)$$

Where:

P_{rm} = Percentage regression to the mean

r = Correlation between two measures in time

If we then know the average score for the entire population as well as the average score for the particular subgroup in each time period, we can estimate the expected effect of regression. The expected value of the average theft rate of the subgroup at the time of the second measurement is estimated as follows:

$$E\overline{X_2}=\overline{X_1}-(U_2-\overline{X_1})(1-r)$$

Where:

$E\overline{X_2}$ = Expected value of the mean of subgroup on the second measure

U_2 = Mean of the measure at a second point in time

$\overline{X_1}$ = Mean of the subgroup on the first measure

If we know the expected effect of the likely regression to the mean for marked vehicles, then any residual reduction in the observed theft rate in the later period may be the result of vehicle marking. We can also perform the same calculation for unmarked vehicles to observe the likely change in the theft rate of these vehicles. The difference between the actual and expected value of the mean of the subgroup in the second time period is as follows:

$$E(DIF)=\overline{X_2}-E\overline{X_2}$$

Or, from above:

$$E(DIF)=\overline{X_2}-(\overline{X_1}-(U_2-\overline{X_1})(1-r))$$

Where:

E(DIF)= Expected value of the difference in theft rate in time period two

$\overline{X_2}$ = Mean value for the subgroup in time period two

The point should also be made that, in the current analysis, we are concerned with the entire population of passenger vehicles of which a subset are marked, unmarked, etc. The theft rate for each subset is calculated by dividing the number of thefts by the total number of each type of vehicle registered (in this case for the current year model). Thus, the results are not subject to the usual measures of sample significance.

From the above example, the population (the class) has to remain the same from the time of the first measurement to the second. This has not been the case for passenger vehicles. The first passenger vehicle models to have required parts marking were identified in 1984 and first marked in 1987. Subsequently, more models have been designated for parts marking and some manufacturers have elected to install anti-theft devices in lieu of parts marking. For the current analysis, we selected 66 models that were in production continuously from 1984 through 1991. Of these, 43 were marked or had anti-theft devices installed as of 1987 or 1988. The marked and anti-theft equipped vehicles were combined into one group, referred to as the "marked" group for the remainder of this paper.[3] We started the series in 1984 since that was the year the first models were selected. Continuing the series through 1991 provided the longest series with the largest cohort of models. Also, successor

[3] Of the 43 models included in the marked group, 30 were marked continuously during the period 1987/1988 to 1991. An additional 7 marked models added anti-theft devices in 1990 or 1991. Six models were equipped with anti-theft devices continuously during the period 1987/1988 to 1991.

legislation passed in 1992 designated additional models for marking based on 1990 and 1991 theft rates.

Effects of Regression to the Mean on Average Theft Rates

Table 1 shows the average theft rates for each type of passenger car (and predecessors) in each year from 1984 to 1991 and is the data upon which the graph in Exhibit 1 is based. The theft rate for marked cars declines over the period from 1984 to 1991 from 1.15 percent to .713 percent. For anti-theft equipped vehicles, the theft rate declines from 1.31 percent to .797 percent. At the same time, the average theft rate for unmarked passenger vehicles increases from .470 percent in 1984 to a high of .809 in 1989, and then decreases somewhat in 1990 and 1991 to a rate of .650 in 1991.

Table 2 shows the number of registered vehicles, thefts, and theft rates for marked, unmarked, and total passenger cars in each year from 1984 through 1991 for the 66 models included in this analysis. For the marked group (including anti-theft vehicles), the theft rate in 1984 is 1.292 percent and declines to .760 in 1991. The theft rate for unmarked vehicles rises from .444 in 1984 to a high of .742 percent in 1989 and then declines to .630 in 1991. The weighted average rate for all vehicles included in the analysis declines over the period from .866 to .689.

Table 3 shows the correlation matrix for the overall theft rate by year. The year-to-year correlations of the theft rate are quite high. However, as might be expected, correlations decline as the time interval between measurements lengthens. Of importance to the current analysis, the coefficient of variation (Rsq) for 1984 and 1991 vehicle theft rates is .3242. The correlation coefficient (R) is then .5694. We would therefore expect the rate for marked vehicles to regress (1-.5694), or approximately 43 percent of the way from the 1984 rate toward the all-vehicle average rate in 1991, if regression to the mean were the only factor affecting the change in theft rates. Similarly, we would expect the theft rate for unmarked vehicles to rise 43 percent of the distance from the rate in 1984 toward the rate for all vehicles in 1991.

These calculations are shown in Table 4a. The actual rates in 1984 and 1991 are taken from Table 2. The expected rate in 1991 is the 1984 rate plus or minus 43 percent of the difference between the

1984 rate for each class of vehicle and the all-vehicle rate in 1991 of .689. In Table 4a, we calculated the average theft rates of marked and unmarked passenger cars as well as the weighted total of the two. We then calculated the expected theft rates for each type of vehicle and a weighted total in 1991. The difference column in the table shows the difference between the actual and expected theft rates for each category in 1991.

Over the period 1984 through 1991, the actual theft rate for marked vehicles declines from 1.292 percent to .760 percent. The rate calculated on the basis of the expected degree of regression to the mean declines to 1.032 percent. Thus, over the entire period, regression effects account for 55 percent of the observed decline in the theft rate for marked vehicles. Over the same period, the theft rate for unmarked vehicles rises from .444 percent to .630 percent. However, the theft rate expected in 1991 based on regression to the mean rises only to .550 percent. Thus, regression effects account for only 57 percent of the observed rise in the theft rate of unmarked vehicles. The combined theft rate declines from .866 to .689 over the period. However, the expected average rate, which is the weighted average expected rate for marked and unmarked vehicles, is .768. Thus, overall, regression to the mean accounts for 55 percent of the decline in the theft rate for all vehicles in the population.

If regression effects account for only slightly more than half of the decline in the theft rate of the marked group, then some other factors (such as parts marking) must be involved in reducing thefts of those vehicles. Similarly, if only a little more than half the rise in the theft rate of unmarked vehicles over the period can be accounted for by regression effects, then something else is contributing to the rise. One possible explanation for the remainder of the increase is that while parts marking may contribute to a reduction in theft for marked vehicles, it may also raise the theft rates of unmarked vehicles by altering the preferences of car thieves.[4] However, the overall theft rate declines by more than can be accounted for by regression effects. This suggests an effect of parts marking on the overall theft rate.

We performed similar calculations for the 1984 to 1989 interval (Table 4b). The overall correlation of theft rates for this period (from Table 3) is higher, (.3815). Based on this correlation, we would

[4] A suggested title for this paper was "Do Car Thieves Read the *Federal Register*." In fact, we found an article on how to remove marking from vehicle parts on the Internet.

expect rates to regress approximately 38% of the way toward the mean of the all-vehicle theft rate for 1989. Similar to results from the 1991 analysis, for marked vehicles the actual theft rate is below the expected rate and for unmarked vehicles the actual rate is above the expected rate. Thus, the decline in the theft rate for marked vehicles is greater than can be explained by regression effects. The same is true for the overall theft rate. Similarly, the theft rate for unmarked vehicles rises by more than can be explained by regression effects. Of the overall change in theft rates, regression effects account for 60 percent of the observed change for marked vehicles and 48 percent of the increase in the theft rate of unmarked vehicles over the period. Again, the rest of the change in theft rates must be attributable to other causes, including parts marking.

As shown in Table 4c, we also performed the same calculations for the 1984 through 1986 period. This period was after vehicles had been identified for marking, but before actual marking of parts began. Over this shorter period, the coefficient of variation of the overall theft rate is considerably higher (.6295) and so the expected regression effect on theft rates is smaller (21 percent). During this period, the theft rate for marked vehicles actually declined less than would be expected as the result of regression to the mean. Therefore, something else was raising the theft rate in this period. Similarly, the actual theft rate for unmarked vehicles rises less than would be expected as the result of regression effects (as does the total rate). Therefore, some other cause must be found for the lower than expected theft rate for unmarked vehicles.

The fact that regression to the mean of the theft rates more than accounts for the actual change in theft rates in the period before parts marking took effect and for only 55 to 60 percent of the decline in the theft rate for marked vehicles after parts marking suggests that the "other cause" for the unexpected decline in theft rates of these vehicles may be at least partially the result of parts marking. At the same time, similar, but opposite effects for unmarked cars from the period prior to marking to after parts marking took effect also suggests that parts marking had a *positive* effect on the theft rates of unmarked vehicles. That is, parts marking had the effect of changing the preferences of car thieves toward unmarked vehicles.

A final possibility, not accounted for by this analysis, is a change in taste among those responsible for vehicle theft. This period also saw the beginning of the rise in the population of minivans and sport

utility vehicles. It is possible that the decline in passenger vehicle theft is the result of a shift to increased theft of these other vehicles. Minivans and sport utility vehicles are included in the larger category of light trucks. However, the theft rate for this category of vehicle parallels that of passenger vehicles over the period from 1984 to 1991.[5]

Table 1

Average Theft Rates
Current Year Passenger Vehicles by Type
1984 - 1991
(In Percent)

Vehicle Type	Year							
	1984	1985	1986	1987	1988	1989	1990	1991
Unmarked	.470	.509	.546	.606	.756	.809	.673	.650
Marked	1.15	1.14	1.20	1.08	1.04	.899	.731	.713
Anti-Theft	1.31	1.25	1.38	1.23	1.46	.926	.787	.797

[5] The theft rate for light trucks rises from .0387 percent in 1984 to .0557 percent in 1989 and then declines to .0535 percent in 1991.

Table 2

Thefts, Registrations and Theft Rates
For Current Year Marked and Unmarked Passenger Vehicles
1984 - 1991

Year	Marked Vehicles			Unmarked Vehicles			Total		
	Thefts	Registered	Theft Rate	Thefts	Registered	Theft Rate	Thefts	Registered	Theft Rate
1984	28467	2204121	1.292	9889	2224822	.444	38356	4428943	.866
1985	26365	2116771	1.246	11304	2272655	.497	37669	4389426	.858
1986	26191	2073878	1.263	12358	2399687	.515	38549	4473565	.862
1987	21306	1909210	1.116	13468	2311153	.583	34774	4220363	.824
1988	20633	1920712	1.074	13915	1966599	.708	34548	3887311	.889
1989	16876	1857274	.909	15049	2027029	.742	31925	3884303	.822
1990	13453	1704209	.789	12026	1776966	.677	25479	3481175	.732
1991	11898	1566172	.760	11941	1894401	.630	23839	3460573	.689

Table 3

Theft Rate Correlation Matrix
1984 - 1991

	84 Rate	85 Rate	86 Rate	87 Rate	88 Rate	89 Rate	90 Rate	91 Rate
84 Rate	1.0000							
85 Rate	.8795	1.0000						
86 Rate	.6295	.8016	1.0000					
87 Rate	.5387	.7096	.9179	1.0000				
88 Rate	.4709	.5637	.7679	.7856	1.0000			
89 Rate	.3815	.3441	.3110	.4162	.5308	1.0000		
90 Rate	.2600	.1916	.2403	.3599	.5360	.8069	1.0000	
91 Rate	.3242	.1891	.1570	.1654	.4181	.6990	.7981	1.0000

Table 4

Calculation of Expected Regression
Marked and Unmarked Passenger Vehicles

4a. 1984-1991

Vehicle Type	1984 Rate	1991 Rate (Actual)	1991 Rate (Expected	Difference
Marked	1.292	.760	1.032	-.272
Unmarked	.444	.630	.550	+.080
Total	.866	.689	.768 (weighted)	-.079

4b. 1984-1991

Vehicle Type	1984 Rate	1991 Rate (Actual)	1991 Rate (Expected	Difference
Marked	1.292	.909	1.112	-.203
Unmarked	.444	.742	.586	+.156
Total	.866	.822	.826 (weighted)	-.004

4c. 1984-1991

Vehicle Type	1984 Rate	1991 Rate (Actual)	1991 Rate (Expected	Difference
Marked	1.292	1.263	1.203	+.060
Unmarked	.444	.515	.530	-.015
Total	.866	.862	.835 (weighted)	+.027

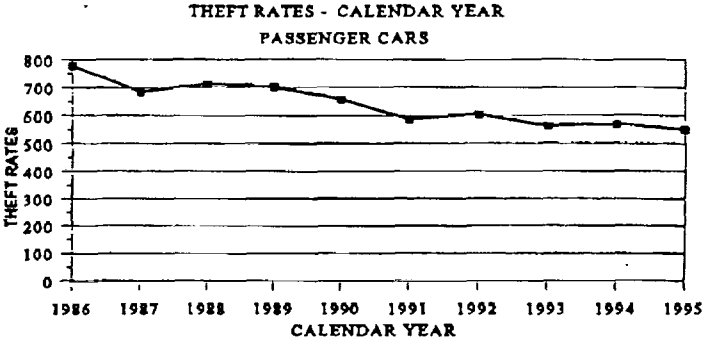
APPENDIX C

VEHICLE AGE AND PASSENGER CAR THEFT AND RECOVERY EXPERIENCE

The Effect of Vehicle Age on Thefts And Recoveries

It is not clear whether vehicle age is a factor in a thief's motive for stealing a vehicle. Data are not available to determine the motive for thefts or for the theft of a vehicle as the vehicle ages. However, an overview of the theft and age of vehicle relationship can be explored by looking at the theft rates as the vehicle ages.

FIGURE C-1



Vehicle Age and Theft Rates of Passenger Cars

Theft rates[6] by vehicle age for model years 1986 - 1995 were calculated to determine if a relationship exists. When looking at vehicle age over that period of time it appears that theft rates actually increase as vehicles age. Ignoring the effects of both calendar year and model year would lead the analyst to that assumption. The analyses was careful to control for the calendar year and model year effects on the relationship between vehicle age and theft rates.

The calendar year of theft is the year in which any model year passenger car was stolen. For example, if a car produced in 1990 was stolen in 1994 then it would be recorded as stolen in calendar year 1994, just like a car produced in 1986 and stolen in 1994 would be considered stolen in calendar year 1994. Figure C-1 shows the theft rates for the calendar years 1986-1995. Theft rates for vehicles stolen have steadily decreased over that 10 year period of time. Obviously passenger cars have been stolen less often over the past decade.

[6]Theft rates are the number of stolen vehicles in a given year (from the FBI files) divided by the number of registered vehicles (from the R.L. Polk files of total vehicles registered by all states in the U.S. in the same given year).

The model year of the theft is the year in which the vehicle was produced. For example, a vehicle produced in the period from September 1995 through August 1996 would be considered a model year 1996 vehicle. Unlike calendar year theft rates, model year theft rates have fluctuated over that same 10 year period. Figure shows that the late 80s' model year thefts rates were declining through the early 90s' models but began to increase again from 1993 to 1995 models. Combining model year and calendar year theft rates produces a confusing pattern.

To explore the relationship of theft and vehicles age, the theft rates for each vehicle age for each of the model years 1986-1994 were calculated. Also, theft rates combining model years 1986 - 1988 were calculated for vehicle ages 0 through 8 years. Theft rates for model years 1987 through 1992 either increased and then remained stable after the first year of age or remained relatively consistent throughout several years of age. The only model year that shows a rise in theft rates as the vehicle ages is model year 1986. The following graphs show the vehicle age theft rates for models 1987-1992.

FIGURE C-2

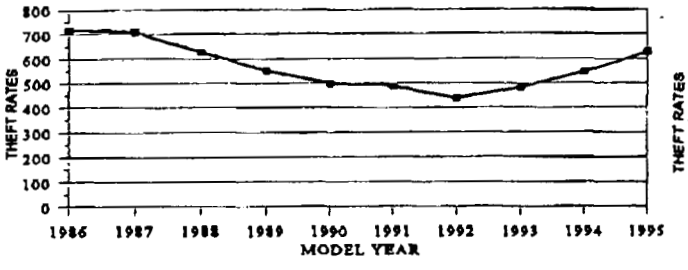


FIGURE C-3

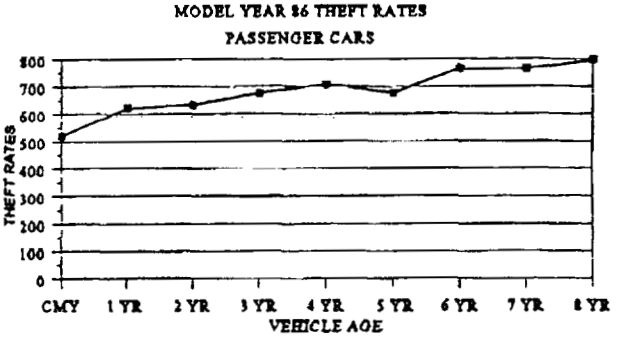


FIGURE C-4

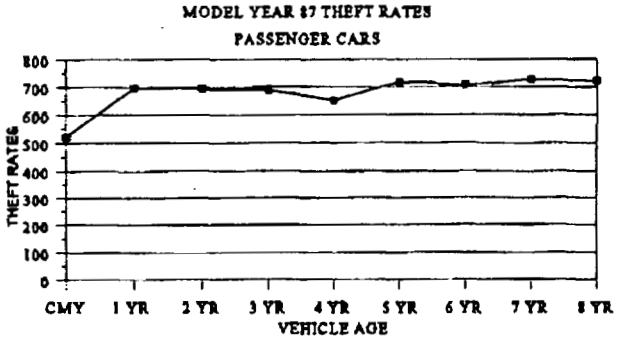


FIGURE C-5

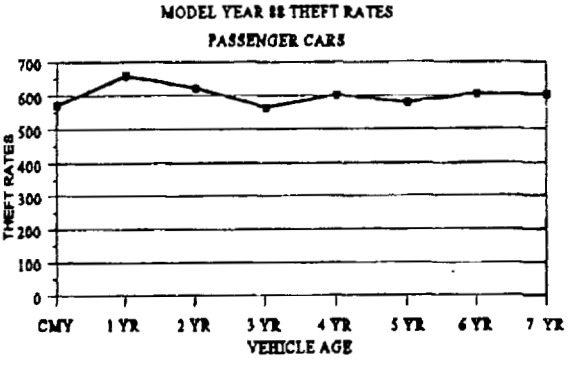


FIGURE C-6

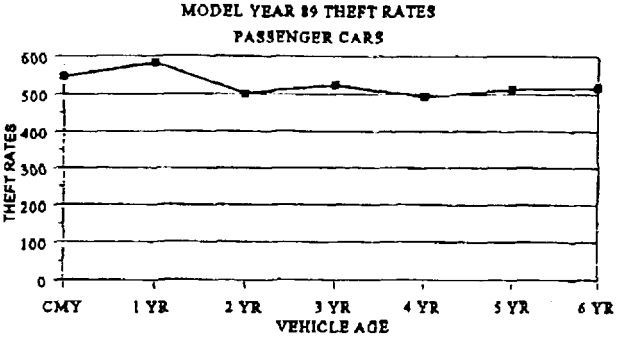


FIGURE C-7

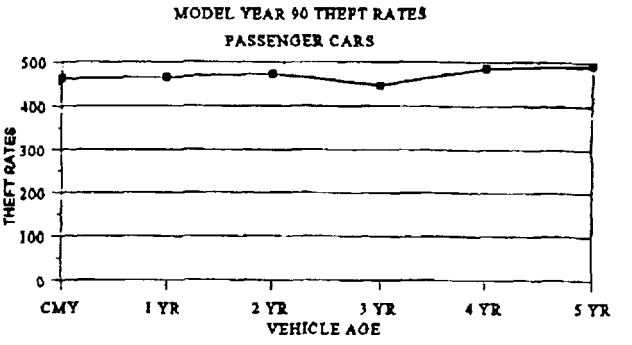


FIGURE C-8

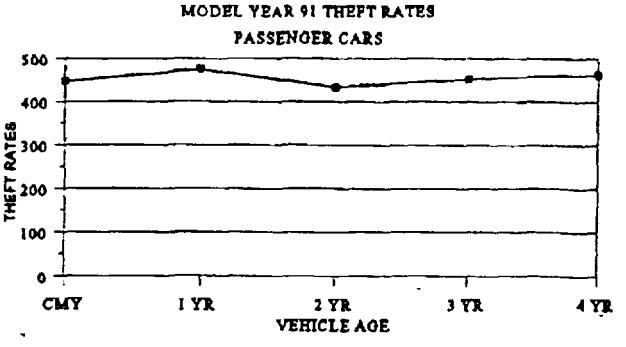


FIGURE C-9

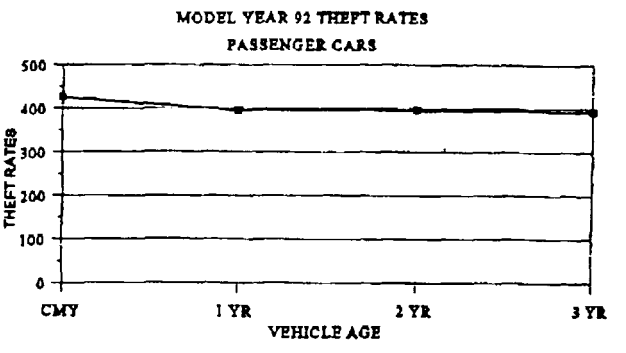


FIGURE C-10

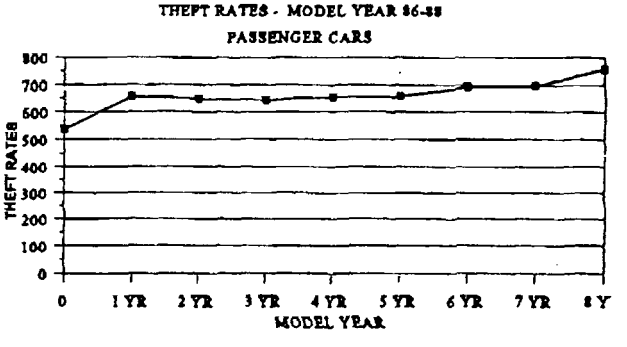
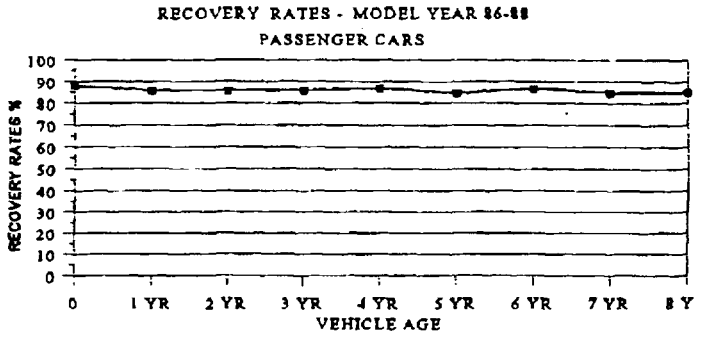


Figure C-10 shows the theft rates for the combined model years of 1986-1988. Theft rates for those models and vehicle ages fluctuated only slightly from ages one through seven. The linear regression for vehicle age and theft rates was not significant. The age of a vehicle does not provide any indication of its likelihood of theft. Vehicles that are seven years old are only slightly more vulnerable to theft then vehicles that are one year old.

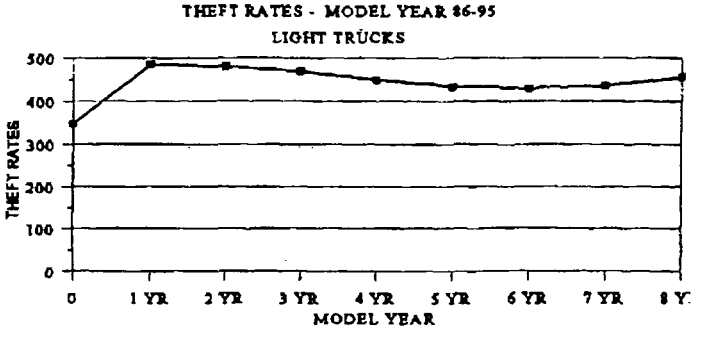
FIGURE C-11



Recovery Rates for Passenger Cars

Recovery rates for passenger cars as they age remain relatively stable. For the same model years 1986-1988 across the vehicle age recovery rates range from 85-88 percent and averaged 86 percent. Figure C-11 shows the recovery rates for model years 1986-1988 for vehicle ages 0 to eight years of age. Older models are not any less or more likely to be recovered than newer model passenger cars.

FIGURE C-12

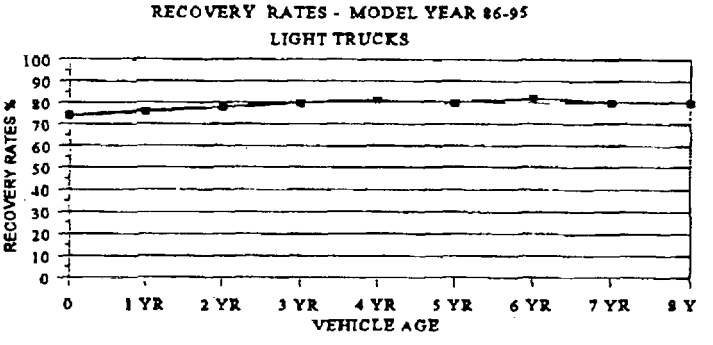


Vehicle Age and Theft and Recovery Rates for Light Trucks

Vehicle age theft rates for light trucks were also calculated. Figure C-12 shows the combined theft rates for model years 1986-1995 as they aged over a nine year period. After an initial increase in theft rates from 0 to 1 year of age, theft rates decreased six percent from vehicle age 2 through age 7. The average theft rate was 444 and ranged from a low of 348 to a high of 481. The linear regression for theft rates and vehicle age was not significant. Vehicle age does not provide any additional information about the likelihood of theft of light trucks as they age.

Recovery rates for light trucks fluctuated only slightly for the same period of time. Figure C-13 shows the recovery rates for light trucks from age 0 to 8 years of age. Recovery rates for light trucks ranged from 74 percent to 82 percent and averaged 79 percent. As with passenger cars, vehicles age tells us little about the likelihood of recovery of light trucks.

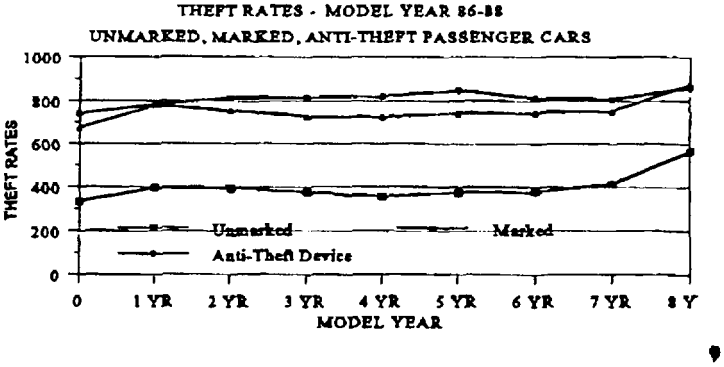
FIGURE C-13



Effect of Parts Marking on Vehicle Age and Theft and Recovery Rates

Theft rates were calculated to determine the effect of parts marking on passenger car theft rates as they age. Figure C-14 shows the theft rates for unmarked, marked, and anti-theft model year 1986-1988 passenger cars as they aged over a nine year period. Theft rates for both the unmarked and marked vehicles increased from 0 to 1 years of age. Theft rates for unmarked vehicles fluctuated slightly for first through seven years of age and then increased from age 7 to 8. Although at a higher rate, theft rates for marked cars mirrored the same trend as the unmarked cars.

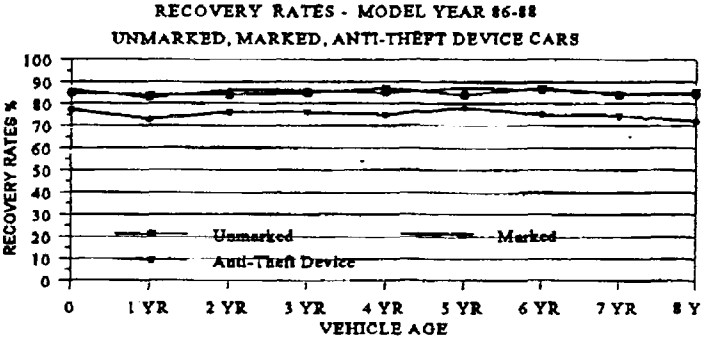
FIGURE C-14



Anti-theft device theft rates trends differed slightly from both marked and unmarked models. Anti-theft device theft rates increased slightly from vehicle age 1 to 5 then decreased from age 5 through 7, and increased from 7 to 8 like the other marked and unmarked models did. But for all models, theft rates remain relatively consistent from ages 2 through 7 years of age. None of the linear regressions for the unmarked, marked, or anti-theft passenger cars were significant. Again, age is not a good predictor of the likelihood of the theft of a passenger car.

Recovery rates for the unmarked, marked, and anti-theft 1986-1988 model year vehicles were relatively stable for vehicle ages 0 through 8 years. Unmarked vehicles are recovered slightly less often then either the marked or anti-theft vehicles as they age. Vehicle age is not a predictor of the possibility of recovery for either the unmarked, marked, or anti-theft cars.

FIGURE C-15



APPENDIX D

Summary and Discussion of Docket Comments

Docket No. 97-042, Notice 1

Summary of Docket Comments

Docket No. 97-042, Notice 1

97-042-N01-002 Jaguar Cars Inc.

A. Jaguar says the Preliminary Report incorrectly shows the Jaguar XJS as an unmarked vehicle for the 1984-1991 model years. According to Jaguar, all models (XJ6, XJ6 Vanden Plas, and Majestic Sovereign) - four-door, coupes, and convertibles have been marked since 1987, when parts marking began.

97-042-N01-003 Florida Motor Vehicle Theft Prevention Authority

A. The Authority fully supports the continuation of the parts-marking program. Parts marking assists in both investigation and prosecution of thieves. It is an effective deterrent to professional theft when combined with other proactive law enforcement efforts.

B. The Authority also supports more permanent marking methods since it would further discourage thefts, making selling stolen parts more difficult, costly and add more risk to the stolen parts market. As a minimum, current labeling should be continued.

C. The Authority thinks that parts marking should be expanded to all newly manufactured vehicles, both imports and domestic.

D. The Authority feels the insurance industry should be required to be more proactive, such as inspecting and verifying VIN numbers and parts before claims are paid or policies issued.

E. Theft of air bags is a significant problem with few tools to help auto theft investigators. The Authority supports any laws that would assist in the marking or control of air bags.

97-042-N01-004 American Automobile Manufacturers Association

A. Antitheft Devices

1. AAMA disagrees with the Preliminary Reports finding that antitheft devices are about as beneficial as parts marking in deterring auto theft.

2. There are errors in the date when certain vehicles had antitheft devices that influences the findings.

3. Antitheft devices have evolved and active systems have been replaced by passive systems requiring no action by the driver. Eventually passive systems were replaced by devices that disabled the engine. The more recent systems are more effective in reducing auto theft.

4. AAMA cites the Highway Loss Data Institute (HLDI) findings of the effectiveness of antitheft devices in reducing theft.

5. Vehicles with antitheft devices are less likely to be stolen for joyriding or transportation, thus their recovery rates are lower.

6. Thirteen states mandate discounts for antitheft devices. No states do so for vehicles with marked parts according to the AAMA. If antitheft devices did not reduce vehicle theft, insurers would provide data to persuade legislators to remove the mandates.

7. In 1997, about 34% of cars and light trucks made by AAMA members had standard antitheft devices. For 1998, this will increase to 54%.

B. Parts Marking

1. AAMA's theoretical discussion of parts marking as an auto theft deterrent indicates that the effect is limited and indirect.

2. AAMA says the Preliminary Report indicates that auto insurers appear to be putting minimal effort into tracking used parts.

C. The Report's Analysis of Parts marking

1. The short term analysis in the Preliminary Report includes models that were redesigned between 1984 and 1989.

2. AAMA disagrees with the hypothesis that a significant reduction in theft rate might be expected starting in 1987. AAMA is not surprised that there was little evidence to support the hypothesis.

3. AAMA says that if parts marking were an effective deterrent, theft and recovery trends should be greater as years pass because more thieves are apprehended and prosecuted. AAMA says the Preliminary Report showed the opposite -- the initial reduction in thefts and increase in recoveries vanished by the time cars were two years old.

4. AAMA says the report is inconsistent: it says that because of other factors, long term reductions cannot be attributed to parts marking; yet, the report identifies long term theft trends as one of four indications of the benefits of parts marking.

D. AAMA says that more permanent markings by stamping and marking glazing would dramatically increase costs.

E. Insurance companies, according to AAMA, should be required to check parts.

F. Before imposing additional requirements, AAMA contends, the National Motor Vehicle Title Information System and National Stolen Auto Part Information System should be evaluated.

97-042-N01-005 Advocates for Highway and Auto Safety

A. Because the Preliminary Report finds parts marking useful arresting and prosecuting auto thieves, is cost effective while imposing minimal cost to the auto industry, Advocates for Highway and Auto Safety support the continuation of parts marking which Advocates feels should be mandatory for all passenger vehicles.

B. The law enforcement agencies surveyed indicated that parts marking was key to detecting stolen parts and as evidence of trafficking in stolen parts which parallels other law enforcement programs to mark valuable personal property for detection and recovery of stolen items and as evidence in prosecuting thieves.

C. The finding in the report that parts marking plays an important role in detection and prosecution of professional car thieves and chop shop operators is supported by an article on car theft in New York City which shows thefts down from 1980 total because of effective prosecution of professional car theft rings and the closure of chop shops. Parts marking is part of a comprehensive approach to vehicle theft reduction that can be highly effective.

D. Advocates does not agree that antitheft devices are equivalent to parts marking in effectiveness. Granting exemptions may confound the determination of parts marking effectiveness. Because the report does not desegregate data on antitheft equipped vehicles which are not exempted, the benefits of parts marking alone are difficult to determine. Advocates recommends this be done. Because of the high cost of antitheft devices, their effectiveness must be examined, according to Advocates.

E. Several exempted car lines with antitheft devices continue to have very high theft rates.

Once granted, the car line exemption seems to continue despite these high theft rates. Advocates says, NHTSA appears not to show interest in reviewing exemptions in light of continued high theft rates and, as a result, revoking the exemption in favor of parts marking.

F. While Advocates endorses more permanent marking methods, it believes that NHTSA should explore marking all passenger vehicles. Advocates is convinced that this should include vehicles currently exempted: vehicles with antitheft devices should also have marked parts.

97-042-N01-006 Nissan North America, Inc.

A. Nissan feels the statement in the Preliminary Report that the cost of the labels and their assembly process has not changed may be in error. Nissan found costs of capitalization for plant and equipment, theft labels, and labor and related expenses to mark parts beginning in the 1997 model year for models produced Japan ranged from $14 to $20 per vehicle. Nissan vehicles produced in the U.S. have a somewhat lower cost. Approximately 70% of Nissan vehicles are manufactured in the U.S. The overall average cost for all their vehicles, according to Nissan, is substantially higher than the report's estimated $4.92. Nissan suggests that other manufacturers with low volume production lines subject to parts marking might have costs in excess of the $22 Congressional ceiling.

97-042-N01-007 Dade County Multi-Agency Auto Theft Task Force

A. The Task Force includes investigators from the FBI, U.S. Customs Service, IRS, Florida Highway Patrol, Dade County State Attorney's Office, Metro-Dade Police Department, Miami Police Department, Miami Beach Police Department, Hialeah Gardens Police Department, and the NICB. The Task Force found parts marking an invaluable law enforcement toll for combating auto theft.

B. In 1996, the Task Force recovered 867 stolen vehicles worth an estimated $17.5 million and made over 400 arrests. Part labels played an important role in a majority of these cases. A label on a major component was consistently being missed which allowed investigators to positively identify stolen vehicles which resulted in vehicles being recovered in chop shops and being exported. This resulted in federal indictments.

C. The parts marking program should be continued and expanded, according to the Task Force. All new vehicles should be marked. Since the top stolen vehicles vary by geographic region, marking all vehicles will better cover the U.S. If all vehicles were marked, officers in all jurisdictions would become aware of the parts marking program and its benefits. As more officers are educated, recoveries and arrests will increase and thefts will decline says the Task Force.

D. The Task Force says more parts should be marked and markings should be more permanent. Air bags, a safety item, should also be considered a major part to be marked. With permanent markings, companies could ensure that factory installed airbags were in vehicles -- if there was installation by an unauthorized mechanic, parts marking could prove tampering had taken place.

E. Factory Etched windows is also recommended by the Task Force. Often windows with original VIN etching are overlooked by thieves.

F. More permanent markings are better. While the Task Force has been able to prove that labels have been removed, investigators have been unable to identify the original VIN.

97-042-N01-008 Florida Auto Theft Intelligence Unit

A. The Florida unit is a non-profit organization with 468 active members including Federal State and Municipal law enforcement/auto theft investigators in Florida. Also membership includes representatives of insurance companies, rental vehicle companies, and auto theft deterrent manufacturers.

B. The Unit has a component part labeling course and has instructed over 3,000 officers nationwide.

C. The Unit says most law enforcement officers are either not aware or do not know how to identify vehicles using confidential or secondary numbers. Training for parts marking has not been readily available and is lacking in many jurisdictions. Auto theft investigation requires expertise particularly in vehicle identification. However, more agencies are becoming aware of parts marking.

D. Task forces and prevention authorities are being formed in Florida and nationwide to combat auto theft. Thousands of vehicles have been recovered in Florida as a direct result of parts marking. The Unit hopes that parts marking will cover more car lines and other vehicle classes to provide law enforcement with continued investigative tools.

E. Law Enforcement is becoming more educated in parts marking and finding altered and counterfeit labels. A more secure/permanent means to mark parts should be considered. Some current labels may be easily peeled while others self destruct and leave footprints. A system called invisographic type labels leave the full VIN as its footprint.

F. With airbag replacement costing from $500 to $1,500 or more, the Unit recommends that airbags be marked. VIN etching of windows has proven to be a valuable tool to law enforcement. In nine years, one investigator only found two cases where etched windows were replaced.

G. While antitheft devices prevent casual thefts, the professional still can defeat them. The Unit recommends that cars with antitheft devices also have marked parts rather than being granted an exemption from marking.

97-042-N01-009 Volkswagen of America, Inc.

A. Cost of Compliance

1. Volkswagen says for its Cabriolet Convertible and Corrado car lines, the cost of parts marking for labor and materials was $15.77 [in 1990 dollars], excluding the engine and transmission. From VW's viewpoint, the major disadvantage of parts marking is the investment in the printing equipment for the labels and the factory logistics for applying them. Volkswagen questions the Preliminary Report's average cost per vehicle in 1995 dollars of $4.92.

2. VW indicates that should additional vehicles be required to have marked parts, the investment cost in equipment for production lines and factories not producing parts marked vehicles would be significant.

3. Import manufacturers such as VW have increasing costs because of parts marking, which is only required in the United States. In contrast, Antitheft devices not only provide theft deterrence, but also customer value and security. The cost of such devices can be spread over larger production volumes because they could be considered as added value features in other countries.

4. VW marked parts on vehicles sold in Quebec and charged the dealer $35 (Canadian) per car for parts marking.

B. Antitheft Devices

1. The technology of Antitheft devices has improved including adding ignition system immobilizer such as GM's PASS-key, BMW's "coded drive-away protection" system, and, in Germany, VW and other German manufacturers have introduced an electronically coded key and transponder beginning in 1995. Theft rates in Germany for car lines with the new German key dropped by nine percent which was below the national theft rate.

2. Antitheft devices, except for thieves equipped with tow trucks and trailers, deter drive away theft of vehicles for the purpose of selling them to chop shops or for retagging for resale or for personal use. Parts marking relates primarily to chop shop activity with

some possible effect on retagging.

4. NHTSA has been approving parts marking exemptions based on installing factory standard Antitheft devices. In the approval process, NHTSA compares theft rate reduction for comparative car lines. The VW Canadian experience also shows significant theft rate reductions for Antitheft devices.

C. VW believes that parts marking should be phased-out or its current requirements reduced.

D. VW says the current statue or the regulations should not be changed to require parts marking on additional lines of passenger motor vehicles.

E. Volkswagen recommends that NHTSA request Congress to allow exempting at least two car lines per year.

F. VW believes that the parts marking requirements should be phased-out or limited to car lines with theft rates above the median as called for in the 1984 Act.

G. VW says there is no basis for expanding parts marking to more car lines. They question that the cost benefit of parts marking has been established and the regulation is contrary to international harmonization.

H. An evaluation study done in Canada for VW's with Antitheft devices and with both Antitheft devices and marked parts showed reduction in auto thefts. The study, VW says, found Antitheft devices showed a major reduction in auto theft but when marked parts were isolated, the reduction was not statistically significant.

I. Because the cost benefit of parts marking, according to VW, is inconclusive, VW does not believe that expanding the components to be marked is justified.

J. VW believes that insurance premium reductions and theft deterrent vehicle designs provide

positive consumer benefits. Therefore, VW will keep tract of these factors in its product planning.

K. VW is not currently making any vehicles for sale in the U.S. that have marked parts.

97-042-N01-010 State Farm Insurance Companies

A. The National Salvage Motor Vehicle Consumer Protection Act of 1997 should help reduce auto. theft by eliminating opportunities for VIN switching and requiring rebuilt salvage vehicles be inspected for stolen parts.

B. State Farm develops statistical reports for manufacturers to encourage development of effective factory-installed antitheft devices. This has resulted in several manufacturers upgrading their vehicles' antitheft capability. State Farm also evaluates factory-installed antitheft devices as well as doors, trunks and hoodlatch locking mechanisms.

C. State Farm feels parts marking would be more effective if it were extended to exempted vehicles which have ineffective antitheft devices and to the remaining [passenger] vehicles not yet addressed by NHTSA rulemaking.

D. State Farm has experienced a 61% drop in theft claim rates since parts marking began in 1987. While State Farm could not determine what portion of the decrease came from parts marking, they believe it has been a valuable law enforcement tool especially in states that have devoted resources to combat auto theft with programs and organizations. These programs together with antitheft devices, increased insurance investigation, increased consumer awareness have also had an impact on auto theft.

E. State Farm agrees that parts marking has caused professional thieves to steal unmarked vehicles, hence marking all vehicles would made a maximum effect on reducing auto theft.

F. State Farm says law enforcement reporting to the National Crime Information Center on

missing parts is incomplete. The Final Report on the National Stolen Passenger Motor Vehicle Information System supports this finding. This thwarts efforts of insurers and others who purchase used parts in verifying whether the parts are legitimate or stolen.

G. State Farm says air bags and windows should be marked. A pilot in Indiana on window etching saw claim frequencies drop over 37%. The manufacturing cost for etching, based on the Department of Transportation data [says State Farm] was less than $10 per vehicle. Thus marking air bags and etching, along with the cost of currently marked parts, would be less than the Congressional limit of $22 per vehicle.

H. Antitheft devices which prevent whole vehicle thefts do little to prevent partial thefts and damage. The best devices are passive and electronically lock out both fuel and starting. State Farm only offers discounts when states require it.

97-042-N01-011 International Association of Auto Theft Investigators

A. IAATI passed a resolution recommending that the parts marking requirement be made to apply to all passenger vehicles, sport utility vehicles, and light duty trucks and that exemptions for antitheft devices be eliminated as well as the 6,000 pound weight limit.

97-042-N01-012 Highway Loss Data Institute

A. HLDI agrees that the theft frequency, discussed in the Preliminary Report, has declined. However, HLDI says the average theft claim payment has increased fivefold since 1979. Because of this, overall insurance theft losses have not changed over the 18 years. NHTSA does not discuss this.

B. Antitheft devices show a stronger rather than equal effect as part marking on theft losses.

C. Recovery data has been erroneously attributed to HLDI.

97-042-N01-013 Document does not exist

97-042-N01-014 Toyota

A. Toyota says it has no other idea than the current marking methods: plates for engines, stamping for transmissions, and printed decals for body panels.

B. Marking costs depend on marking methods and, for example, using plates would exceed the $22 threshold according to Toyota.

C. Marking glazing was proposed and terminated in 1994 by NHTSA because of public comments that: NHTSA does not have the authority, the cost would exceed the statutory maximum, windows are rarely stolen, there is no evidence that vehicles are stolen for their glazing.

D. Because of the comments above, and the unreasonable labor costs to coordinate marked glazing to their respective vehicles, and the lack of demonstrable benefits, Toyota opposes marking glazing.

97-042-N01-015 3-M Safety and Security Systems

A. 3-M believes that antitheft devices and component parts marking should not be seen as mutually exclusive or independent. Both contribute to auto theft deterrence.

B. 3-M urges that all passenger vehicles, sports utility vehicles, multi-purpose vehicles, and light duty trucks have marked parts, and that the vehicle weight exemption be eliminated.

C. 3-M is in favor of eliminating the antitheft device exemption provision of the Act.

D. 3-M urges the expansion of major parts to be marked to include air bags and radios.

97-042-N01-016 Association of International Automobile Manufacturers (AIAM)

A. AIAM says NHTSA should not make any recommendations concerning expanding the parts marking program because the findings are less than conclusive.

B. AIAM says NHTSA has no authority to extend the parts marking coverage in the absence of any Attorney General's finding.

C. AIAM says NHTSA should not expand coverage if benefits are only around two percent.

D. AIAM says NHTSA underestimated parts marking cost and refers to cost estimates provided under comments 97-042-N01-006 and 97-042-N01-009.

E. AIAM says NHTSA has underestimated the effectiveness of antitheft devices and should review its analysis.

F. AIAM recommends eliminating the parts marking requirement.

G. AIAM recommends expanding antitheft device exemptions.

97-042-N01-017 Iowa State Patrol

A. In Iowa, few criminal cases are made for possession of a stolen part without its VIN sticker. This appears to stem from officers not being able to determine if the sticker is removed.

B. The Iowa State Patrol recommends adding air bags and sound systems to the major parts list to be marked.

C. The Iowa State Patrol recommends stamping all major parts.

D. The Iowa State Patrol suggests that all vehicles be marked, not just high theft lines.

Discussion of Docket Comments

Docket No. 97-042, Notice 1

Vehicle Designation Changes and Theft Analysis

Comments received indicated that the database of theft and recovery data for the Preliminary Report included some incorrectly designated models and applicable years. Jaguar models from 1984 through 1991 are shown as unmarked when they actually had marked parts beginning in 1987. Several models, that were granted exemptions from parts marking because they had factory-installed antitheft devices, actually were equipped with these devices the year before the exemption was granted. Also some models included in the analysis were redesigned for marketing reasons. All these corrections were made to the database and analyses were redone. Both the charts and discussions in the report have been changed where appropriate. The basic analytical changes include the GM models with antitheft devices showing greater effectiveness than parts marking in deterring vehicle theft. Other vehicles, especially imported models, showed mixed results: some had lower theft rates after being equipped with antitheft devices and others either showed no reduction or an actual increase in vehicle thefts after being equipped with antitheft devices. Obviously the type of antitheft device has a significant effect on theft deterrence.

Participation in Theft Prevention System

Auto manufacturers and law enforcement agencies commented that the insurance industry should take a more active role in having repair parts checked for parts marking and that the VIN marking be checked with law enforcement agencies to determine that the part is not from a stolen vehicle. Conversely, the insurance industry says that law enforcement agencies should take a more active role in checking repair part sources such as salvage yards and body shops.

One comment was that law enforcement officers received little training to determine which cars are marked, what parts are marked, and where the markings are located. Even fewer officers

know how to locate secondary or confidential numbers on vehicles. If all passenger vehicles were marked, the law enforcement community and the insurance industry might be motivated to both learn what and where parts are marked, and to invest the time to actually monitor the salvage and auto body repair industries.

Parts Marking Vehicle Coverage

Law enforcement agencies, consumer groups, and the insurance industry submitted comments that all passenger vehicles should have marked parts. The auto industry comments were against parts marking because they felt that markings were not proven effective since NHTSA had not specified a numeric effectiveness answer with confidence bounds. The auto industry feels parts marking effects are limited and indirect. The auto industry argument is based on parts marking versus antitheft devices. They argue that since antitheft devices are so effective as compared to parts marking that the these devices should be the preferred approach to deterring auto theft. Hence the auto industry feels parts marking should be either terminated, phased out, or limited to only the high theft lines.

Based on comments received, much of the current trouble in detecting and prosecuting auto thieves can be eliminated by requiring that all passenger vehicles whether or not they have antitheft devices - passenger cars and light trucks - have marked parts. Then thieves will not have the option of selecting unmarked cars to steal, police officers will know that all used parts are to be marked, the insurance industry can monitor the salvage and repair industry to be sure that used parts are legal, and stolen vehicles and parts can be more easily traced by to the owner. While the preliminary report did not include a definite effectiveness number(s), the report did say that parts marking is effective in reducing auto theft and improving vehicle recovery. Also, parts marking is an aid in apprehending and convicting auto thieves.

Permanence of Parts Markings

Law enforcement agencies favor more permanent methods of parts marking and say that labels have been altered and counterfeited. While evidence of label removal has been used to apprehend

and convict thieves, lack of the VIN has prevented identifying the stolen vehicle/part and owner. Several auto manufacturers indicated that parts marking was already so expensive and any move to make them more permanent would result in costs above the Congressional limit. No one provided any information on more permanent marking methods and their cost. One comment mentioned a type of label (invisographic) which has a footprint that shows the VIN - a step in the right direction. More information is needed to be able to make an informed decision regarding more permanent marking methods.

Additional Parts Recommended for Parts Marking

Several comments were received recommending that airbags be marked as well as glazing and sound systems. Airbags were recommended because they are safety devices and cost between $500 and $1,500 to replace. Glazing is recommended as a deterrent to stealing the whole vehicle rather than for the specific parts themselves. Estimates for etching glazing suggest that this could result in the total parts marking cost being at or above the Congressional threshold. While airbags are good candidates for marking, the location and method for marking them will be more difficult than other major parts. Sound systems are also frequently stolen from vehicles and marking them would help in recovering the system to the rightful owner. Since the whole vehicle is usually not stolen, marking the sound system may have a limited deterrent effect.

Antitheft Devices and Parts Marking

Parts marking and antitheft devices have somewhat different effects on vehicle theft and recovery. According to comments received, parts marking tends to discourage professional thieves and chop shop operators, antitheft devices seem to deter the amateur auto thief. The Preliminary Report showed that for parts marking to pay for itself, there only needed to be less than a two percent decrease in thefts. This is the result of the low cost of parts marking. Even if parts marking costs were increased to the Congressional limit, parts marking would only have to deter six to eight percent of vehicle thefts to break even. Antitheft devices are much more expensive than the cost of marking parts. The analyses in this final report shows that a reduction in thefts of over 50% is needed to offset a cost of over $200 per vehicle for antitheft devices. Some of these

devices have achieved that level of effectiveness. One comment indicated that several of the exempted car lines have continued to have high theft rates. This suggests that a more in-depth analysis of theft and recovery rates for antitheft devices is needed. The analysis would require tracing car line experience by specific type of antitheft device to determine effectiveness. This information could then be supplied to consumers so they could make an informed decision to pay for these devices. The consumer, as is now being done, would make the decision to pay for antitheft devices rather than the Federal government become involved in this decision making process. On the other hand, parts marking, even though estimates are not precise, has been shown to be effective in both deterring theft and increasing vehicle/part recovery. Requiring all passenger vehicles be marked, regardless of them being equipped with antitheft devices, would improve theft deterrence, vehicle recovery, and apprehension and prosecution of thieves.

Cost of Parts Marking

Two comments were received indicating that the government cost estimate to mark parts was too low. One comment included costs for plant and equipment and reported costs that were three to four times as large as the government estimate. The other comment included the cost of printing equipment resulting in their estimate being three times larger than the government cost estimate.

The cost estimate in the Preliminary Report is based on the cost of purchased labels which can be obtained from several large suppliers and time studies performed in auto manufacturing plants during the final assembly process. Government cost estimates include factory burden (overhead) and profit. In another agency study, costs were estimated using a similar approach and with similar results. The government cost estimate does not include marking engines and transmissions. The Congressional ceiling on the cost of parts marking also excludes the marking of engines and transmissions. Traditionally these two parts were marked before the 1984 Theft Act.

Comments received for the 1991 report to Congress included two manufacturers saying their costs were higher and one label supplier reporting that they estimated the cost of parts marking to be lower than the government estimate.

U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

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NPP-22
July 1998**

U.S. Department of Justice

Office of Justice Programs

National Institute of Justice

Washington, D.C. 20531

To: Chuck Kahane
Chief, Evaluation Division
NHSTA

From: Nancy La Vigne
National Institute of Justice

Re: Data needs for re-evaluation of auto parts marking

Date: March 4, 1999

Enclosed please find a memorandum and floppy disk from Bill Rhodes of Abt Associates Inc. regarding his data needs for the re-evaluation of auto parts marking. The memorandum outlines the data he requires and the disk contains an ASCII file with a list of the automobile models Abt plans to include in its evaluation.

As you may recall from our meeting of January 12, 1999, NIJ has agreed to engage Abt Associates in a contract to conduct this re-evaluation ***on data that has been validated by NHTSA as being correct.*** Our phone conversation of last week indicated that you are unable to provide us with a timeline for how long it will take to provide us with this information until you are able to review the attached memorandum. Please contact me at your earliest convenience at (202) 616-4531 to let me know what you believe is a reasonable timeline. Thank you for your prompt attention to this matter.

CC: Jeremy Travis, Director, NIJ
Dean Googasian, Special Assistant to the Assistant Attorney General
Warren La Heist, Program Analysis Officer, NHSTA

Abt Associates Inc.

Date February 26, 1999

To Nancy LaVigne

From Bill Rhodes

Subject automobile parts-marking data

Here is a description of the data we will need for the evaluation of parts-marking effectiveness. I thought this would be best coming through you.

Enclosed please find an ASCII file containing a list of automobile models that we plan to include in our analysis of the effectiveness of automobile parts-marking. These data were selected from KRA Corporation's compilation of data from the National Crime Information Center and R.L. Polk & Company. The file provides the make and model name of models produced in 1981 and thereafter.

The analysis we have planned will require the following data for each model, for every year from 1981 to 1995:

- The years in which the model was subject to parts-marking.
- The years in which the model was subject to partial parts-marking.
- The years in which the model had a factory-installed anti-theft device.
- The years in which the model received an anti-theft exemption from automobile parts-marking.
- The years in which the model was modified such that pre-modification and post-modification automobile parts are not exchangeable and thus the modification is a de facto model change.

Please provide these data in an electric file, preferably either as a SAS data set or in ASCII format. Please send the file to:

Quentin McMullen
Abt Associates Inc.
55 Wheeler Street
Cambridge, MA 02138-1168
quentin_mcmullen@abtassoc.com

Thank you for your assistance in obtaining these data.

Abt Associates Inc.

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Opinions of 47 Auto Theft Investigators Regarding Automobile Component Parts Anti-Theft Labels

Report to the National Institute of Justice

December 30, 1996

Prepared by

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William Rhodes, Ph.D.

Opinions of 47 Auto Theft Investigators Regarding Automobile Component Parts Anti-Theft Labels

December 30, 1996

Acknowledgements

We thank the many law enforcement auto theft investigators who provided us with the information presented in this report. We also thank Detective Sergeant David Ecklund of the Fort Lauderdale, Florida, Police Department for offering many useful improvements to the report. Of course, the authors alone are responsible for any omissions or errors.

Table of Contents

Acknowledgements ii

EXECUTIVE SUMMARY v

Chapter One INTRODUCTION AND BACKGROUND

Key Points 1
Rationale for Parts Marking 2
The Federal Parts Marking Legislation 3
Methodology 9
Contents of the Report 11

Chapter Two DO ANTI-THEFT LABELS HELP PREVENT CHOP SHOP OPERATIONS AND DETER AUTO THEFT?

Key Points 13
Effects on Arrests and Prosecution 14
Obstacles to Effective Use of Labels 20
The Effectiveness of Labels in Deterring Theft 22

Chapter Three CAN ANTI-THEFT DEVICES SUBSTITUTE FOR PARTS MARKING?

Key Points 25
Anti-Theft Devices 26
Recovery Systems 28
Other Anti-Theft Deterrents 30

Chapter Four WHAT SHOULD HAPPEN TO THE PARTS MARKING LEGISLATION?

Key Points 31
Opinions about Extending the Legislation 31
Opinions about Additional Features the Legislation Should Incorporate 32

Table of Contents
(continued)

Chapter Five **WHAT RESOURCES ARE AVAILABLE TO INVESTIGATORS USING ANTI-THEFT LABELS?**

Key Points 35
Training Resources 35
Technical Assistance 37
Equipment 38

Chapter Six **CONCLUSION**

Key Points 39
Implications of the Study for the Parts Marking Legislation 40
Other Ways to Make the Legislation More Effective 41

References 43

Appendix A Glossary of Terms 45
Appendix B Motor Vehicle Theft Data for Cities and Municipalities 46

Figures

1-1 Chains of Vehicle Theft 4

1-2 Auto Theft Flow 5

2-1 Investigators' Opinions About the Usefulness of Anti-Theft Labels in Making Auto Theft Arrests 14

2-2 Investigators' Opinions About the Usefulness of Anti-Theft Labels in Prosecuting Auto Theft Cases 18

2-3 Number of Investigators Who Have Encountered Counterfeit Anti-Theft Labels 22

3-1 Investigators' Opinions Regarding the Deterrent Value of Four Anti-Theft Devices ... 26

4-1 Number of Investigators Who Advocate That Specific Additional Parts Be Marked ... 33

5-1 Methods by Which Jurisdictions Receive Training in Using Anti-Theft Labels 36

EXECUTIVE SUMMARY

Chapter One: Introduction and Background

The nature of car theft changed significantly beginning in the 1970s from joyriding to theft for profit, in large part due to a proliferation of so-called "chop shops" that engage in the volume sale of stolen car parts to body shops, to auto repair shops, and directly to car owners. Because auto theft investigators were often unable to identify which vehicles the stolen parts came from or whether the parts were stolen at all, the Federal Government enacted the Motor Vehicle Theft Law Enforcement Act of 1984 that required automobile manufacturers, based on standards established by the U.S. Department of Transportation (DOT), to mark 14 component parts of selected high-theft automobile lines with identifying numbers. The Federal Anti-Car Theft Act of 1992 required manufacturers to mark an additional 50 percent of their remaining lines. Both statutes permitted the DOT to grant a limited number of exemptions for new automobile lines equipped with selected anti-theft devices.

The 1992 legislation also required the U.S. Attorney General to conduct two assessments of the DOT rules:

(1) conduct by 1997 an initial evaluation of the effectiveness of the parts marking and, if found to be effective in inhibiting chop shop operations and deterring motor vehicle theft, extend parts marking to all remaining vehicle lines by December 1997; and,

(2) conduct by 1999 a long-range review of (a) whether parts marking has been effective in substantially inhibiting the operation of chop shops and motor vehicle theft and (b) whether the anti-theft devices for which the DOT has granted exemptions are an effective substitute for parts marking in substantially inhibiting motor vehicle theft.

Pursuant to the first of these two research requirements, the U.S. Department of Justice's National Institute of Justice contracted with Abt Associates to conduct a two-part study of the impact of the legislation.

The first part of the study, to be reported in a separate document, will use the DOT's national auto theft data to examine auto theft rates across time and across States. The second

part of the study, reported in the present document, examines the experiences and opinions of auto theft investigators regarding the effectiveness of the component parts anti-theft labels.

The information examined in the present report is based on telephone conversations with auto theft investigators from 47 jurisdictions, including 31 of the 32 largest cities in the country (plus Miami), six smaller municipalities, and nine State agencies. While the jurisdictions do not represent a random sample of law enforcement agencies across the country, they do include the majority of jurisdictions with the highest auto theft rates in the Nation. Because five of the six smaller municipalities, and one rural State (North Dakota), make no use of labels (or, in one case, little use), information from these jurisdictions has been presented separately from the data from the other 40 jurisdictions.

Chapter Two: Do Anti-Theft Labels Help Prevent Chop Shop Operations and Deter Auto Theft?

Nearly three-quarters of the 40 big city and State auto theft investigators contacted reported that anti-theft labels are useful in helping to arrest chop shop owners and individuals who steal or traffic in stolen vehicles and parts. Nearly two-thirds of the investigators reported that labels also help them to prosecute chop shop operators and other automobile and parts thieves. Investigators reported that the most serious obstacle to making more effective use of the labels is that they are easy to remove and, once removed, it is impossible to prove that the parts are stolen because the owner cannot be traced. Investigators were about evenly divided regarding whether anti-theft labels deter professionals or amateurs from stealing or stripping cars. Investigators from the six smaller jurisdictions and one rural State report little or no use of anti-theft labels because joyriding, and a resulting high recovery rate of stolen vehicles, is their principal form of auto theft.

Chapter Three: Can Anti-Theft Devices Substitute for Parts Marking?

The Federal Anti-Car Theft Act of 1992 requires the Attorney General to retain the manufacturers' parts marking exemptions for cars equipped with anti-theft devices if it can be shown that the devices are an effective substitute for parts marking in substantially preventing

automobile theft. While this assessment is a requirement of the 1999 evaluation, not the 1997 evaluation, this report nevertheless provides auto theft investigators' opinions about whether the devices can substitute effectively for parts marking. A large majority of investigators reported that audible alarms, steering wheel "clubs," kill switches, and "smart" keys all help deter auto theft but that each has drawbacks that prevent it from substituting effectively for parts marking. The small minority of investigators who had experience with recovery systems reported that the systems are effective in recovering stolen cars but that their use to date is limited by lack of transmission equipment and cost to the consumer.

Chapter Four: What Should Happen to Parts Marking Legislation?

All but one investigator felt that the parts marking legislation should be extended to all automobile lines and to all types of noncommercial vehicles, especially pickup trucks. While every investigator reported that the parts that manufacturers are currently required to label are the parts that are stolen most frequently, all but six investigators recommended that additional parts be required to have labels, citing most often seats and airbags. Just over one-third of the investigators recommended that manufacturers be required to stamp vehicle identification numbers (VINs) on the component parts rather than use labels.

Chapter Five: What Resources Are Available to Investigators Using Anti-Theft Labels?

Investigators reported making use of three principal types of resources to assist them in making effective use of component parts labels: training, technical assistance, and equipment. Investigators reported they rely primarily on one or both of two organizations for training related to anti-theft labels: the National Insurance Crime Bureau (NICB) and the International Association of Auto Theft Investigators (IAATI). The NICB also assists jurisdictions with auto theft investigations through its computerized database and field agents, many of whom go on site to help local investigators. Local auto theft task forces assist with investigations in nine jurisdictions contacted. Nearly half the jurisdictions use ultraviolet lights to detect counterfeit labels or the footprints that most anti-theft labels are designed to leave if removed.

Chapter Six: Conclusion

The study's findings suggest that component parts anti-theft labels assist most big city and State auto theft investigators to arrest car and parts thieves and to prosecute them. Investigators were nearly evenly split about the possible deterrent effects of the labels on auto theft, although some reported that the labels deter some chop shop operators. Anti-theft devices are not considered sufficiently effective to warrant labeling exemptions for cars that manufacturers equip with the devices. Almost all investigators would like the parts marking legislation expanded to include not only all remaining car lines but also noncommercial vehicles and additional parts. Investigators suggested that parts marking might be more effective if auto theft investigators and patrol officers were trained more systematically and frequently in how to investigate label removal and tampering, if legislation in every State made tampering with or removing labels a felony, and if investigators had access to detection equipment, such as ultraviolet lights.

Chapter One

INTRODUCTION AND BACKGROUND

Key Points

- Beginning in the early 1970s, car theft changed from largely joyriding to predominantly theft for profit. The proliferation of "chop shops" played a significant role in this change. Once a part had been removed from a car, auto theft investigators often had no means of identifying which vehicle the stolen part came from or whether the part was even stolen.

- As a result of the increase in theft for profit, the Federal Government enacted the Motor Vehicle Theft Law Enforcement Act of 1984 and the Federal Anti-Car Theft Act of 1992, which directed the U.S. Department of Transportation (DOT) to develop a standard mandating automobile manufacturers to place an identifying number on the major component parts of selected vehicle lines. Both statutes allowed manufacturers to petition the DOT to exempt a limited number of automobile lines equipped with certain anti-theft devices.

- The 1992 legislation requires manufacturers to mark all remaining vehicle lines by December 1997 unless the Attorney General determines that further marking will not substantially inhibit chop shop operations and motor vehicle thefts. As a result, the National Institute of Justice, the Department of Justice's research arm, contracted with Abt Associates to conduct a two-part study of the impact of the legislation on automobile theft.

- The first part of the study, to be reported under separate cover, will examine DOT national auto theft data using a cross-sectional time-series design. The second part of the study, reported in this document, examines the experiences and opinions of 47 auto theft investigators regarding the effectiveness of anti-theft labels. The 47 investigators represent 31 of the 32 largest cities in the country (plus Miami), six smaller municipalities, and nine State agencies.

Rationale for Parts Marking

Automobile theft is a major problem in the United States. Nearly 1.5 million motor vehicles were reported stolen in 1995, representing one out of every 139 cars in the country (FBI, 1996, p. 50). Theft of component parts from vehicles is an even more common problem, outnumbering vehicle theft five to one (Harris and Clarke, 1992).

In the 1950s and 1960s, most car theft consisted of joyriding—youngsters stealing cars, driving them for a short period of time, and then abandoning them, resulting in very high vehicle recovery rates. Auto theft investigators contacted for this study reported that joyriding is still the predominant form of car "theft" in smaller and rural jurisdictions. However, beginning in the 1970s, substantial numbers of thieves in larger jurisdictions started stealing cars for profit, resulting in fewer recovered cars and more parts missing from those vehicles that were recovered. Part of the increase in car theft for profit was due to a proliferation of so-called "chop shops" selling stolen parts either directly to consumers in need of replacement parts or to end users—body shops, automobile dealerships, and auto repair shops—for resale to customers. (See appendix A, "Glossary," for definitions of chop shops and other terms used in this report.)

Thieves began or increased their use of other schemes, as well:

- Thieves steal, strip, and abandon a car, while the innocent owner reports it as stolen. The police eventually recover the car and cancel the theft record. The thieves purchase the frame at an insurance or police auction, reattach the parts they stole from it, and then sell the vehicle, which is no longer listed as stolen.

- Owners strip their own car, removing enough parts for their insurance company to declare the vehicle a total loss, and then file a claim with and receive reimbursement from the company. They may then buy back the frame themselves at an insurance company auction, put the parts back on the car, and either sell or make normal use of the vehicle.

- Thieves buy a salvaged car for its title and Vehicle Identification Number (VIN). They then steal the same model car, place the VIN from the salvaged car on the intact stolen car, and sell it to an innocent buyer.

- Thieves openly ship stolen cars out of the country with stolen or counterfeit VINs for resale abroad. Thieves also crate stolen cars for export and label the crates as containing other goods.

- Thieves legitimately ship cars overseas but arrange either to have the VINs sent back to the United States for reuse on counterfeit public VIN labels or to have the actual VIN tag sent back for reuse on stolen cars. These "born-again cars" are often not identifiable as stolen.

Figure 1-1, provided by the Portland (Oregon) Police Department's Auto Theft Division, illustrates the chain of events in two types of auto theft operations; figure 1-2, provided by the Fort Lauderdale (Florida) Auto Theft Unit, illustrates how chop shops process stolen parts and vehicles.

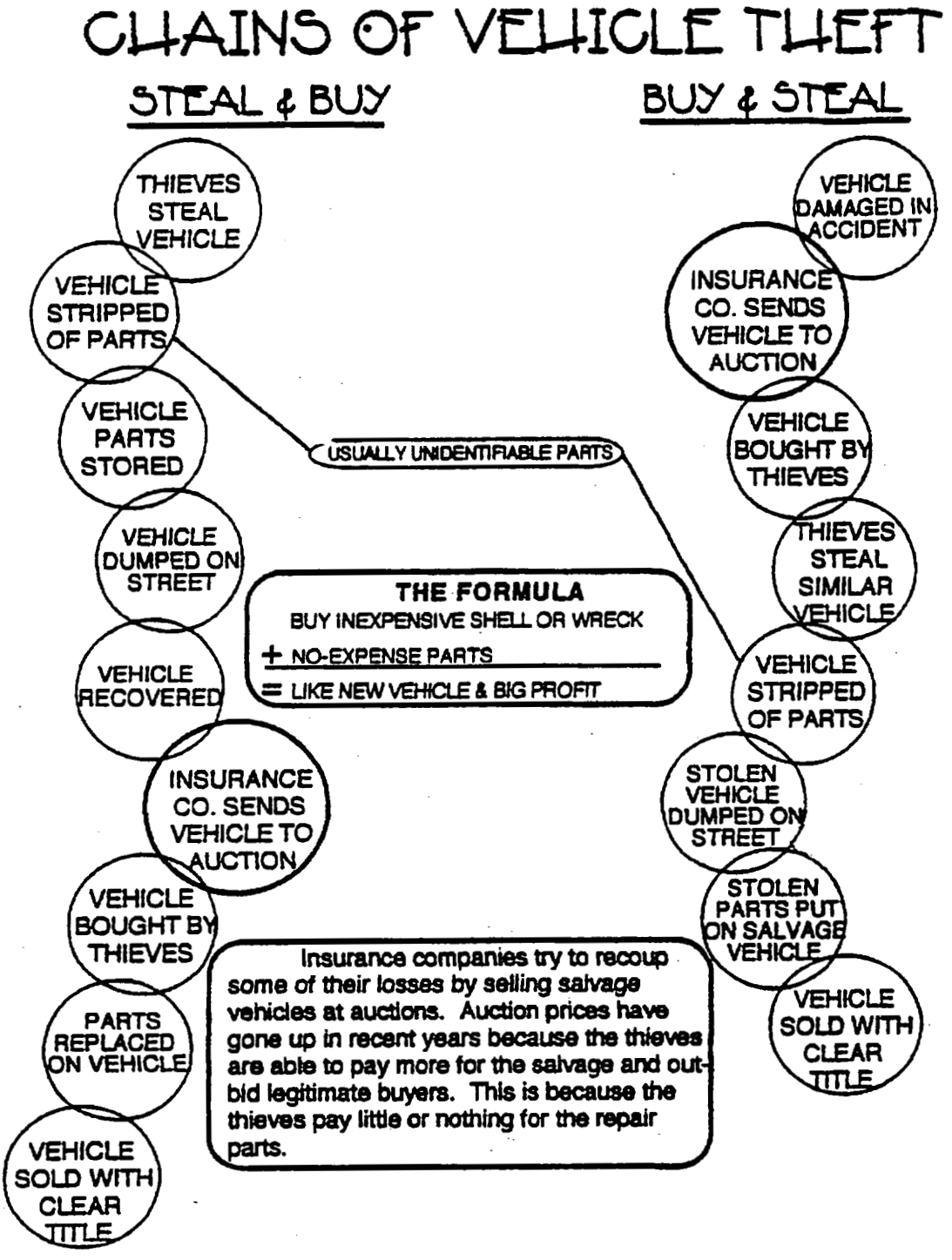
The Federal Parts Marking Legislation

Auto theft investigators, in attempting to cope with the new types of theft, often had no means of identifying which vehicles the stolen parts came from, whether the parts were stolen at all, or whether a VIN belonged to the car on which it was found. As a result, in 1984 the Federal Government enacted the Motor Vehicle Theft Law Enforcement Act of 1984 (chapter 331 49 §33102). The legislation directed the U.S. Department of Transportation (DOT) to prescribe a vehicle theft prevention standard that mandated automobile manufacturers to inscribe or affix an identifying number or symbol onto 14 of the major parts[1] of vehicle lines determined by the DOT to be of high theft risk. The legislation built on the Highway Safety Act of 1966, which required manufacturers to install public (i.e., easily seen) VINs on all automobiles by 1969. (See the box "Other Types of Automobile Markings.") In response to the act, the DOT's National Highway Traffic Safety Administration (NHTSA) promulgated a standard (50 FR 43168; October 25, 1985) that required manufacturers to mark the 14 parts on specified high-theft automobiles. These lines constituted one-third of their total automobile lines.[2]

[1]The act requires manufacturers to label the following parts: engine; transmission; both front doors; both rear doors; hood; both bumpers; both front fenders; deck lid, tailgate, hatchback, or sliding or cargo door(s); and both rear quarter panels. An amendment to the 1992 legislation also required labels on the side assembly of multipurpose vehicles and on the pickup box, cargo box, or both of light duty trucks.

[2]Two automobile manufacturers, also responding to the changing nature of automobile theft, experimented briefly in the 1970s and early 1980s with labeling six component parts with VINs on two of their automobile lines.

Figure 1-1

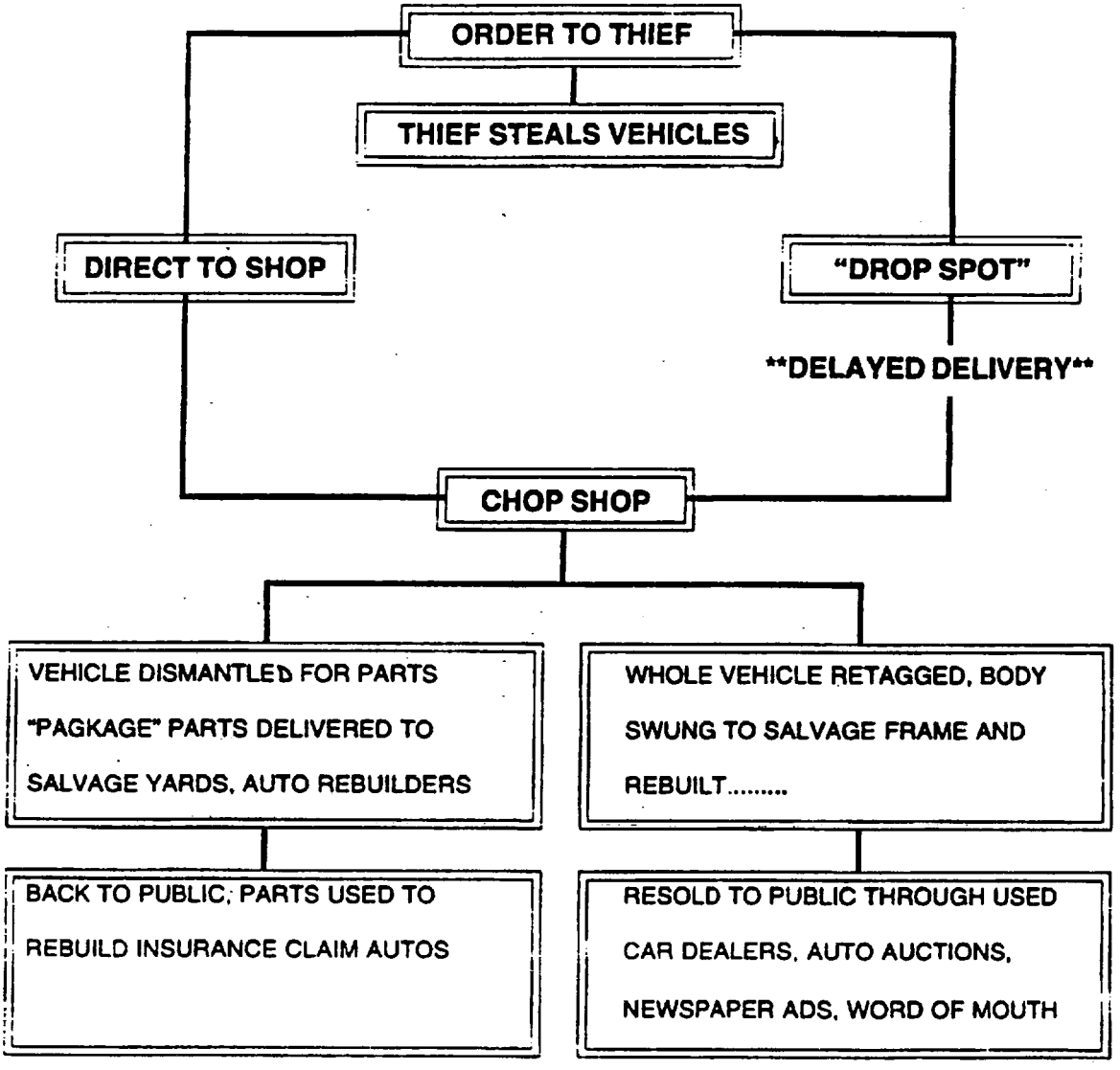


Graphic provided by the Portland (Oregon) Police Department's Auto Theft Division.

Figure 1-2

AUTO THEFT FLOW

Theft order originates in a salvage yard, through an auto rebuilder or thief, a retagger or stripper. Order is given for a certain make, color and piece of equipment.



Graphic provided by the Fort Lauderdale (Florida) Police Department's Auto Theft Unit.

Other Types of Automobile Markings

The markings on component parts mandated by the Motor Vehicle Theft Law Enforcement Act of 1984 are not the only markings found on automobiles. Below is a partial list of additional markings that automobiles may have.

- **Federal Safety Standard Label** ("Nader" sticker). Required by the Government in 1970, this sticker includes the VIN and verifies that the vehicle conforms to all Federal laws. The Federal label is found in the driver's door area of American cars but may be located on the rear or passenger door of some foreign vehicles.

- **Public VIN Label** ("P-VIN"). Introduced by manufacturers in 1968, this label is visible in the windshield area or driver's side window. Manufacturers introduced bar codes on VIN plates in 1990.

- **Confidential Numbers** (C-VINs; also called hidden numbers or secondary markings). Most manufacturers, at their own discretion, stamp a VIN on one or more not easily seen locations, typically on the frame in American vehicles and the firewall on foreign cars. Before 1989, manufacturers stamped the VIN on the vehicle, but in 1989 they began switching to pin stamping—making tiny dot-like indentations in the metal. The confidential numbers on American cars are usually a "derivative" of the entire VIN—that is, they repeat only some of the VIN's 17 characters. Foreign cars use a different set of characters, but the characters can be cross referenced with the VINs. Manufacturers vary the location of their confidential numbers from year to year, plant to plant, and model to model.

- **Service Parts Identification Labels**. Since 1984, General Motors has been placing this label on its automobiles and vans for inventory purposes. In addition to the entire VIN, the label includes other information, such as the color of the vehicle.

The statute required manufacturers to mark replacement parts with certain symbols and the letter "R" to distinguish them from original parts. The legislation permitted the DOT, upon petition by a manufacturer, to exempt a limited number of new high-theft lines of passenger motor vehicles equipped with anti-theft devices that the department decided were likely to be as effective in reducing and deterring theft as compliance with the standard.

Manufacturers have chosen to use adhesive labels for the markings. However, if removed, the labels are designed to leave a trace, commonly called a "footprint," on the surface where it was originally affixed. When the labels on older model cars are pulled off, some adhesive remains indicating a label had been in place. However, thieves can remove the adhesive. Labels on some recent model vehicles have material that migrates into the paint. When thieves remove these labels, investigators need an ultraviolet (or "black") light to detect the footprint.

The component parts anti-theft labels[3] are designed to make it possible to trace automobile parts to the original vehicle in order to prove that they or the cars have been stolen. In addition, since the Federal Government and many States make it a criminal offense to remove or tamper with a VIN label, law enforcement investigators may seize and confiscate parts whose anti-theft labels are missing or have been tampered with. In some States, officers may also arrest individuals in possession of the parts or cars. Most investigators consider missing labels, or labels that have been tampered with, a "red flag," indicating that the part or vehicle may have been stolen and therefore suggesting the need for further investigation. (See chapter 2, "Do Anti-Theft Labels Help . . . ?")

In 1992, Congress enacted the Federal Anti-Car Theft Act, directing the DOT to require manufacturers to mark an additional 50 percent of their remaining automobile lines by December 1994 regardless of the vehicles' theft rate. In combination with NHTSA's standard pursuant to the 1984 statute, which required the marking of one-third of the manufacturers' automobile lines, the new legislation had the effect of requiring manufacturers to label a total of two-thirds of their automobile lines. However, the 1992 act allowed the DOT to continue to grant a limited number of exemptions for new automobile lines equipped with effective anti-theft devices—two vehicle lines per year through 1996 and one car line from 1997 to 2000. The new legislation also prohibited any standard that would require manufacturers to spend more than $15 (in 1984 dollars) to mark each vehicle.

[3]Different law enforcement agencies—and even different police officers within the same agency—use different terms to refer to component parts markings. Some of the terms include Mylar labels, NHTSA labels, DOT labels, anti-theft labels, VIN labels, high-theft line labels, and auto tails. Investigators may refer to the markings as stickers, tabs, strips, or labels. For purposes of consistency, this report always refers to them as (component parts) anti-theft labels.

The Anti-Car Theft Act of 1992 further required the Attorney General to conduct two assessments of the DOT's rule making in response to the legislation:

(1) conduct by 1997 an initial assessment of the effectiveness of the parts marking and, if found to be effective in inhibiting chop shop operations and deterring motor vehicle theft, extend parts marking to all remaining vehicle lines by December 1977; and,

(2) conduct by 1999 a long-range review of (a) whether parts marking has been effective in substantially inhibiting the operation of chop shops and motor vehicle theft and (b) whether the anti-theft devices for which the DOT has granted exemptions are an effective substitute for parts marking in substantially inhibiting motor vehicle theft. If the Attorney General finds that the application of the standard has not been effective, the DOT is required to terminate the standard within 180 days. If the Attorney General finds that the anti-theft devices are an effective substitute for parts marking, the DOT must continue to grant exemptions.

In response to the legislation's short-term 1997 research mandate, the U.S. Department of Justice, in a competitive procurement, awarded a grant to Abt Associates Inc. to conduct a study to determine whether anti-theft labels have substantially reduced auto theft so that the Attorney General could make an informed recommendation to Congress regarding the extension of parts marking to the remaining automobile lines. Subsequently, the U.S. Department of Justice's National Institute of Justice (NIJ) and DOT's NHTSA agreed to coordinate their joint evaluation responsibilities. The National Institute of Justice asked Abt Associates to survey law enforcement agencies and provide the findings to NHTSA, while NHTSA agreed to provide Abt Associates with statistical data assembled by another contractor.

Based on these two sources of information, Abt Associates is conducting a two-part evaluation of the effectiveness of the component parts anti-theft labels in deterring auto theft and inhibiting chop shop operations. One part of the evaluation, to be submitted to the Department of Justice on April 30, 1997, will examine NHTSA's national auto theft data using a cross-sectional time-series design that examines auto theft rates across time and across States based on data from the FBI's National Crime Information Center (NCIC) and the DOT's insurer database. The second part of the evaluation—reported in this document—examines the experiences and opinions of auto theft investigators regarding the effectiveness of component parts anti-theft labels.

Methodology

A previous study conducted for NHTSA (Harris and Clarke, 1991) using 1987 data concluded that anti-theft labels were not effective in reducing theft. However, law enforcement officers reported that the standard was helpful in identifying stolen parts and vehicles. The officers also recommended that the legislation not only be extended but also strengthened to require the stamping or etching of VINs on component parts rather than allowing the use of labels which, they reported, could be easily removed. In a second study, the Highway Loss Data Institute, using insurance industry data, found substantially reduced rates for marked vehicles compared to unmarked vehicles, especially in large metropolitan areas (HLDI, 1989). Finally, a 1990 NHTSA evaluation based on NCIC data was unable to draw significant conclusions regarding the impact of the labels on theft (NHTSA, 1990). The present study builds on the NHTSA study by examining many of the same issues addressed in that survey and including many of the same jurisdictions. However, the NHTSA and other studies cited above were all conducted shortly after the DOT regulations went into effect. The present study has the advantage of several additional years for the regulations to have had an impact or an increased impact.

The information presented in the present report is based on telephone conversations with auto theft investigators from 47 jurisdictions nationwide, including 31 of the 32 largest cities in the country (plus Miami), six smaller municipalities, and nine State agencies. (See the box, "Jurisdictions Contacted.") Typically, one investigator was contacted in each jurisdiction, but in a few instances two or more investigators from the same jurisdiction participated. We identified investigators by asking the agencies' auto theft unit (or, in some cases, the agency's administrative assistant or public affairs division) to identify the investigator most familiar with component parts anti-theft labels. In some cases, the person interviewed was the auto theft unit chief; in other cases, the investigator was a line officer within the unit or (in smaller jurisdictions) within the investigative bureau. Almost all the investigators were at least sergeants; many were lieutenants. Nine of the investigators were members of a local auto theft task force.

Jurisdictions Contacted

The following 47 jurisdictions were contacted for the study:

32 Departments in Large Cities (population 400,000 and above)

Austin	Houston	Oklahoma City
Baltimore	Indianapolis	Philadelphia
Boston	Jacksonville	Phoenix
Chicago	Kansas City	Portland*
Cleveland	Long Beach	San Antonio
Columbus	Los Angeles	San Diego*
Dallas	Memphis	San Francisco*
Denver	Miami* (378,720)	San Jose
Detroit*	Milwaukee	Seattle
El Paso*	Nashville	Washington, DC
Fort Worth	New York	

9 State Departments of Public Safety/Highway Safety/State Police

California*	Colorado	North Dakota
Florida	Massachusetts	New York
Iowa	Michigan	Texas

6 Smaller Municipalities

Boise, Idaho	Sarasota, Florida	Syracuse, New York
Minot, North Dakota	Stockton, California	Victoria, Texas

Appendix B shows the population, number of motor vehicle theft offenses, and per capita theft rate for each of the 38 municipalities contacted.

* Investigator was a member of an area auto theft task force.

Investigators were asked whether and how they make use of anti-theft labels, whether they felt labels are useful in reducing auto theft and inhibiting chop shop operations, and whether they found anti-theft devices to be effective in deterring automobile theft.

The jurisdictions examined do not represent a random sample of law enforcement agencies across the country. The box "Site Selection Criteria" discusses how the jurisdictions were selected. Except as noted, the six smaller municipalities and one rural State were excluded

from the analysis because, with one exception, labels were irrelevant to their auto theft investigation activities.

Site Selection Criteria

We surveyed police departments in 31 of the 32 largest municipalities in the United States. (Investigators in New Orleans were unavailable.) We sampled primarily agencies in large cities because the auto theft problem is the most severe in large jurisdictions (FBI, 1996; HLDI, 1994).* Although the forty-fourth largest city in the nation, Miami was included in the study because it had been included in an earlier U.S. Department of Transportation study of high-theft labels.

We also surveyed nine State public safety, highway safety, or department of motor vehicle agencies, since they often play a major role in investigating car theft. We selected States from diverse parts of the country (including coastal and interior States, and States on the Mexican and Canadian borders) and States with different size populations.

Finally, we surveyed six smaller municipalities to learn whether smaller jurisdictions find anti-theft labels effective. The smaller municipalities represented include diversity in terms of location and size.

*Theft losses for vehicles normally garaged in the 30 largest metropolitan areas, accounting for one-half of the U.S. population, are considerably higher than in the rest of the United States. In the 30 areas, theft claims are almost twice as frequent and the average claim sizes are more than 40 percent larger than in the rest of the nation. (HLDI, 1994)

Contents of the Report

The following chapter examines whether auto theft investigators believe that component parts anti-theft labels help them to prevent chop shop operations and deter auto theft. Chapter three presents the investigators' opinions about the effectiveness of anti-theft devices and stolen car recovery systems, while chapter four summarizes the investigators' opinions about whether the legislation mandating component parts marking should be extended to all automobile lines. Resources that investigators report they have available for assistance in making maximum use of labels to investigate auto theft are presented in chapter five. A final chapter draws conclusions from the preceding information.

Chapter Two

DO ANTI-THEFT LABELS HELP PREVENT CHOP SHOP OPERATIONS AND DETER AUTO THEFT?

Key Points

☞ Three-quarters of the auto theft investigators in the 40 big city jurisdictions and States contacted for this study reported that component parts anti-theft labels are useful in helping to arrest chop shop owners, organized theft rings, and individuals who steal or traffic in stolen parts and vehicles. Investigators offered four reasons the labels are helpful:

- When vehicles are missing their public and confidential VINs, investigators can still trace their owners, prove they were stolen, and make arrests when they find—as they frequently do—at least one component part with an intact anti-theft label.
- In many jurisdictions, when investigators discover anti-theft labels that do not match public or confidential VINs on a vehicle, or discover damaged or missing labels, they can seize the parts or vehicles and auction or destroy them.
- Most jurisdictions treat missing or damaged labels as a "red flag" indicating the need for further investigation; without this flag, they would have no reason to suspect the vehicle or parts might have been stolen.
- Investigators in jurisdictions that require inspections of restored cars before the vehicles can be retitled report that the labels help inspectors to detect and seize cars that have been reassembled with stolen parts.

☞ Nearly two-thirds of the investigators reported that labels help them to prosecute chop shop operators and other automobile and parts thieves.

(continued)

Key Points (continued)

- Investigators reported that the most serious obstacle to making effective use, or more effective use, of labels is that they are easy to remove. Once removed, it is difficult, according to many investigators, to prove the parts are stolen because the owner cannot be traced.

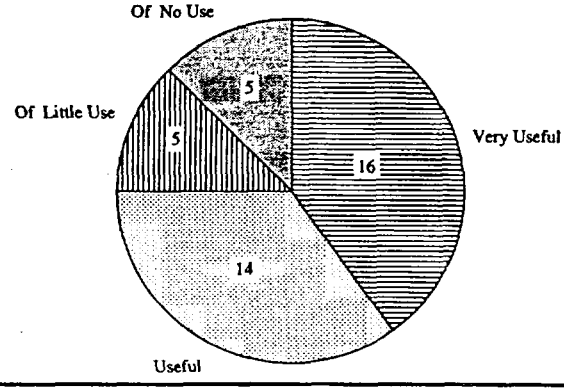
- About half the investigators believe that anti-theft labels do not deter professionals or amateurs from stealing or stripping cars because nothing will deter professional thieves and because joyriders are not aware that the labels exist. Among the investigators who believe labels have a deterrent effect, most reported the effect was most pronounced on chop shop operators.

This chapter discusses whether auto theft investigators find anti-theft labels helpful in arresting and prosecuting automobile thieves, in particular chop shop owners, and deterring automobile theft.

Effects on Arrests and Prosecution

Three-quarters of the investigators (30 out of 40) reported that anti-theft labels are useful in helping to arrest chop shop owners and organized rings and individuals who steal or traffic in stolen parts and vehicles. (See figure 2-1.)

Figure 2-1
Investigators' Opinions About the Usefulness of Anti-Theft Labels in Making Auto Theft Arrests (n = 40)



Over half of these 30 investigators said the labels are *very* useful, offering testimonials such as the following:

- "We make an incredible number of identifications with Ford Mustang labels that have been removed or painted over. We made 25 arrests using labels in the past 24 months." (San Francisco)
- "They help a lot. We have five cars in the warehouse right now that were identified with the labels." (San Jose)
- "We made 20 arrests using labels in just the past 12 months." (Denver)
- "Parts marking has aided in the identification of cars in a high percentage of our arrests—we use them almost daily." (Los Angeles)
- "Labels help most definitely—they're what make the case." (San Antonio)

Investigators offered four explanations for why the labels contribute to arrests:

(1) Labels make it possible to detect many stolen parts among end users—salvage yards, body shops, and repair shops—that investigators could otherwise never identify as stolen.

- "We go into salvage yards with a search warrant, use ultraviolet scanners on all parts, and find many parts that are stolen." (New York City)
- "Labels are absolutely crucial to identifying stolen parts in chop shops." (Chicago)
- "Chop shops cut cars up and take away the motors with confidential VINs, leaving only the parts, so the *only* way we have to identify these cars is with the anti-theft labels." (Metro-Dade [Miami])

(2) When they find parts with missing, damaged, or counterfeit labels, or with labels that do not match other VINs on the same car, investigators in many jurisdictions have the authority to seize the parts (and cars) for further investigation and then either turn them over to the insurance company or auction or destroy them.

(3) Many jurisdictions reported that, even if they cannot seize parts with missing or tampered labels, or parts with labels that do not match other VINs, the findings suggest that something is amiss. As a result, they investigate the matter further, hoping to prove by other means whether the parts or vehicles have been stolen.

Without the labels serving as "red flags," they would have no reason to suspect the vehicles or parts might have been stolen.

(4) Laws in several States require that the department of motor vehicles or a State or local law enforcement agency inspect restored salvage cars before retitling them. Inspectors often discover that these cars, or some of their parts, have been stolen because the component parts lack labels or because the VINs on the labels do not match the public or confidential VINs. According to a Massachusetts investigator, under the Massachusetts Salvage Title Law of 1991, restored vehicles have to have matching numbers on the parts and show who did the repair work before the Registry of Motor Vehicles allows owners to put them back on the road. Often the labels from stolen parts have been removed, and the owners are charged with possession of stolen property.

The other 10 jurisdictions reported that the labels are of very little or no help in making arrests for reasons discussed in the following section on "Obstacles to Effective Use of Labels."

Case Histories of How Anti-Theft Labels Lead to Arrests and Prosecution

Auto theft investigators offered numerous case histories of how anti-theft labels have helped them to identify stolen parts and cars, leading to arrests and prosecutions. The most common story investigators told is of chop shop owners and thieves who fail through carelessness, haste, ignorance—or a calculated risk that no one will notice—to remove one or more labels.

"With so many parts marked, thieves never get them all. We sometimes get down to the last one, but we find a label. Every thief misses at least one." (Stockton)

"We were working salvage yards with administrative searches and came across a new model Neon crunched up, with the C-VINs and P-VINs missing. The owner had the model and inventory number, and the title, but it just didn't seem right. Sure enough, we found one anti-theft label with a different VIN, and the guy could not prove he owned the part. So we arrested him for possessing stolen property, and he's currently being prosecuted. The judge found probable cause for believing the guy stole the car and allowed us to confiscate it." (El Paso)

"We've had many cases where four or five labels were removed, but the thieves didn't get them all off." (New York City)

(continued)

Investigators related many other illustrative stories.

- "We discovered that a label on the hood of a car in a chop shop was different from the other labels on the car, so we seized it and found it was stolen. That gave us cause to return to the shop, where we recovered several additional stolen vehicles." (Colorado)

- "A sophisticated Russian auto theft ring specializing in BMWs had retagged an entire car, including the engine, the transmission number, and the electronic codings on the car computer. But they missed one label, so we were able to arrest the thief where the car was stored. Without the label, we had nothing on the guy." (Los Angeles)

- "A chop shop operator was removing labels, sanding and spray painting over the footprints, and putting on counterfeit labels on a bunch of Land Cruisers. However, he left the counterfeit labels on the running board of each car temporarily until he was ready to stick them on. Because of overspraying, we found the outline of the counterfeit labels left on the running board after he had affixed the last one. This was a red flag to us that something was fishy." (Metro-Dade [Miami])

- "In two major chop shop operations involving 200 Volkswagens each, thieves had switched the public and confidential VINs but not the anti-theft labels, which indicated that the vehicles were stolen. This allowed us to seize all the cars for closer examination and then bring charges." (Seattle)

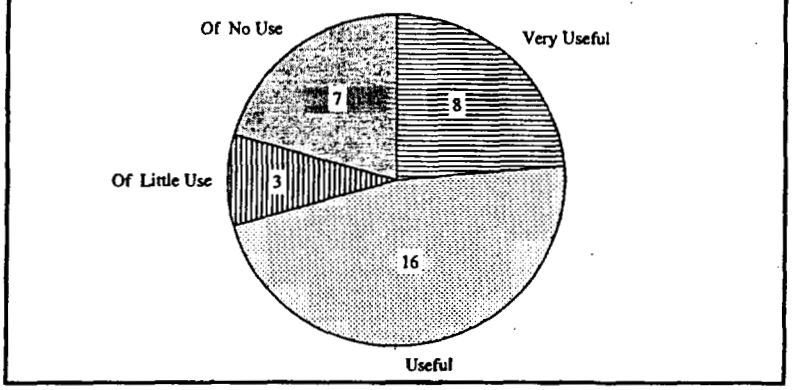
- "We obtained a warrant to search a warehouse where an officer looking through an open window had seen a number of dismantled car parts. Inside, we found a car's frame with just the wheels, engine, and transmission remaining, but with the VINs filed off. However, there were anti-theft labels on many of the parts scattered throughout the shop. Using the VINs on the anti-theft labels, we were able to locate the victim, who identified the car. As a result, the thief—who boasted of chopping and selling an average of 20 cars a week—was arrested, prosecuted, and convicted." (Metro-Dade [Miami])

- "Professionals stole a car soon after its owner happened to have repainted it. The thieves did not realize the labels were underneath the paint. In an undercover operation, we posed as a body shop and bought the car from the thieves. We unpeeled the paint, found the VIN on the labels, traced it to its owner, and arrested the thieves." (New York City)

- "We had one case where we caught the thieves because they put counterfeit labels on a vehicle that wasn't supposed to have any labels." (Washington, D.C.)

Nearly two-thirds of the investigators (24 of 40) reported that labels are helpful in prosecuting chop shop operators and other automobile thieves. Nine said the labels were *very* helpful in prosecuting cases. (See figure 2-2.) For example, an investigator from the Florida Highway Patrol reported that his unit had successfully prosecuted several cases in the past year relying on labels.

Figure 2-2
Investigators' Opinions About the Usefulness of Anti-Theft Labels in Prosecuting Auto Theft Cases (n = 34)



Note: n = 6 "Don't Know."

Investigators reported that labels help with prosecutions in two respects.

(1) The labels are useful in encouraging the State's attorney to file charges because their absence constitutes convincing evidence of theft or because the VINs on the labels are different from the confidential VIN.

(2) Labels help prosecutors win cases because they provide valuable evidence that the vehicles or parts were stolen.

According to a Stockton investigator, "There's no problem at all obtaining convictions based on missing labels. I testify that they are put there in the factory as proof that they must have been there." An investigator in Milwaukee said, "We've had only one case go trial in the past five years; all the others pled guilty because the labels helped provide irrefutable evidence of theft." Some investigators reported that, while not sufficient evidence for a conviction by themselves, labels that were missing or tampered with contributed to securing a conviction. As an investigator with the Michigan State Police explained, "More points of identification

strengthen the case in court; the defense is hard on evidence, so you need more than one identification source. Component parts labels have greatly improved identification for court purposes."

The most common crimes that jurisdictions charge when chop shop operators are the defendants are grand theft, receiving stolen property, possession of stolen property, and tampering with or removing anti-theft labels. Very few jurisdictions turn their cases over to U.S. Attorneys for prosecution, largely, investigators report, because "The Feds will accept only high profile cases" that involve interstate transport and either organized rings or large numbers of parts or vehicles worth a great deal of money. In addition, some investigators have no interest in proceeding federally because they have close working relationships with highly skilled local State's attorneys who specialize in prosecuting auto theft cases. By contrast, a few investigators said they prefer to take their cases to U.S. Attorneys because the penalties for car theft are stiffer under Federal law than under many State statutes and because offenders convicted in Federal court are ineligible for parole.

Smaller Cities Generally Do Not Make Use of Anti-Theft Labels

Six smaller jurisdictions (see the box "Jurisdictions Contacted" in chapter 1) were contacted for this study, along with one very rural State, North Dakota, the population of whose largest city (Fargo) is only 61,000. Investigators from five of these jurisdictions reported that they made no use of anti-theft labels (one was unaware of their existence), and one other investigator said he made very little use of them. Only Stockton, California, the largest of the smaller jurisdictions, with 223,000 residents, and a jurisdiction with a relatively high auto theft rate comparable to that of many big cities (see appendix B), reported that the labels were useful in making arrests. Investigators in the six other jurisdictions reported that the labels were not ineffective but *irrelevant* to catching thieves because the principal form of auto "theft" they encounter is joyriding, not theft for profit. With joyriding, they recover vehicles—and all the VINs—intact. In addition, these jurisdictions reported they have few, if any, chop shops. Because of their minimal experience with labels, information from these seven jurisdictions has been excluded from the data analysis in this report to avoid skewing the findings for big cities and populous States. However, a few anecdotes of how Stockton has made use of labels are included for illustrative purposes.

Obstacles to Effective Use of Labels

Investigators reported that the most serious obstacle to making more effective use, or <u>any</u> effective use, of anti-theft labels is that they are easy to remove. Only nine jurisdictions reported that ease of removal was no problem at all. The following are typical of the comments investigators made in this regard:

> "The labels are usually conspicuous and easy to take off—and usually have been—and then we can't prove the parts were stolen because we can't identify the owner." (Oklahoma City)

> "The big problem is removal—which happens 90 percent of the time, so they're a big failure. Only an idiot doesn't remove them, because they're visible. They just have to wash the glue off and you can't tell they were there." (Boston)

Several investigators reported that when parts have no labels, there are two reasons why they cannot be sure whether the labels are missing or are simply not supposed to be there in the first place:

- Some automobile models do not change their parts design over a period of years—the parts are interchangeable—so that parts manufactured before the parts marking legislation went into effect will be unmarked legitimately.
- Some model years, but not others, are not required to have labels because the manufacturer has received an exemption as a result of installing an anti-theft device.

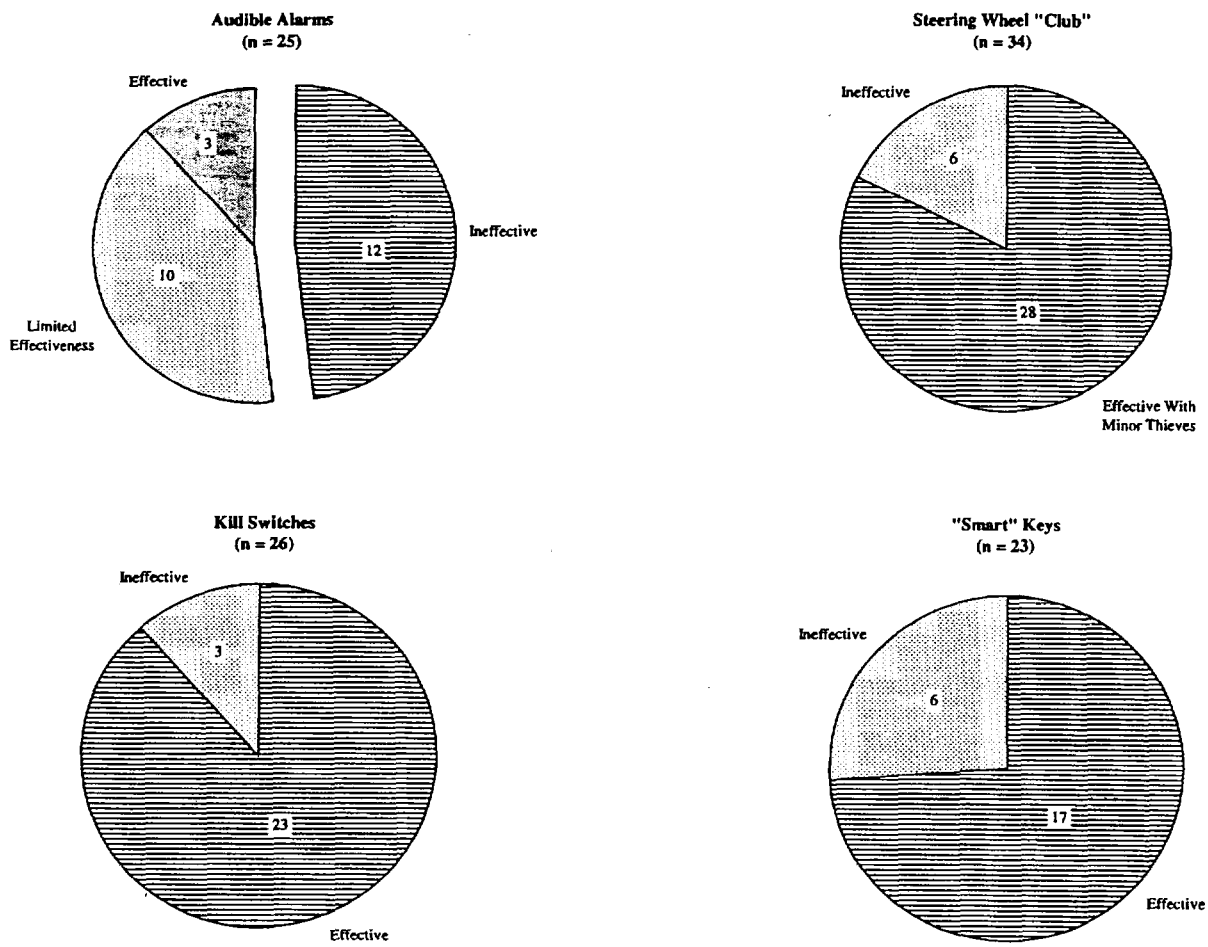
Despite the reported ease of removing the labels, most investigators said they can often still detect the footprint with an ultraviolet light[1] or prove that a label was mandated. As a Dallas investigator reported, "Thieves do sand and paint, but my detectives know whether a model *should* have a label, and they testify in court that it wasn't there." Furthermore, State law permitting, investigators can then seize the parts, arrest the owners, or both, because the label has been tampered with. However, as discussed further in chapter 5, "What Resources Are

[1]The two major manufacturers of anti-theft labels also sell equipment that investigators can use for detecting footprints left by the removal of their respective labels. However, only one investigator reported using the equipment.

Anti-Theft Devices

Many investigators offered opinions about the deterrent value of audible alarms, steering wheel "clubs," kill switches, and "smart" keys. Figure 3-1 summarizes these opinions.

Figure 3-1
Investigators' Opinions Regarding the Deterrent Value of Four Antitheft Devices



Audible Alarms

Audible alarms use motion or impact sensors to trigger a siren. Of the 25 investigators who offered an opinion about car alarms, 13 agreed that the device is a good deterrent.

Available to Investigators," many jurisdictions do not have access to an ultraviolet light. Even with an ultraviolet light, because the footprint does not reveal the VIN, investigators often cannot identify the previous owner, which prevents them from proving that the parts were stolen. As a California Highway Patrol investigator said, "It's hard to prove they stole the part, so we just confiscate it." Furthermore, some of the smaller label manufacturers do not use the footprint technology. Finally, if thieves sand and paint the part, an ultraviolet light can no longer reveal a footprint.

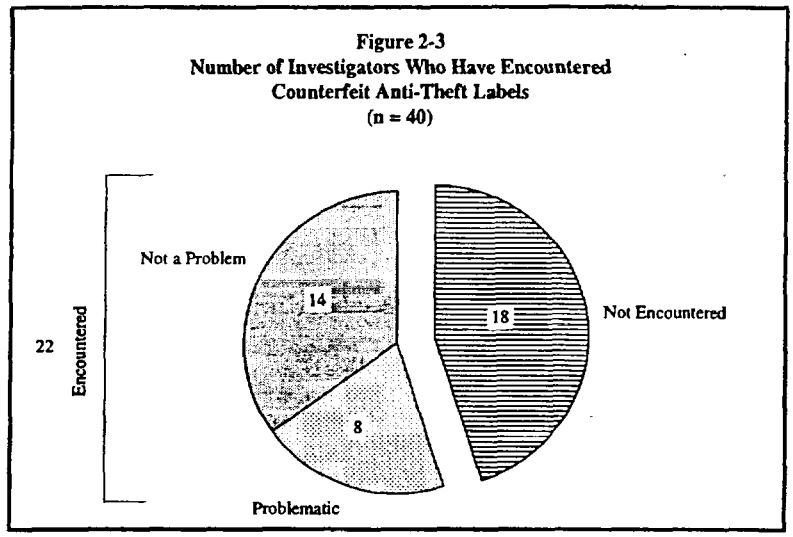
Several investigators reported that the labels' effectiveness is reduced because many patrol officers are not trained to take advantage of them. Even when they are familiar with the labels, most patrol officers make little or no use of them either because they have not received training in where to find them or because they have forgotten the training they received. As a result, some investigators said, few patrol officers will seize and turn over cars with missing or suspicious labels to their department or State auto theft unit for further investigation. As an investigator from San Jose said, "The problem is that patrol officers, who make most of the stops, have little idea what cars are supposed to have labels, so they don't even mess with them. They don't want to get into trouble having a car towed."

The potential benefit of training patrol officers to take advantage of parts marking is suggested by the comment of an investigator with the Los Angeles Police Department's Commercial Auto Theft Division. "We have been training patrol officers for two years to have extra sets of eyes out there looking for stolen cars; we train them as to when they have probable cause to look for marked parts. This has been so effective we could spend full-time investigating the leads these patrol officers now give us." Similarly, an Indianapolis auto theft investigator trains other city police officers to look for labels so that, if any are missing, they can seize the cars under the State's 48-hour impoundment statute until he can inspect them.

The only other significant barrier to making effective use of the labels, reported by just over half the jurisdictions (22), is the use of counterfeit anti-theft labels. (See figure 2-3.) A few investigators reported that thieves are using computer graphics to manufacture very sophisticated counterfeits:

- "Computers make it hard to tell what is not original; law enforcement is far behind the criminal element in technology." (Oklahoma City)

- "We've seen counterfeit labels good enough to fool dealerships." (Milwaukee)



Four of the 22 jurisdictions that have encountered counterfeits have done so only once.

By contrast, over half the investigators who have run into counterfeit labels reported that they encounter them rarely (in some cases, only once) or said that the counterfeits are easy to recognize, either with the naked eye or with an ultraviolet light.

Investigators mentioned few other barriers to using labels. Every investigator reported that the component parts that the National Highway Traffic Safety Administration has required be marked are the parts that are stolen most frequently. Only two investigators reported either that thieves are switching to stealing parts not covered by the legislation or that salvage yards are able to hide or disguise their inventory in order to make it difficult for investigators to locate stolen parts. According to a Philadelphia investigator, "The large salvage yards bury the stolen parts in the center of a pile of legitimate parts, so we have to use a fork lift to get at the stolen ones." Other investigators reported that salvage yards have too many parts to be able to hide them, and they have to keep the parts visible so customers can examine them.

The Effectiveness of Labels in Deterring Theft

In contrast to the consensus among the investigators that labels help them catch car thieves, ***the investigators were about evenly divided in their opinions about whether anti-theft***

labels help deter auto theft. Investigators in 18 jurisdictions felt that the labels help to deter theft. A Nashville detective said, "A professional knows they are there, so he won't fool with the car unless he has a solid place for the part or vehicle to go and can do the job quickly." A detective in Fort Worth reported that "Some guys abandon cars in good condition because of the labels." Most of these investigators, however, felt that labels have their greatest deterrent effect with chop shop operators, especially since many States give law enforcement agencies authority to conduct "administrative searches" of salvage yards and repair shops without a search warrant.

- "Labels won't deter the career thief, but some body shops won't purchase parts with missing labels and without paperwork." (Michigan)
- "Salvage yards are reluctant to accept or keep parts without labels." (Chicago)
- "Chop shops do things differently because of the increased threat of being inspected and caught for missing labels—for example, they keep the identity of person who brought in parts. But it's the labeling that has put teeth behind our inspections." (San Antonio)
- "Honest body shops very frequently report suspicious parts because owners know they can go to jail if they receive them, so the incentive [to avoid selling stolen parts] is there." (Los Angeles)

Investigators in New York State, Austin, Houston, and Philadelphia also felt that labeling deters the crating and exporting of stolen cars, but eight investigators reported that the labels had no impact on exports. According to a Seattle detective, "Labels haven't made a difference in exporting stolen vehicles because thieves are bold, brazen, and quick." None of the investigators' experiences with anti-theft labels are associated with geographic proximity to Mexico or Canada, or with conducting investigations in a port city. This finding may reflect the fact that investigators reported that thieves often steal parts and cars in interior States for ultimate export rather than restrict their thefts to border States and port cities. Most investigators said they had no way of knowing whether the labels deter exporting either because their jurisdiction is not in a port or border city or State, or because U.S. Customs and other Federal agencies have primary or exclusive responsibility for addressing the problem of exported stolen vehicles. In addition, those investigators who work most closely with exported cars—U.S. Customs and other Federal agencies—were not contacted for this study.

Several investigators volunteered that, even if labels do not have a deterrent effect on auto theft, they do increase the "cost of doing business" to thieves. A New York City investigator told about an undercover job his unit conducted involving videotaping a body shop. "The tape recorded the owner telling a thief, 'I know that I said I would give you $500 for that car, but I can give you only $200 because the parts are marked. Now I'm going to have to go the trouble of removing the labels.' " The extra time thieves need to select cars without labels and the extra time chop shops must take to remove them may result in their having fewer hours to be breaking the law. Conversely, seven investigators reported that labels *decreased their* investigative burden. As one said, "If the label VINs match the public VIN, then we don't have to look further at the confidential VINs." According to another, "If you find a marked part, the investigation is practically over; otherwise, it can take days and days to identify a car." The time savings that labels provide these investigators may enable them to devote more time to catching thieves. While five investigators said that labels increase their work load because now there is something to follow up on, all added that they found the extra labor productive.

Chapter Three

CAN ANTI-THEFT DEVICES SUBSTITUTE FOR PARTS MARKING?

Key Points

- Investigators agreed that, while anti-theft devices—audible alarms, steering wheel "clubs," kill switches, and "smart" keys—have deterrent value, most can be defeated; as a result, they are not an effective substitute for parts marking in preventing automobile theft.
- The small minority of investigators who had experience with recovery systems (e.g., Lojack, Teletrak, and Global Position Satellite) reported that the systems are effective in recovering stolen cars, but that they, too, have limitations.
- Metal steering column sleeves, VIN window etching, and owner education were also identified as anti-theft deterrents.

The Federal Anti-Car Theft Act of 1992 requires the Attorney General to determine by 1999 whether the anti-theft devices for which the Department of Transportation granted marking exemptions are an effective substitute for parts marking in substantially preventing automobile theft. While this assessment is a requirement of the long-range 1999 evaluation, not the initial 1997 evaluation, this report nevertheless provides auto theft investigators' opinions about whether the devices can substitute effectively for parts marking. Included in this discussion are the views of investigators on a variety of contemporary anti-theft devices and recovery systems in addition to the anti-theft devices currently recognized by DOT.

Of the 13 investigators who offered an opinion, all agreed that anti-theft devices are not an effective substitute because, while they may have deterrent value, most can be defeated. Because many investigators had no direct working experience with some of the specific anti-theft devices, the information reported below, as indicated, is based on the opinions of only selected investigators.

However, 10 of these investigators qualified their approval: seven said they are effective only with minor thieves (especially juveniles), and three said they are helpful only if combined with other devices (such as kill switches). Problems cited about car alarms are that they are usually ignored, they can be easily deactivated or circumvented,[1] and many owners fail to use them.

Steering Wheel "Clubs"

Investigators considered steering wheel "clubs" to be the most visible deterrent among anti-theft devices. However, while a majority of investigators (28 of 34) who had experience with the club reported that minor thieves are likely to avoid a car armed with the device because of the time and tools needed to defeat it, most investigators indicated the club is not a deterrent for professionals intent on stealing a particular car. Some professional thieves leave the club at the scene of the theft, or, if apprehended, gloat to law enforcement officers about their club collections. Six investigators claimed that the device has no deterrent effect. Eighteen investigators described how easily the club can be defeated—either by cutting the steering wheel or by freezing the club until it shatters. Two investigators observed that some victims owned the club but did not use it regularly. Ironically, a club can be a positive indicator of a car's value to a potential thief. One investigator even mentioned that clubs represent a potential danger to officers: by breaking the club apart and sharpening the steel rod, thieves can turn the device into a scabbard and sword reportedly capable of piercing a bulletproof vest.

Kill Switches

Kill switches are designed to render a vehicle inoperable by inhibiting the flow of electricity or fuel to the engine until a hidden switch is activated (NICB, 1996). All but a few of the investigators (23 of 26) who discussed kill switches thought that these devices deter theft; in fact, one jurisdiction uses a kill switch in its bait car to prevent car chases or loss. As with other anti-theft devices, however, most investigators felt that thieves will find a way to defeat

[1]Thieves can deactivate car alarms by popping the hood and pulling wires. Alarms can be circumvented by breaking the window to access the car and transporting the vehicle to a location where it is safe to deploy the alarm. Also, since alarms are designed to stop when the car is raised at an angle, thieves can simply tow the vehicle away.

or circumvent kill switches. Since kill switches can be installed in several locations, investigators advocated choosing different locations to enhance their effect. Although kill switches will prevent the thief from driving the car away, investigators observed that, because it is not visible, the vehicle will probably sustain some damage (e.g., to the windows and ignition) when the unsuspecting thief breaks into the car. (See the section on Global Position Satellite below for a discussion of related problems.)

"Smart" Keys

"Smart" key, or anti-theft immobilization, systems feature a control module which allows electronic communication between a specially coded key and the ignition; the car will not start unless the key code matches the on-board code. Some smart key systems also block the operation of the starter, fuel line, ignition, and central engine control if improper access is detected (Siuru, 1996). Ford's Passive Anti-Theft System (PATS), General Motors' Vehicle Anti-Theft System (VAT), and BMW's Coded Driveaway System are examples of smart key systems. Many investigators had heard of smart keys, but few had an informed opinion about their deterrent value. While 17 of the 23 investigators who had some experience with them said they were effective, many of these investigators, along with six investigators who were entirely critical of smart keys, cited serious limitations. For instance, thieves can avoid the anti-theft system altogether by towing or transporting the vehicle on a flatbed truck, or by obtaining the key illicitly.[2] One jurisdiction reported an increase in the theft rate of Lexus cars equipped with a smart key system. Four other investigators reported instances in which smart keys were defeated by unknown means.

Recovery Systems

In contrast to anti-theft devices, recovery systems use electronic tracking systems to locate vehicles equipped with transmitters after the vehicles have been stolen. Due to marketing, these systems have name brand recognition, and investigators are somewhat familiar

[2]One thief acquired coded keys by pretending to serve as intermediary in private car sales. Victims were unaware of the theft until the sales checks proved fraudulent.

with their design. However, to date, most States do not have the necessary equipment to utilize them—principally towers. Systems like Global Position Satellite (GPS), which use satellites rather than towers, are rarer still. Moreover, the cost of recovery systems is still prohibitive for most car owners. No one has seen these systems defeated, but investigators advise that, like kill switches, tracking devices need to be installed in random locations on cars so that thieves cannot find them easily. One Lojack option includes installation of more than one transmitter.

Lojack

Lojack is a beacon system activated by law enforcement once notified a vehicle has been stolen. All but one of the 10 investigators who had practical experience with Lojack reported it is effective in stolen vehicle recovery, including in chop shop and export cases. In one example, Lojack enabled an investigator to locate a stolen car crated for export, which led to the identification of six additional stolen cars. Problems investigators related about Lojack include: electrical interference in major cities; the delay between vehicle theft and police notification, which can permit the thief to dismantle or transport the vehicle out of the region; and the cumbersome and labor intensive method of tracking vehicles. The simplest Lojack system retails for nearly $600.

Teletrak

Teletrak is activated by starting the ignition without a key. Of the three investigators who spoke from experience with Teletrak, two rated it the best recovery system. One complained of transmitter problems that nearly resulted in the loss of a bait car.

Global Position Satellite (GPS)

Global Position Satellite (GPS) is a wireless cellular system in which a tracker box installed on the vehicle emits a signal tracked by satellite and computer. The transmitter is set by remote control and activated automatically when the ignition is started. Four of the five investigators who had experience with GPS on at least an experimental basis said it is effective;

one was particularly impressed with its tracking precision. The GPS system offers an added kill switch feature which shuts down the engine by remote control. Two investigators were concerned about the system's 10 to 12 second kill switch delay because of possible accidents if the switch is activated while the stolen vehicle is in motion. GPS can cost as much as $800 to install plus $30 per month for service.

Other Anti-Theft Deterrents

Investigators identified several other anti-theft devices and strategies. One automobile manufacturer, for example, has developed a metal steering column sleeve to prevent thieves from defeating the ignition system by "hot-wiring" the vehicle. Four investigators said this device helps prevent theft, while another four reported seeing it defeated. Four investigators said they support etching highly visible VINs into windows; one investigator said this would be an effective deterrent because "it is cheaper to steal another car than to replace the windshield." Finally, several investigators recommended common sense approaches to deterring auto theft, such as increased education about locking doors, not leaving keys in the ignition, and parking in well-lit areas. One investigator recommended parking in a space close to another vehicle of similar make and model when possible, thereby reducing the likelihood of theft to 50:50.

Chapter Four

WHAT SHOULD HAPPEN TO THE PARTS MARKING LEGISLATION?

Key Points

- Every investigator but one recommended that the parts marking legislation be extended to all automobile lines. With two exceptions, every investigator advocated requiring manufacturers to label all types of noncommercial vehicles, such as pickup trucks.
- Many investigators recommended incorporating two additional features in the legislation.
  - While nearly every investigator felt that the parts that manufacturers are currently required to mark are the most stolen parts, all but six investigators also said that additional parts should be marked, citing seats and airbags most often.
  - Fourteen investigators recommended—sometimes in very strong terms—that manufacturers be required to stamp the VINs on the component parts.

This chapter summarizes the investigators' opinions about whether the parts marking legislation of 1984 and 1992 should be extended to all automobile lines and what additional features any new legislation should incorporate.

Opinions about Extending the Legislation

Every investigator but one said that ***the legislation should be extended to include all automobile lines***. A Los Angeles investigator said, "It's an absolute must that labels should be on all cars for sale in the U.S. They're one of the most positive deterrents and identification tools ever invented and the least expensive way to help automobile theft go down." Several

investigators reported that automobile lines that have the highest theft rates nationwide are not necessarily the lines that are stolen most often in their jurisdictions. The one investigator who saw no need to extend the legislation said, "It hasn't benefitted me."

Eleven investigators volunteered that the "black box" exemption which allows the Department of Transportation, upon appeal from a manufacturer, to exempt cars equipped with certain anti-theft devices is a weakness in the law that should be eliminated.

- "The notion that the cars with these anti-theft devices aren't being stolen is c--p; they *are* being stolen." (San Francisco)

- "The reality is that these exempted cars get stolen, and, when high-theft line vehicles are stolen—and they're the ones most likely to have anti-theft devices—it's an expensive loss." (Milwaukee)

Investigators objected to the exemption for two reasons. First, when exempted cars are stolen, there are no labels they can use for tracing the vehicles. Second, as an investigator in Portland complained, "The black box exemption is one of our biggest headaches because we don't know if a part *should* have a label."

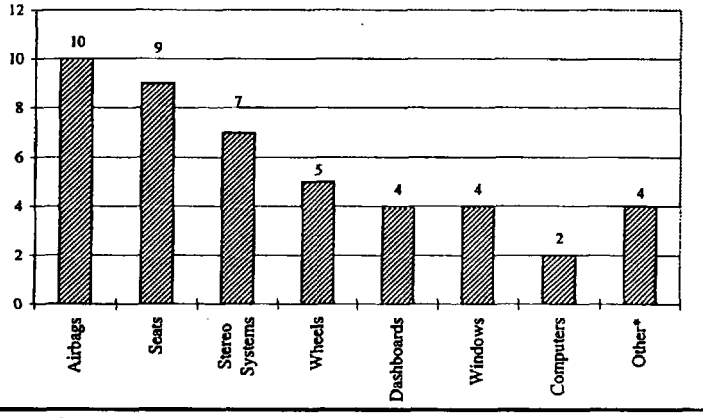
With two exceptions, every investigator advocated requiring manufacturers to ***label all types of noncommercial vehicles***, including pickup trucks and sports utility vehicles. An investigator in Austin said that pickups were "the hottest item in Texas"; a Denver investigator reported that sports utility vehicles are "the biggest problem in the Mid-West"; and an investigator in San Antonio said "Chevy trucks are the number one stolen vehicle in this city."

Opinions about Additional Features the Legislation Should Incorporate

Every investigator reported that ***the parts that manufacturers are currently required to label are the parts that are most frequently stolen.*** However, all but five investigators felt that ***additional parts should be required to have labels***. Many investigators advocated marking additional parts in general. When asked which parts they thought it would be most important to mark, most named specific parts, in particular, airbags and seats. (See figure 4-1.) Among the ten investigators who advocated marking airbags, one from Austin said, "There's a huge market for them," while a San Antonio investigator reported that "They're being stolen like

hotcakes." A few investigators reported that one major automobile manufacturer is already placing a partial VIN on its airbags' backplate. Four investigators said that etching a VIN on windows would be particularly effective in preventing theft because, as one investigator said, "Guys won't steal those cars, because the etching is too visible to ignore and the windows are too expensive to change."

Figure 4-1
Number of Investigators Who Advocate That Specific Additional Parts Be Marked
(n = 27)



*Unibody or frame rail; expensive rims; steering assembly.

Finally, fourteen investigators recommended—sometimes in very strong terms—that manufacturers be required to ***stamp the VINs on the component parts***. As discussed in chapter 2, several investigators reported that labels are easy to remove, and, once removed, it can be difficult to determine whether the part was supposed to have been marked as well as impossible to identify the owner. Three investigators volunteered the suggestion that, if VINs can not be stamped onto the parts, they should be designed to leave the VIN as part of the footprint.

Chapter Five

WHAT RESOURCES ARE AVAILABLE TO INVESTIGATORS USING ANTI-THEFT LABELS?

Key Points

- Auto theft investigators make use of three principal resources to assist them in making effective use of component parts labels: training, technical assistance, and equipment.
- Auto theft investigators rely primarily on one or both of two organizations for training related to anti-theft labels: the National Insurance Crime Bureau (NICB) and the International Association of Auto Theft Investigators (IAATI).
- Jurisdictions receive help with investigations that involve anti-theft labels primarily from NICB, local auto theft task forces, or both. In many jurisdictions, NICB agents go on site to assist with investigations.
- Nearly half the jurisdictions use ultraviolet lights to detect footprints, but many jurisdictions report they do not have access to a light.

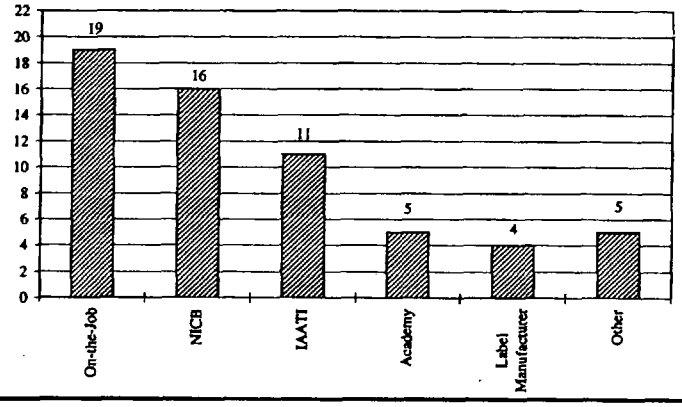
This chapter describes the principal resources auto theft investigators reported they have available for assisting them in making effective use of component parts anti-theft labels.

Training Resources

Auto theft investigators who expect to use anti-theft labels as an investigative tool need to know which parts are mandated to have labels, where the labels are located, whether they have been tampered with, and how footprints can be detected. As shown in figure 5-1, ***auto theft investigators rely primarily on one or both of two organizations for training in these skills: the National Insurance Crime Bureau (NICB) and the International Association of***

Auto Theft Investigators (IAATI). Sixteen of the 40 jurisdictions receive training from NICB, an organization, funded by member automobile insurance companies, that is dedicated to preventing auto theft. Eleven jurisdictions use IAATI, a professional membership organization comprised of auto investigators nationwide. Seven of these jurisdictions receive training from the national IAATI office, while another four receive training from regional or State chapters.

Figure 5-1
Methods by Which Jurisdictions Receive Training in Using Anti-Theft Labels*
(n = 40)



*Jurisdictions may receive training from more than one source.

Five investigators reported that all officers in their departments receive training during the police academy, although two said that most officers forget what they learn. Two jurisdictions receive training from automobile manufacturers; three (all in Texas) from their State Department of Public Safety; one (Washington, D.C.) from the FBI; and six from companies that manufacture the labels, in some cases as part of IAATI training seminars. Many jurisdictions receive training from more than one of these sources.

Thirteen investigators reported that the only training their investigators receive is on the job. Generally, senior investigators train officers newly assigned to investigate auto theft. Several jurisdictions combine on-the-job training with the training resources identified above.

Technical Assistance

Investigators receive help with investigations that involve anti-theft labels primarily from NICB and local auto theft task forces. Two jurisdictions reported that manufacturers were occasionally of assistance in determining the locations of anti-theft labels.

The National Insurance Crime Bureau (NICB)

In addition to maintaining a comprehensive database of automobile numbers and histories, ***about 200 trained NICB investigators stationed across the country are often available to assist State and local law enforcement agents in the investigation of auto theft.*** Thirty-three jurisdictions reported making use of NICB's database or investigators in cases involving anti-theft labels.

- Twelve jurisdictions *telephone their local NICB investigators* for assistance—often frequently. According to a Los Angeles investigator, "NICB is our number one information source; everything is on its computers."

- Fifteen jurisdictions are able to ask local NICB investigators *to come on site* to assist with investigations. For example, an NICB agent is available on call 12-18 hours a week in El Paso and 24 hours a day in Boston.

- Six jurisdictions have one or more NICB agents *permanently attached to their auto theft units*. For example, two agents work two days a week with the Florida Department of Highway Safety; two agents work full time with the Houston auto theft unit; and one agent is assigned full time to the California Highway Patrol's Auto Vehicle Theft Task Force in Sacramento.

Investigators report that NICB provides several types of assistance. Agents may

- join local investigators at a salvage yard and use their laptop computers to tap into the NICB computer database from salvage yard (for example, to recreate full VINs from labels that have been partially destroyed or to find out whether an auto whose theft record has been purged from the NCIC database is still in the NICB computer), thereby enabling the officers to seize immediately any parts or vehicles that are determined to be stolen;

- help locate labels on a given part with a particular automobile year and line;

- provide expertise or equipment, such as ultraviolet lights, to identify a part where the label has been removed;
- act as a liaison to the insurance industry when insurance information is needed; and,
- provide front money for sting operations or bait cars.

Auto Theft Task Forces

Fifteen of the 40 jurisdictions have auto theft task forces that provide assistance to local law enforcement agencies. Typically, a municipal police department auto theft investigator is a member of the local task force. Department investigators use the task force to assist with or take over cases requiring special expertise or additional personnel or equipment, such as ultraviolet lights.

The composition of task forces varies considerably. However, they typically include the largest local municipal police department and the county sheriff's department. They may also include State or Federal agencies. The New York State Department of Motor Vehicles Investigations Unit in Albany is part of a task force that includes the U.S. Customs Service, the Quebec Provincial Police, and the Montreal Urban Police. Members of Houston's task force include the city police department, the county sheriff, the FBI, the Texas Department of Public Safety, and the NICB. Six suburban police departments make up the Western Wayne County task force along with the Detroit Police Department, the Michigan State Police Department, and the county sheriff.

Equipment

Nearly half (19) the 40 jurisdictions use ultraviolet lights to detect footprints. Several investigators report that the technique is very helpful in detecting whether a part once had an anti-theft label. By contrast, two investigators who do not have an ultraviolet light said they did not need one because they always know whether a part belongs to an automobile line or model that is required to have a label.

Chapter Six

CONCLUSION

Key Points

☞ A synthesis of the study's findings suggests the following:

- component parts anti-theft labels appear to help most big city and State investigators to make arrests and prosecute cases;
- investigators were almost evenly split about whether the labels deter auto and parts theft;
- anti-theft devices are not considered sufficiently effective to grant exemptions to lines that come equipped with anti-theft devices;
- almost all investigators would like the parts marking legislation extended to all automobile lines; most also want the legislation expanded to include all noncommercial vehicles and additional parts.

☞ Investigators suggested three steps that might enhance the effectiveness of parts marking in effecting arrests:

- more systematic and frequent training of auto theft investigators and patrol officers in how to make use of the labels;
- more widespread State legislation making tampering with or removing labels a crime; and,
- access to ultraviolet lights and other equipment for detecting footprints.

This chapter synthesizes the implications of the auto theft investigators' experiences and opinions in relation to parts marking and reviews the investigators' proposals for increasing the legislation's effectiveness.

Implications of the Study for the Parts Marking Legislation

Three-quarters of the big city and State investigators contacted for this study reported that component parts anti-theft labels help them to make arrests and prosecute cases. With regard to arrests, 16 found them *very* helpful, while five found them *of no help*.

Investigators were about evenly divided about whether anti-theft labels deter auto and parts theft. Many investigators reported that nothing will deter professional thieves and that amateurs do not know the labels exist. Investigators who reported that the labels do have a deterrent effect feel that the effect is strongest with chop shop operators.

Very few investigators reported that anti-theft devices are effective enough to warrant exempting certain automobile lines from the marking requirement. While a majority believe that certain anti-theft devices are helpful in deterring theft, most also believe that professional thieves can defeat them. Several investigators noted that devices like the club primarily have only a displacement effect—that is, they simply motivate thieves to look for another car that has no club. Several investigators observed that many drivers do not bother to use the anti-theft devices they have.

Consistent with this experience, ***every investigator but one recommended that the parts marking legislation be extended to include all cars.*** Investigators reported that the models that are stolen the most frequently according to national statistics are not always the models stolen most often in their jurisdictions. Most investigators said they would like the legislation to cover not just all passenger cars but also ***pickup trucks and sport utility vehicles***. Some reported that these are the types of vehicles stolen most often in their jurisdictions.

Several investigators were critical of the "black box" exemption which allows the Department of Transportation, upon petition by a manufacturer, to exempt from the marking requirement a limited number of automobile lines that are equipped with certain anti-theft devices. Several investigators reported that the exemptions make it difficult to know whether a part is supposed to be marked.

Finally, a large majority of investigators expressed a preference for ***mandating labels on additional parts***, citing seats and airbags most frequently.

A majority of investigators recommended—some vehemently—that VINs be stamped on the component parts instead of placed on labels. Citing ease of removal and the resulting

difficulty proving the part was stolen and identifying the owner, some investigators felt that parts marking is useless unless the VINs are stamped. However, most investigators were quick to state that, if manufacturers consider stamping to be prohibitively expensive, they were still "happy with what we have."

As a substitute for stamping, a few investigators proposed that label manufacturers develop the technology that will leave a footprint with the actual VIN if the label is removed. With a VIN in the footprint, investigators would be able to identify the vehicle's owner. Two investigators were aware that a label manufacturing company is in the process of testing a label that will, if removed, leave the VIN in the footprint.

Finally, four investigators expressed concern that automobile manufacturers are purportedly considering abandoning confidential VINs on the grounds that anti-theft labels make them unnecessary. One investigator reported that, if a vehicle without a confidential VIN were to be torched, there would be no other way to identify the car at all. The same investigator reported that one major automobile manufacturer has already discontinued using confidential VINS.

Other Ways to Make the Legislation More Effective

Investigators suggested three steps that might enhance the effectiveness of parts marking in effecting arrests.

More systematic and frequent training regarding the labels might improve jurisdictions' ability to use them effectively. Some investigators are unfamiliar with how to make the most effective use of anti-theft labels. This may reflect the fact that training of auto theft investigators was reported to be unsystematic in some jurisdictions, with training often conducted on the job. Furthermore, while some investigators have manuals that indicate which cars are required to have labels, other investigators reported they have to call the National Insurance Crime Bureau for this information. Several implied that, rather than take the time to call, they either abandon the investigation or pursue other, less efficient, investigative avenues.

Several investigators said that patrol officers could be more aggressive in identifying stolen cars if they received training regarding the vehicles that are required to have labels, the locations of the labels, and their right to seize vehicles with missing or damaged labels. As one

investigator said, "The manual I use to find out which cars have labels is a half inch thick. How is a beat cop supposed to figure that out in 10 minutes of training?"

Several investigators reported that ***the absence of State legislation making tampering with or removing labels a crime prevents their using labels effectively***. For example, an investigator from Oklahoma City reported that without a statute in his State, he can only bring charges of possession of stolen property for these activities. By comparison, in some other States it is a felony to remove a label or to have a component part with a label removed. Investigators in five jurisdictions also said that thieves can avoid salvage inspection statutes in their States by having the cars retitled in another State that does not require inspections of anti-theft labels. As a result, they suggested that a Federal statute requiring a salvage examination nationwide would make the labels more effective in both deterring and catching thieves.

Finally, ***increased access to ultraviolet lights and other equipment for detecting footprints*** might improve investigators' effectiveness in using labels to arrest thieves.

In summary, most investigators in the large cities contacted in this report and in the States with one or more large metropolitan areas reported that anti-theft labels are useful in making arrests and prosecuting thieves. Almost all the investigators felt that anti-theft devices have significant limitations. Many investigators suggested that, with improved officer training and additional State legislation, the labels' effectiveness could be improved still further. While most investigators report that labels help in recovering stolen parts and cars, and in catching thieves, only about half the investigators believe that the labels deter car theft.

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Appendix A

Glossary of Terms

Black Box Exemption	Term some investigators use to describe the exemption from the parts marking requirement that the Federal legislation allows the Department of Transportation to grant to manufacturers that equip cars with effective anti-theft devices.
Chop Shops	Premises engaged in dissembling or storing of unlawfully obtained passenger motor vehicles or parts with the purpose of altering or removing the identify of the vehicles or parts and selling or disposing of them, typically to auto repair and body shop, or to individual purchasers.
End Users	Body shops, dismantling operations, salvage yards, wrecking yards, and automobile dealerships.
Footprints	In more recent labels, chemicals that migrate into the automobile's paint when anti-theft labels have been removed; ultraviolet light can usually detect the chemicals.
IAATI	The International Association of Automobile Theft Investigators, a professional association for law enforcement officers involved in investigating auto theft.
NICB	The National Insurance Crime Bureau, a research organization funded by selected automobile insurance companies to act as an international repository of information related to automobile insurance claims and histories. The NICB receives, stores, and distributes information submitted to it by the National Crime Information Center (NCIC), member insurance companies, and U.S. Customs. At the request of law enforcement agencies nationwide, the bureau provides information about the history of any automobile.
Salvaged Vehicle	A vehicle damaged or stripped so extensively that it is no longer worth repairing.
VIN	Vehicle Identification Number. The 17 characters of a VIN indicate the vehicle's country of origin, type of engine, year and plant of manufacture, the true serial number of the vehicle, and other information. Every vehicle has its own unique VIN.

Appendix B
Motor Vehicle Theft Data for Cities and Municipalities

City	Population	Motor Vehicle Theft Offenses	Per Capita Rate[1] (per thousand)
Austin, TX	523,691	3,581	6.84
Baltimore, MD	712,209	11,172	15.69
Boston, MA	550,715	10,036	18.22
Chicago, IL	2,749,881	36,197	13.16
Cleveland, OH	495,074	9,058	18.30
Columbus, OH	638,729	7,040	11.02
Dallas, TX	1,042,088	16,882	16.20
Denver, CO	505,843	5,241	10.36
Detroit, MI	997,297	29,273	29.35
El Paso, TX	590,215	3,882	6.58
Fort Worth, TX	460,321	4,861	10.56
Houston, TX	1,734,335	22,536	12.99
Indianapolis, IN[2]		6,016	
Jacksonville, FL	679,148	5,736	8.45
Kansas City, MO	445,549	6,792	15.24
Long Beach, CA	436,034	5,420	12.43
Los Angeles, CA	3,466,211	46,212	13.33
Memphis, TN	623,902	13,837	22.18
Miami, FL	378,720	8,832	23.32
Milwaukee, WI	622,467	11,345	18.23
Nashville, TN	523,681	8,115	15.50
New York, NY	7,319,546	72,679	9.93
Oklahoma City, OK	466,232	5,115	10.97
Philadelphia, PA	1,529,848	23,809	15.56
Phoenix, AZ	1,085,706	23,161	21.33
Portland, OR	458,623	9,113	19.87
San Antonio, TX	999,900	8,422	8.42
San Diego, CA	1,157,771	12,342	10.66
San Francisco, CA	738,371	8,291	11.23
San Jose, CA	822,845	4,225	5.13
Seattle, WA	529,526	6,944	13.11
Washington, D.C.	554,000	10,192	18.40

Municipality	Population	Motor Vehicle Theft Offenses	Per Capita Rate (per thousand)
Boise, ID	149,856	493	3.29
Minot, ND	35,518	64	1.80
Sarasota, FL	55,241	278	5.03
Stockton, CA	223,752	3,481	15.56
Syracuse, NY	159,603	793	4.97
Victoria, TX	61,724	241	3.90

Source: Federal Bureau of Investigation (1996).

[1]Per capita calculates theft rate based on population in reporting jurisdictions; cars may be reported stolen by nonresidents excluded from the population figure (e.g. Miami rate overestimates impact on population).

[2]Indianapolis/Marion County is a unified city-county government with a total population of 772,792.

Issued on: June 20, 1997.

L. Robert Shelton,

Associate Administrator for Safety Performance Standards.

[FR Doc. 97-16751 Filed 6-25-97; 8:45 am]

BILLING CODE 4910-59-P

DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

[Docket No. 97-042; Notice 1]

RIN 2127-AF55

Auto Theft and Recovery; Preliminary Report on the Effects of the Anti Car Theft Act of 1992 and the Motor Vehicle Theft Law Enforcement Act of 1984

AGENCY: National Highway Traffic Safety Administration (NHTSA), Department of Transportation.

ACTION: Request for comments.

SUMMARY: This notice announces the publication by NHTSA of a preliminary report for public comment pursuant to the Anti Car Theft Act of 1992 (codified in Chapter 331 of Title 49 of the United States Code), which directs the Secretary of Transportation to submit a report to Congress five years after the enactment of the statute (49 U.S.C. 3311(b)). The statute requires the Department to report on the effects of federal regulations on auto theft and comprehensive insurance premiums and what changes, if any, to these regulations are appropriate.

As required by the Chapter 331, the agency seeks public review and comment on this report prior to its submission to Congress. The report does not contain recommendations at this time. The Department will develop recommendations after a review of public comments.

DATES: Comments must be received no later than August 11, 1997.

ADDRESSES:

Report: Interested people may obtain a copy of the report free of charge by sending a self-addressed mailing label to Walter Culbreath, Publications Ordering and Distribution Services (NAD-51), National Highway Traffic Safety Administration, 400 Seventh Street, SW., Washington, DC 20590.

Comments: All comments should refer to the docket and notice number of this notice and be submitted to: Docket Section, Room 5109, Nassif Building, 400 Seventh Street, SW., Washington, DC 20590. [Docket hours, 9:30 a.m.-4:00 p.m., Monday through Friday.]

FOR FURTHER INFORMATION CONTACT: Charles J. Kahane, Chief, Evaluation Division, Plans and Policy, National Highway Traffic Safety Administration, Room 5208, 400 Seventh Street, SW., Washington, DC 20590 (202-366-2560).

SUPPLEMENTARY INFORMATION:

History

As a result of the Department's recommendations in the 1991 report to Congress on the Motor Vehicle Theft Law Enforcement Act of 1984 and other information received by the Congress, the Anti Car Theft Act of 1992 was enacted. This Act built on the 1984 Act in several ways: Federal penalties for auto theft were enhanced. A grant program was authorized to help state and local law enforcement agencies concerned with auto theft. Experts were called on to look into and report on motor vehicle titling, registration, and salvage (the report was published in February 1994). The National Motor Vehicle Title Information System was to be established and the states were required to participate in the system; the Theft Prevention Standard was expanded, rules were established to check if salvage or junk vehicles are stolen; and the Attorney General is to maintain a National Stolen Auto Part Information System. Selling or distributing marked parts that are stolen became a Federal crime. Random customs inspection to detect stolen vehicles being exported were allowed. A pilot study on a nondestructive inspection system was authorized. As in the 1984 Act, the Anti Car Theft Act of 1992 calls for a report to the Congress on the effects of the Act on trends in motor vehicle thefts and recovery. The report is due five years after the legislation was enacted. The Anti Car Theft Act requires that the five year report to Congress address: motor vehicle theft and recovery statistics as well as their collection and reliability; the extent to which motor vehicles are dismantled and exported; the market for stolen parts; the cost and benefit of marking parts; arrest and prosecution of auto theft offenders; the Act's effect on the cost of comprehensive insurance premiums; the adequacy of Federal and state theft laws; and an assessment of parts marking benefits for other than passenger cars. As in the 1984 Act, a preliminary report is to be published and announced in the **Federal Register** for comment. This 1997 report addresses that requirement.

The 1992 Act's amendments on theft prevention include: expanding coverage to selected lines that were below the 1990/1991 median theft rate, and including high theft multipurpose passenger vehicles and light trucks that are rated at not more than 6,000 pounds gross vehicle weight under the provisions of the theft standard. These changes had to be made two years (1994) after the enactment of the Act. Three years later (1997), based on the Attorney General's findings, the Secretary of Transportation shall designate all remaining such lines of passenger motor vehicles (other than light-duty trucks), unless the Attorney General determines such additional parts marking would not substantially inhibit chop shop operations and vehicle thefts. By the end of 1999, the Attorney General shall determine if the rules have been effective in inhibiting chop shops and vehicle theft and send these findings to the Secretary. These findings are to include an analysis of the effectiveness of factory-installed antitheft devices as a substitute for parts marking.

The rulemaking process and manufacturer comments regarding lead time to implement parts marking resulted in expansion of the Theft Prevention Standard to a selected group of low theft line vehicle lines and other passenger vehicles beginning with the 1997 model year.

Summary of Preliminary Report

To compile this report, the Department obtained data from sources specified in the Act and available elsewhere, including the FBI's National Crime Information Center, the Justice Department's National Institute of Justice; the Bureau of Customs; the Highway Loss Data Institute, the National Information Crime Bureau; insurance companies; surveys of and interviews with state, county and city enforcement, motor vehicle administration and court officials; and autobody repair shops. The most recent theft data available for this report from the National Crime Information Center is the 1995.

Motor vehicle theft was a growing problem in the early and mid 1980's. In 1984, Congress enacted the Motor Vehicle Theft Law Enforcement Act (Public Law No. 98-547 (October 25, 1984)) in order to reduce the incidence of motor vehicle thefts and facilitate the tracing and recovery of stolen motor vehicles and parts from stolen vehicles. The Department of Transportation implemented the 1984 Act by issuing the Federal Motor Vehicle Theft Prevention Standard, which requires manufacturers of designated high theft passenger car lines to inscribe or affix the Vehicle Identification Number (VIN) onto the engine, the transmission, and

12 major body parts. As an alternative to parts marking, manufacturers could choose to install antitheft devices as standard equipment on those lines. The objective of parts marking is to allow law enforcement agencies to identify stolen vehicles or parts removed from stolen vehicles—and to deter professional thieves since they will have difficulty in marketing stolen marked parts and are more likely to get caught if they steal cars with marked parts. The high-theft car lines were designated in 1985, and actual parts marking began with model year 1987.

In 1991, the National Highway Traffic Safety Administration (NHTSA) presented a report to the Congress assessing the auto theft problem in the United States and, in particular, attempting to evaluate parts marking. At that time, however, only two years of theft and recovery data were available for cars with marked parts. Evidence of the effectiveness of parts marking could not be obtained through statistical analysis of theft and recovery rates. Nevertheless, the Department found wide support in 1991 for parts marking from the law enforcement community. Investigators believed that parts marking provided them with a valuable tool for detecting, apprehending, and prosecuting thieves. After considering the analyses, surveys and public comments obtained during the preparation of the 1991 report, the Department recommended that the theft prevention standard be continued with minor changes.

In 1991–92, motor vehicle theft was still a large problem. Thefts had increased from 830,000 in 1984 to 1,270,000 by 1990. In search of stronger remedies, and in response to the Department's recommendation and other information, Congress enacted Public Law No. 102–519 (October 25, 1992), the Anti Car Theft Act of 1992.

The 1992 Act requires the Department of Transportation to provide a report to the Congress updating the findings of the 1991 report and evaluating the effects of the 1984 and 1992 Acts. As a first step, the Department is publishing this Preliminary Report for public review and issuing a notice in the **Federal Register** announcing a 45 day opportunity for public comment. Comments received will be summarized and discussed as part of the Final Report that will be transmitted to the Congress.

The goals of this report are:

- To update the detailed statistics on motor vehicle theft and recovery presented in the 1991 report. For this report, theft and recovery data were available from 1984 through 1995, and insurance data from 1986 through 1992.
- To revisit the evaluation of parts marking, now that extensive data are available on the theft experience of cars with marked parts or antitheft devices. (However, since theft data were available only through 1995, the effectiveness of the 1992 Act as regards expanded coverage in 1997 and later models cannot be analyzed at this time.)
- To evaluate other provisions of the 1992 Anti Car Theft Act and the 1984 Act, focusing on changes that have occurred since the 1991 report.

The basic reasons for stealing cars have not changed since the 1991 report. Cars are stolen for transportation, joyriding, export, for repair parts, and to obtain expensive items such as stereo equipment for a quick profit. Since the last report to Congress, a new type of auto theft crime has emerged—carjacking—but the theft motives are still the same. Fundamentally, though, two types of auto theft may be recognized: (1) Professional thefts for profit, such as thefts to supply chop shops, retagging and retitling, or for illegal export. These thefts often result in a total loss to the original owner, but there is hope they can be deterred by remedies such as parts marking. They are believed to account for at least 23 percent of all thefts, and perhaps substantially more. (2) Nonprofessional thefts for purposes such as joyriding or to obtain temporary transportation. The vehicles are mostly recovered; on the other hand, parts marking would not appear as likely to deter these thefts.

As in the 1991 report, theft and recovery data come from the FBI's National Crime Information Center. The data do not indicate the motives for individual thefts or separate the "professional" from the "nonprofessional" thefts. Analyses based on aggregate data cannot identify the effectiveness of each subsection of the 1984 and 1992 Acts, but can provide insights on the trend in thefts and recoveries.

The principal finding of this evaluation is that the auto theft problem, which was growing during the mid 1980's, leveled off or even began to decline after 1989–90. In 1995, there were 1,180,000 motor vehicles stolen, a decline of seven percent from the all-time peak of 1,270,000 experienced in both 1990 and 1992. However, the 1995 thefts are still 39 percent more than the 830,000 experienced in 1984. The theft rate per 100,000 registered vehicles increased from 543 in 1984 to 714 in 1990, but had dropped back to 597 by 1995.

Passenger cars account for 71 percent of all motor vehicle thefts, followed by light trucks—pickup trucks, sport utility vehicles and vans—at 24 percent. The remaining thefts are split between heavy trucks and motorcycles. Theft rates for all four vehicle types have declined since 1990.

Recoveries of stolen vehicles have kept pace with thefts over the years—recovery rates have remained stable at close to 80 percent of thefts throughout 1984–95. Passenger cars have slightly higher recovery rates than light trucks. Motorcycles have substantially lower recovery rates than all other vehicle types, and they have gotten worse. It is estimated that the annual economic loss resulting from vehicle thefts—and from the fact that many vehicles are never recovered or only recovered in a damaged condition—is at least $4 billion and could be as high as $8 billion.

The average consumer cost of parts marking in 1995 models was $4.92 per car. At that cost, just a two percent reduction in the theft rate would create consumer benefits well exceeding the cost of parts marking.

Theft and recovery rates for car lines that got parts marking or antitheft devices in 1987 were compared to the rates for the car lines before 1987 and to the rates for car lines that did not get either remedy. However, the fact that, originally, only high-theft car lines got parts marking resulted in biases in the data that made it essentially impossible to attribute a specific percentage reduction in thefts or increase in recoveries to parts marking or antitheft devices. Still, the analyses provided four indications (hedged with caveats) that parts marking and antitheft devices quite possibly had beneficial effects at times, apparently greater than 2 percent:

- There seemed to be a conspicuous shift in theft rates in model years 1986–87, coinciding with the introduction of parts marking. Cars with marked parts had lower theft rates than expected, while those with unmarked parts had higher rates than expected. The effect was as strong as 20 percent when cars were new, but it weakened as they became older and seemed to have vanished by the time they were two years old. The latter is a noteworthy finding, since it is consistent with the view that many professional thieves subsequently learned how to obliterate the markings, and found them less of a deterrent.
- Almost all car lines had lower theft rates in their early 1990's models than in the late 1970's models. However, the long-term reduction was substantially greater in the car lines that got parts

marking or antitheft devices than in the car lines that did not. It is not so clear what happened during the crucial intervening years, the 1980's.

• Recovery rates for 1987 cars with marked parts were consistently higher than for corresponding 1986 models. However, this one-time favorable effect consistently deteriorated after 1987.

• There was a strong reduction after 1987 in the percentage of vehicles that were only recovered in-part—i.e., missing their engine, transmission or a major body part (those which for high theft lines are required to have markings). There was a corresponding increase in percentage of vehicles recovered in-whole (no major parts missing) or intact. This trend was especially strong in the car lines with marked parts.

Factory-installed antitheft devices were installed on far fewer car lines than parts marking. The findings on the effect of antitheft devices are generally parallel to those on parts marking, but less conclusive. Generally speaking, there was no strong evidence that factory-installed antitheft devices have a different effect than parts marking. No data were available for evaluating the effect of aftermarket antitheft devices.

Analysis of the effect of vehicle age on theft rates showed that eight year old vehicles were just as likely to be stolen as current model year vehicles. This suggests that parts marking methods need to be sufficiently permanent to last up to eight years or more.

On the whole, the analysis results seem to suggest that Chapter 331's approach, which views both parts-marking and factory-installed antitheft devices as effective deterrents to automobile theft has had benefits. There is some indication that the effect of parts marking might have been greater than two percent needed for cost-effectiveness, at least at certain times. Also, parts marking and antitheft devices seem to be integral components of a larger program to combat auto theft. That program has, on the whole had an impact, as evidenced by the leveling off and reduction of theft rates after 1990.

Collection and dissemination of theft and recovery information has improved since 1991, primarily because technical advances in communications and computer equipment made databases more complete and accessible to agencies needing the information. The two systems called for in the Anti Car Theft Act of 1992—the National Motor Vehicle Title Information System and the National Stolen Auto Part Information System—are either not completely in place or are so new that their effects on vehicle theft (prevention, recovery or apprehension of thieves) cannot be evaluated at this time.

In tandem with the number of motor vehicle thefts, arrests for auto theft peaked in 1989 and have leveled off since then. In 1994, an estimated 200,000 were arrested for auto theft or attempted theft in the United States.

While recent surveys of district attorneys and law enforcement agencies did not provide detailed statistical data on arrests, prosecutions, and convictions for auto theft, they present an even more encouraging picture than corresponding surveys in the earlier report. Since 1991, there have been moderate increases in the number of prosecutions under both Federal Acts. There have also been increases in the level of effort directed to each prosecution. Now that they have better evidence with which to work, both prosecutors and officers are willing to invest more effort at obtaining a conviction. By 1996, prosecutors saw an increase of over 20 percent in the number of prosecuted cases, and 10 percent said that theft rates had declined in their jurisdictions. By 1996, in contrast to almost no effect seen in 1991, almost half of the district attorneys reported an increase in convictions—and most of them attributed it to the Federal Acts. Stiffer sentencing was occurring in 45 percent of the convictions, including a 75 percent increase in jail sentences. This could be even higher, they report, but for prison overcrowding.

Law enforcement agencies report the same attitudes about the deterrent effects of parts marking in 1996 as they did in 1991. They feel that auto thefts for chop shop operations will continue if there is a demand for a part, marked or not. But almost half of the investigators feel that parts marking makes professional thieves more cautious or even deters them completely from stealing cars with marked parts. All investigators thought parts marking had no effect on amateur thieves. Parts marking seems to have the greatest effect on chop shop operators because of the increased cost of "doing business."

Auto theft investigators feel that parts marking is a valuable tool for arresting and prosecuting thieves. In 1991, they saw little or no effect, but by 1996, most of them felt that parts marking did assist in identifying and recovering stolen parts and vehicles. About three fourths of the law enforcement agencies in big cities said parts marking helped in arresting both chop shop operators and professional thieves. Auto theft investigators, as in 1991, still say that more permanent methods for parts marking are needed. Even though it is unlawful to remove labels from marked parts and the labels are required to leave evidence that they were once on the marked part, thieves have found methods for removing both the label and its "footprint". The investigator then has to be sufficiently knowledgeable to recognize that the part should have a label. Also without the label it is very difficult to trace the part back to the vehicle from which it was stolen.

Investigations and assistance provided by NHTSA to the Justice Department in the prosecution of violations of criminal statutes concerning altering or removing markings and forfeiture of certain motor vehicles and motor vehicle parts, and chop shops has brought to the agency's attention the fact that many law enforcement officers do not know which vehicles must be marked, where the markings are to be located or which parts are to be marked. Also, investigators often are unaware of the replacement parts-marking requirements. The agency investigators feel that an education program for law enforcement officials on the applicable parts-marking requirements is needed.

Data received from the Customs Service since the 1991 report, indicates it has improved its ability to recoup stolen vehicles.

Insurance companies have not reported any effects of parts marking on insurance premiums. Some insurance companies do offer discounts on comprehensive premiums for vehicles equipped with certain types of anti theft devices. Analysis of claim payments also has not shown any specific effects of either parts marking or antitheft devices. Insurance companies report that their used part policies have not changed since 1986. About three fourths of the reporting companies encourage the use of used parts for crash repairs. Most companies rely on the repair shops to obtain parts from reputable sources.

Analyses of the effectiveness of parts marking in "high theft" passenger car lines suggests that parts marking has benefits in reducing theft rates, and at times in increasing recovery rates. These benefits seem to exceed the cost of parts marking. The greatest impact of parts marking appears to have affected chop shops and "professional" auto thieves. While more vehicles stolen for export are being recovered, the number recovered is too small to say that parts marking has helped reduce thefts for export or recovery of these vehicles. Given that parts marking appears to be effective in currently marked passenger car lines, there is no reason to doubt

that it could also have benefits for other passenger vehicles.

In conclusion, it appears that parts marking and other provisions of the 1984 and 1992 Acts have given the law enforcement community tools they can use to deter thefts, trace stolen vehicles and parts, and apprehend and convict thieves. Theft rates leveled off after 1989–90 and have begun to drop. While the program to reduce auto theft has had an impact, there appear to be three areas with potential room for improvement: (1) Insurance companies and motor vehicle departments could take better advantage of the existing parts marking program by routinely requiring inspection of the markings of used parts acquired at body shops and used vehicles brought in for new titles. (2) To the extent that current parts markings can be obliterated, their long-term deterrent effect may be diminished. (3) Since many vehicles still do not have marked parts, the deterrent effect of parts marking at this time may be offset by increased thefts of the vehicles without marked parts.

Comments Sought

In addition to any comments regarding this report and its findings on effectiveness in deterring or reducing motor vehicle theft or enhancing recoveries, comment on the following questions are sought:

- Section 33113(b)(11) of Title 49 requires the report to include recommendations to Congress for legislative or administrative action for—(A) continuing without change the theft prevention standards prescribed under Chapter 331; (B) amending this chapter to cover more or fewer lines of passenger motor vehicles; (C) amending this chapter to cover other classes of motor vehicles. Please provide your comments on all or any one of these items, including the basis for your position.
- Given that the current marking methods cost the consumer less than $5 per vehicle and that Congress allows up to $22 per vehicle in 1995 dollars, are there more permanent methods for marking vehicles with the Vehicle Identification Number (VIN) that can be accomplished within the Congressionally mandated limit? Please include documentation on the marking method, how permanent the markings are (how difficult it is to remove the markings and what evidence is likely to remain that there were markings), cost estimates including the cost of any materials, equipment, tooling and labor. Please identify the economic year for the cost estimates. Please include a description of how the markings are applied including the time to mark all the major vehicle parts. If the information to be supplied is proprietary, application to the agency Chief Counsel's Office can be made.
- Are there other vehicle parts (e.g., air bags, radios) that should be classified as major parts and thus subject to parts marking? Some states allow glazing to be etched with the VIN. Should glazing be included as a major part and be required to be marked? Please provide a rationale with evidence to support any recommendations.
- Under the current standard, a limited number of lines are exempted from parts marking because the vehicles are equipped with factory installed antitheft devices as standard equipment. Because of the limited data available for evaluation, the effectiveness of antitheft devices as a deterrent could not be determined with much statistical confidence. Is there other evidence to support the effectiveness of antitheft devices? Please supply such evidence along with a description of the applicable antitheft device.
- Even though some insurance companies offer discounts for certain types of antitheft devices, it is unclear as to which devices are considered desirable for obtaining a discount. Also, what additional efforts are made by insurance companies to encourage parts marking and/or the installation of antitheft devices? What other measures does the insurance industry take to reduce the occurrence of motor vehicle theft? Please supply any supporting evidence that shows that these measures are helping to reduce motor vehicle theft or apprehending auto thieves.

All comments received before the close of business on the comment closing date will be considered, and will be available for examination in the docket at the above address both before and after that date. To the extent possible, comments filed after the closing date will also be considered. The NHTSA will continue to file relevant information as it becomes available in the docket after the closing date, and it is recommended that interested people continue to examine the docket for new material.

People desiring to be notified upon receipt of their comments in the rules docket should enclose a self-addressed, stamped postcard in the envelope with their comments. Upon receiving the comments, the docket supervisor will return the postcard by mail.

Authority: 49 U.S.C. 30112, 33113(b).

William H. Walsh,

Associate Administrator for Plans and Policy.

[FR Doc. 97-16750 Filed 6-25-97; 8:45 am]

BILLING CODE 4910-59-P

DEPARTMENT OF TRANSPORTATION

Surface Transportation Board

[STB Docket No. AB-33 (Sub-No. 112X)]

Union Pacific Railroad Company—Abandonment Exemption—in Lancaster County, NE

On June 6, 1997, the Union Pacific Railroad Company (UP) filed with the Surface Transportation Board a petition under 49 U.S.C. 10502 for exemption from the provisions of 49 U.S.C. 10903 to abandon a 1.88-mile segment of its Lincoln Branch, extending from milepost 492.88 near 33rd Street to milepost 494.76 near 10th Street in Lincoln, NE. The line traverses U.S. Postal Service Zip Code 68503 in Lancaster County, NE.

The line does not contain federally granted rights-of-way. Any documentation in the railroad's possession will be made available promptly to those requesting it. The interest of railroad employees will be protected by Oregon Short Line R. Co.—Abandonment—Goshen, 360 I.C.C. 91 (1979).

By issuance of this notice, the Board is instituting an exemption proceeding pursuant to 49 U.S.C. 10502(b). A final decision will be issued within 90 days (by September 24, 1997).

Any offer of financial assistance under 49 CFR 1152.27(b)(2) will be due no later than 10 days after service of a decision granting the petition for exemption. Each offer of financial assistance must be accompanied by the filing fee, which currently is set at $900. See 49 CFR 1002.2(f)(25).

All interested persons should be aware that following abandonment of rail service and salvage of the line, the line may be suitable for other public use, including interim trail use. Any request for a public use condition under 49 CFR 1152.28 and any request for trail use/rail banking under 49 CFR 1152.29 will be due no later than July 16, 1997. Each trail use request must be accompanied by a $150 filing fee. See 49 CFR 1002.2(f)(27).

All filings in response to this notice must refer to STB Docket No. AB-33 (Sub-No. 112X) and must be sent to: (1) Surface Transportation Board, Office of the Secretary, Case Control Unit, 1925 K Street, N.W., Washington, DC 20423-

under 49 U.S.C. 32905, are listed in Table I:

TABLE I—GALLON EQUIVALENT MEASUREMENTS FOR GASEOUS FUELS PER 100 STANDARD CUBIC FEET

Fuel	Gallon equivalent measurement
Compressed Natural Gas	0.823
Liquefied Natural Gas	0.823
Liquefied Petroleum Gas (Grade HD-5)*	0.726
Hydrogen	0.259
Hythane (Hy5)	0.741

*Per gallon unit of measure.

PART 541—FEDERAL MOTOR VEHICLE THEFT PREVENTION STANDARD

Sec.

541.1 Scope.
541.2 Purpose.
541.3 Application.
541.4 Definitions.
541.5 Requirements for passenger motor vehicles.
541.6 Requirements for replacement parts.

APPENDIX A TO PART 541—LINES SUBJECT TO THE REQUIREMENTS OF THIS STANDARD
APPENDIX A-I TO PART 541—HIGH-THEFT LINES WITH ANTITHEFT DEVICES WHICH ARE EXEMPTED FROM THE PARTS-MAKING REQUIREMENTS OF THIS STANDARD PURSUANT TO 49 CFR PART 543
APPENDIX A-II TO PART 541—HIGH-THEFT LINES WITH ANTITHEFT DEVICES WHICH ARE EXEMPTED IN PART FROM THE PARTS-MARKING REQUIREMENTS OF THIS STANDARD PURSUANT TO 49 CFR PART 543
APPENDIX B TO PART 541—PASSENGER MOTOR VEHICLE LINES (EXCEPT LIGHT DUTY TRUCKS) WITH THEFT RATES BELOW THE 1990/91 MEDIAN THEFT RATE, SUBJECT TO THE REQUIREMENTS OF THIS STANDARD
APPENDIX C TO PART 541—CRITERIA FOR SELECTING LINES LIKELY TO HAVE HIGH THEFT RATES

AUTHORITY: 49 U.S.C. 33101, 33102, 33103, 33105; delegation of authority at 49 CFR 1.50.

SOURCE: 50 FR 43190, Oct. 24, 1985, unless otherwise noted.

EDITORIAL NOTE: The information collection requirements contained in this part 541 will be submitted to the Office of Management and Budget for its approval. A notice will be published in the FEDERAL REGISTER when OMB approval has been obtained.

§ 541.1 Scope.

This standard specifies performance requirements for identifying numbers or symbols to be placed on major parts of certain passenger motor vehicles.

§ 541.2 Purpose.

The purpose of this standard is to reduce the incidence of motor vehicle thefts by facilitating the tracing and recovery of parts from stolen vehicles.

§ 541.3. Application.

This standard applies to the following:

(a) Passenger motor vehicle parts identified in § 541.5(a) that are present:

(1) In the passenger motor vehicle lines listed in appendix A of this part;

(2) Beginning with model year 1997, in passenger motor vehicle lines which NHTSA has finally determined, pursuant to 49 CFR part 542, to be high theft based on the 1990/91 median theft rate; and

(3) Beginning with model year 1997, in passenger motor vehicle lines listed in appendix B of this part.

(b) Replacement parts for passenger motor vehicle lines described in § 541.3(a) (1) and (2), if the part is identified in § 541.5(a).

[59 FR 64168, Dec. 13, 1994]

§ 541.4 Definitions.

(a) *Statutory terms.* All terms defined in 49 U.S.C. chapter 331 are used in accordance with their statutory meanings unless otherwise defined in paragraph (b) of this section.

(b) *Other definitions.* (1) *Interior surface* means, with respect to a vehicle part, a surface that is not directly exposed to sun and precipitation.

(2) *Light-duty truck (LDT)* means a motor vehicle, with motive power, except a trailer, designed primarily for the transportation of property or special purpose equipment, that is rated at 6,000 pounds gross vehicle weight or less.

(3) *Line* means a name which a manufacturer applies to a group of motor vehicles of the same make which have the same body or chassis, or otherwise are similar in construction or design. A "line" may, for example, include 2-door, 4-door, station wagon, and hatchback vehicles of the same make.

(4) *1990/91 median theft rate* means 3.5826 thefts per thousand vehicles produced.

(5) *Multipurpose passenger vehicle (MPV)* means a passenger motor vehicle which is constructed either on a truck chassis or with special features for occasional off-road operation and which is rated at 6,000 pounds gross vehicle weight or less.

(6) *Passenger car* is used as defined in §571.3 of this chapter.

(7) *VIN* means the vehicle identification number required by part 565 of this chapter.

[59 FR 64168, Dec. 13, 1994, as amended at 61 FR 29033, June 7, 1996]

§541.5 Requirements for passenger motor vehicles.

(a) Each passenger motor vehicle subject to this standard must have an identifying number affixed or inscribed on each of the parts specified in paragraphs (a)(1) through (a)(18) inclusive, if the part is present on the passenger motor vehicle. In the case of passenger motor vehicles not originally manufactured to comply with applicable U.S. vehicle safety and bumper standards, each such motor vehicle subject to this standard must have an identifying number inscribed in a manner which conforms to paragraph (d)(2) of this section, on each of the parts specified in paragraphs (a)(1) through (a)(18), inclusive, if the part is present on the motor vehicle.

(1) Engine.
(2) Transmission.
(3) Right front fender.
(4) Left front fender.
(5) Hood.
(6) Right front door.
(7) Left front door.
(8) Right rear door.
(9) Left rear door.
(10) Sliding or cargo door(s).
(11) Front bumper.
(12) Rear bumper.
(13) Right rear quarter panel (passenger cars).
(14) Left rear quarter panel (passenger cars).
(15) Right-side assembly (MPVs).
(16) Left-side assembly (MPVs).
(17) Pickup box, and/or cargo box (LDTs).
(18) Rear door(s) (both doors in case of double doors), decklid, tailgate, or hatchback (whichever is present).

(b)(1) Except as provided in paragraphs (b)(2) and (b)(3) of this section, the number required to be inscribed or affixed by paragraph (a) shall be the VIN of the passenger motor vehicle.

(2) In place of the VIN, manufacturers who were marking engines and/or transmissions with a VIN derivative consisting of at least the last eight characters of the VIN on October 24, 1984, may continue to mark engines and/or transmissions with such VIN derivative.

(3) In the case of passenger motor vehicles not originally manufactured to comply with U.S. vehicle safety and bumper standards, the number required to be inscribed by paragraph (a) of this section shall be the original vehicle identification number assigned to the motor vehicle by its original manufacturer in the country where the motor vehicle was originally produced or assembled.

(c) The characteristics of the number required to be affixed or inscribed by paragraph (a) of this section shall satisfy the size and style requirements set forth for vehicle certification labels in §567.4(g) of this chapter.

(d) The number required by paragraph (a) of this section must be affixed by means that comply with paragraph (d)(1) of this section or inscribed by means that comply with paragraph (d)(2) of this section.

(1) *Labels.* (i) The number must be printed indelibly on a label, and the label must be permanently affixed to the passenger motor vehicle's part.

(ii) The number must be placed on each part specified in paragraph (a) of this section in a location such that the number is, if practicable, on an interior surface of the part as installed on the vehicle and in a location where it:

(A) Will not be damaged by the use of any tools necessary to install, adjust, or remove the part and any adjoining parts, or any portions thereof;

(B) Is on a portion of the part not likely to be damaged in a collision; and

(C) Will not be damaged or obscured during normal dealer preparation operations (including rustproofing and undercoating).

(iii) The number must be placed on each part specified in paragraph (a) of this section in a location that is visible

without further disassembly once the part has been removed from the vehicle.

(iv) The number must be placed entirely within the target area specified by the original manufacturer for that part, pursuant to paragraph (e) of this section, on each part specified in paragraph (a) of this section.

(v) Removal of the label must—

(A) Cause the label to self-destruct by tearing or rendering the number on the label illegible, and

(B) Discernibly alter the appearance of that area of the part where the label was affixed by leaving residual parts of the label or adhesive in that area, so that investigators will have evidence that a label was originally present.

(vi) Alteration of the number on the label must leave traces of the original number or otherwise visibly alter the appearance of the label material.

(vii) The label and the number shall be resistant to counterfeiting.

(viii) The logo or some other unique identifier of the vehicle manufacturer must be placed in the material of the label in a manner such that alteration or removal of the logo visibly alters the appearance of the label.

(2) *Other means of identification.* (i) Removal or alteration of any portion of the number must visibly alter the appearance of the section of the vehicle part on which the identification is marked.

(ii) The number must be placed on each part specified in paragraph (a) of this section in a location that is visible without further disassembly once the part has been removed from the vehicle.

(iii) The number must be placed entirely within the target area specified by the original manufacturer for that part, pursuant to paragraph (e) of this section, on each part specified in paragraph (a) of this section.

(e) *Target areas.* (1) Each manufacturer that is the original producer who installs or assembles the covered major parts on a line shall designate a target area for the identifying numbers to be marked on each part specified in paragraph (a) of this section for each of its lines subject to this standard. The target area shall not exceed 50 percent of the surface area on the surface of the part on which the target area is located.

(2) Each manufacturer subject to paragraph (e)(1) of this section shall, not later than 30 days before the line is introduced into commerce, inform NHTSA in writing of the target areas designated for each line listed in appendix A. The information should be submitted to: Administrator, National Highway Traffic Safety Administration, 400 Seventh Street, SW, Washington, DC 20590.

(3) The target areas designated by the original vehicle manufacturer for a part on a line shall be maintained for the duration of the production of such line, unless a restyling of the part makes it no longer practicable to mark the part within the original target area. If there is such a restyling, the original vehicle manufacturer shall inform NHTSA of that fact and the new target area, in accordance with the requirements of paragraph (e)(2) of this section.

[59 FR 64168, Dec. 13, 1994]

§ 541.6 Requirements for replacement parts.

(a) Each replacement part for a part specified in § 541.5(a) must have the registered trademark of the manufacturer of the replacement part, or some other unique identifier if the manufacturer does not have a registered trademark, and the letter "R" affixed or inscribed on such replacement part by means that comply with § 541.5(d), except as provided in paragraph (d) of this section. In the case of replacement parts subject to the marking requirements of this section, which were not originally manufactured for sale in the United States, the importer of the part shall inscribe its registered trademark, or some other unique identifier if the importer does not have a registered trademark, and the letter "R" on the part by means that comply with § 541.5(d)(2), except as provided in paragraph (d) of this section.

(b) A replacement part subject to paragraph (a) of this section shall not be marked pursuant to § 541.5.

(c) The trademark and the letter "R" required by paragraph (a) of this section must be at least one centimeter high.

(d) The trademark and the letter "R" required by paragraph (a) of this section must be placed entirely within the target area specified by the vehicle manufacturer, pursuant to paragraph (e) of this section.

(e) *Target areas.* (1) Each manufacturer that is the original producer or assembler of the vehicle for which the replacement part is designed shall designate a target area for the identifying symbols to be marked on each replacement part subject to the requirements of paragraph (a) of this section. Such target areas shall not exceed 25 percent of the surface area of the surface on which the replacement part marking will appear.

(2) The boundaries of the target area designated under paragraph (e)(1) of this section shall be at least 10 centimeters at all points from the nearest boundaries of the target area designated for that part under §541.5(e) of this part.

(3) Each manufacturer subject to paragraph (e)(1) of this section shall inform NHTSA in writing of the target areas designated for each replacement part subject to paragraph (a) of this section, at the same time as it informs the agency of the target area designated for the original equipment parts of the line, pursuant to §541.5(e)(2) of this part. The information should be submitted to: Administrator, National Highway Traffic Safety Administration, 400 Seventh Street, SW., Washington, DC 20590.

(4) The target area designated by the original vehicle manufacturer for the parts subject to the requirements of paragraph (a) of this section shall be maintained for the duration of the production of such replacement part, unless a restyling of the part makes it no longer practicable to mark the part within the original target area. If there is such a restyling, the original vehicle manufacturer shall inform NHTSA of that fact and the new target area, in accordance with the requirements of paragraph (e)(3) of this section.

(f) Each replacement part must bear the symbol "DOT" in letters at least one centimeter high within 5 centimeters of the trademark and of the letter "R", and entirely within the target area specified under paragraph (d) of this section. The symbol "DOT" constitutes the manufacturer's certification that the replacement part conforms to the applicable theft prevention standard, and shall be inscribed or affixed by means that comply with paragraph (a) of this section. In the case of replacement parts subject to the requirements of paragraph (a) of this section, which were not originally manufactured for sale in the United States, the importer shall inscribe the "DOT" symbol before the part is imported into the United States.

APPENDIX A TO PART 541—LINES SUBJECT TO THE REQUIREMENTS OF THIS STANDARD

Manufacturer	Subject lines
ALFA ROMEO	Milano 161.
	164.
BMW	Z3.
	6 Car Line.
CHRYSLER	Chrysler Cirrus.
	Chrysler Executive, Sedan/Limousine.
	Chrysler Fifth Avenue/Newport.
	Chrysler Laser.
	Chrysler LeBaron/Town & Country.
	Chrysler LeBaron GTS.
	Chrysler's TC.
	Chrysler New Yorker Fifth Avenue.
	Chrysler Sebring.
	Chrysler Town & Country.
	Dodge 600.
	Dodge Aries.
	Dodge Avenger.
	Dodge Colt.
	Dodge Daytona.
	Dodge Diplomat.
	Dodge Lancer.
	Dodge Neon.
	Dodge Shadow.

Manufacturer	Subject lines
	Dodge Stratus.
	Dodge Stealth.
	Eagle Summit.
	Eagle Talon.
	Jeep Cherokee (MPV).
	Jeep Grand Cherokee (MPV).
	Jeep Wrangler (MPV).
	Plymouth Caravelle.
	Plymouth Colt.
	Plymouth Laser.
	Plymouth Gran Fury.
	Plymouth Neon.
	Plymouth Reliant.
	Plymouth Sundance.
	Plymouth Breeze.
CONSULIER	Consulier GTP.
FERRARI	Mondial 8.
	308.
	328.
FORD	Ford Aspire.
	Ford Crown Victoria.
	Ford Escort.
	Ford Mustang.
	Ford Probe.
	Ford Taurus.
	Ford Thunderbird.
	Lincoln Continental.
	Lincoln Mark.
	Lincoln Town Car.
	Mercury Capri.
	Mercury Cougar.
	Mercury Grand Marquis.
	Mercury Sable.
	Mercury Tracer.
	Merkur Scorpio.
	Merkur XR4Ti.
GENERAL MOTORS	Buick Electra.
	Buick Reatta.
	Buick Skylark.
	Chevrolet Astro (MPV).
	Chevrolet Lumina Minivan.
	Chevrolet Malibu.[1]
	Chevrolet Monte Carlo (MYs 1987–88).
	Chevrolet Nova.
	Chevrolet Blazer (MPV).
	Chevrolet Prizm.[2]
	Chevrolet S–10 Pickup.
	Geo Storm.
	Chevrolet Tracker (MPV).[2]
	GMC Jimmy (MPV).
	GMC Safari (MPV).
	GMC Sonoma Pickup.
	Oldsmobile Achieva (MYs 1997–1998).[3]
	Oldsmobile Bravada.
	Oldsmobile Cutlass.[4]
	Oldsmobile Cutlass Supreme (MYs 1988–1997).[5]
	Oldsmobile Intrigue.
	Pontiac Fiero.
	Pontiac Grand Am.
	Saturn Sports Coupe.
	Pontiac Grand Prix.
HONDA	Accord.
	CRV (MPV).
	Odyssey (MPV).[6]
	Passport.
	Prelude.
	Acura Integra.
HYUNDAI	Accent.
	(nameplate to be announced).[6]
	Sonata.
	Tiburon.
ISUZU	Impulse.
	Rodeo.
	Stylus.

Manufacturer	Subject lines
	Trooper/Trooper II.
JAGUAR	XJ.
	XJ–6.
	XJ–40.
KIA MOTORS	S–II.
LOTUS	Elan.
MASERATI	Biturbo.
	Quattroporte.
	228.
MAZDA	GLC.
	626.
	MX–3.
	MX–5 Miata.
	MX–6.
MERCEDES-BENZ	190 D.
	190 E.
	250D–T.
	260 E.
	300 SE.
	300 TD.
	300 SDL.
	300 SEC/500 SEC.
	300 SEL/500 SEL.
	420 SEL.
	560 SEL.
	560 SEC.
	560 SL.
MITSUBISHI	Cordia.
	Eclipse.
	Mirage.
	Montero (MPV).
	Montero Sport (MPV).
	Tredia.
	3000GT.
NISSAN	240SX.
	Pathfinder.
	Sentra/200SX.
	Stanza/Altima.
PEUGEOT	405.
PORSCHE	924S.
SUBARU	XT.
	SVX.
	Forester.
	Legacy.
SUZUKI	X90.
	Samurai (MPV).
	Sidekick (MYs 1997–1998).[7]
	Grand Vitara (MPV).
TOYOTA	Toyota 4-Runner (MPV)
	Toyota Avalon.
	Toyota Camry.
	Toyota Celica.
	Toyota Corolla/Corolla Sport.
	Toyota MR2.
	Toyota RAV4 (MPV).
	Toyota Sienna (MPV).
	Toyota Solara.[8]
	Toyota Starlet.
	Toyota Tercel.
	Lexus RX300 (SUV).[8]
VOLKSWAGEN	Audi Quattro.
	Volkswagen Rabbit.
	Volkswagen Scirocco.

[1] Replaced the Chevrolet Corsica beginning with MY 1997.
[2] The Geo make identifier was replaced by the Chevrolet make identifier beginning with MY 1998.
[3] Renamed the Oldsmobile Alero beginning with MY 1999.
[4] Replaced the Oldsmobile Cutlass Ciera in MY 1997.
[5] Renamed the Oldsmobile Intrigue beginning with MY 1998.
[6] Lines added for MY 1999.
[7] Renamed the Suzuki Grand Vitara beginning with MY 1999.
[8] Lines added for MY 1999.

[63 FR 38097, July 15, 1998]

APPENDIX A-I—HIGH-THEFT LINES WITH ANTITHEFT DEVICES WHICH ARE EXEMPTED FROM THE PARTS-MARKING REQUIREMENTS OF THIS STANDARD PURSUANT TO 49 CFR PART 543

Manufacturer	Subject lines
AUSTIN ROVER	Sterling.
BMW	3 Car Line.[1]
	5 Car Line.
	7 Car Line.
	8 Car Line.
CHRYSLER	Chrysler Conquest.
	Chrysler Imperial.
GENERAL MOTORS	Buick Park Avenue.
	Buick Regal/Century.
	Buick Riviera.
	Cadillac Allante.
	Cadillac Seville.
	Chevrolet Cavalier.
	Chevrolet Corvette.
	Chevrolet Lumina/Monte Carlo.
	Oldsmobile Alero.[1].
	Oldsmobile Aurora.
	Oldsmobile Toronado.
	Pontiac Sunfire.
HONDA	Acura CL.
	Acura Legend (MYs 1987–1996).[2]
	Acura NSX.
	Acura RL.
	Acura SLX.
	Acura TL.
	Acura Vigor (MYs 1992–1995).[3]
ISUZU	Impulse (MYs 1987–1991).
JAGUAR	XK8
MAZDA	929.
	RX–7.
	Millenia.
MERCEDES–BENZ	124 Car Line (the models within this line are):
	300D.
	300E.
	300CE.
	300TE.
	400E.
	500E.
	129 Car Line (the models within this line are):
	300SL.[4]
	500SL.[5]
	600SL.[6]
	SL320.
	SL500.
	SL600.
	202 Car Line (the models within this line are):
	C220.
	C230.
	C280.
	C36
MITSUBISHI	Galant.
	Starion.
	Diamante.
NISSAN	Nissan Maxima.[7]
	Nissan 300ZX.
	Infiniti I30.
	Infiniti J30.
	Infiniti M30.
	Infiniti QX4.
	Infiniti Q45.
PORSCHE	911.
	928.
	968.
	Boxster.
SAAB	900.
	9000.
TOYOTA	Toyota Supra.
	Toyota Cressida.
	Lexus ES.

Manufacturer	Subject lines
VOLKSWAGEN	Lexus GS. Lexus LS. Lexus SC Audi 5000S. Audi 100. Audi 200. Audi A6. Audi S4. Audi S6. Audi Cabriolet. Volkswagen Cabrio. Volkswagen Corrado. Volkswagen Golf/GTI. Volkswagen Passat. Volkswagen Jetta/Jetta III

[1] Exempted in full beginning with MY 1999.
[2] Renamed the Acura RL beginning with MY 1997.
[3] Replaced by the Acura TL beginning with MY 1996.
[4] Replaced by the SL320 beginning with MY 1997.
[5] Renamed the SL500 beginning with MY 1994.
[6] Renamed the SL600 beginning with MY 1994.
[7] Exempted in full beginning with MY 1999.

[63 FR 38100, July 15, 1998]

APPENDIX A—II TO PART 541—HIGH-THEFT LINES WITH ANTITHEFT DEVICES WHICH ARE EXEMPTED IN-PART FROM THE PARTS-MARKING REQUIREMENTS OF THIS STANDARD PURSUANT TO 49 CFR PART 543

Manufacturers	Subject lines	Parts to be marked
GENERAL MOTORS	Buick LeSabre	Engine, Transmission.
	Cadillac Deville	Engine, Transmission.
	Cadillac Eldorado	Engine, Transmission.
	Cadillac Sixty Special[1]	Engine, Transmission.
	Oldsmobile Ninety-Eight	Engine, Transmission.
	Pontiac Bonneville	Engine, Transmission.
	Pontiac Firebird	Engine, Transmission.
	Chevrolet Camaro	Engine, Transmission.
	Oldsmobile Eighty-Eight	Engine, Transmission.

[1] Renamed the Cadillac Concours beginning with MY 1994.

[63 FR 38101, July 15, 1998]

APPENDIX B TO PART 541—PASSENGER MOTOR VEHICLE LINES (EXCEPT LIGHT DUTY TRUCKS) WITH THEFT RATES BELOW THE1990/91MEDIAN THEFT RATE, SUBJECT TO THE REQUIREMENTS OF THIS STANDARD

Manufacturer	Subject lines
Chrysler	Dodge Ramcharger (MPV).
	Dodge Ram Wagon/Van B150.
Ferrari	Testarossa.
Ford	Crown Victoria.
	Festiva.
	Mercury Grand Marquis.
	Mercury Sable.
	Taurus.
General Motors	Chevrolet Astro (MPV).
	Chevrolet Celebrity.
	Chevrolet Sprint.
	GMC Safari (MPV).
	Oldsmobile Custom Cruiser.
Honda	Civic.
Mazda	Navajo.
Nissan	Axxess.
Porsche	944.
Rover Group	Range Rover (MPV).
Volvo	760.
Volkswagen	Fox.
	Passat.

[59 FR 64169, Dec. 13, 1994]

APPENDIX C TO PART 541—CRITERIA FOR SELECTING LINES LIKELY TO HAVE HIGH THEFT RATES

Scope

These criteria specify the factors the Administrator will take into account in determining whether a new line is likely to have a high theft rate, and, therefore, whether such line will be subject to the requirements of this theft prevention standard.

Purpose

The purpose of these criteria is to enable the Administrator to select, by agreement

with the manufacturer, if possible, those new lines which are likely to have high theft rates.

Application

These criteria apply to lines of passenger motor vehicles initially introduced into commerce on or after January 1, 1983.

Methodology

These criteria will be applied to each line initially introduced into commerce on or after January 1, 1983. The likely theft rate for such lines will be determined in relation to the national median theft rate for 1983 and 1984. If the line is determined to be likely to have a theft rate above the national median, the Administrator will select such line for coverage under this theft prevention standard.

Criteria

1. Retail price of the vehicle line.
2. Vehicle image or marketing strategy.
3. Vehicle lines with which the new line is intended to compete, and the theft rates of such lines.
4. Vehicle line(s), if any, which the new line is intended to replace, and the theft rate(s) of such line(s).
5. Presence or absence of any new theft prevention devices or systems.
6. Preliminary theft rate for the line, if it can be determined on the basis of currently available data.

PART 542—PROCEDURES FOR SELECTING LINES TO BE COVERED BY THE THEFT PREVENTION STANDARD

Sec.

542.1 Procedures for selecting new lines that are likely to have high or low theft rates.
542.2 Procedures for selecting low theft new lines with a majority of major parts interchangeable with those of a high theft line.

AUTHORITY: 15 U.S.C. 2021, 2022, and 2023; delegation of authority at 49 CFR 1.50.

SOURCE: 59 FR 21672, Apr. 26, 1994, unless otherwise noted.

§542.1 Procedures for selecting new lines that are likely to have high or low theft rates.

(a) *Scope.* This section sets forth the procedures for motor vehicle manufacturers and NHTSA to follow in the determination of whether any new vehicle line is likely to have a theft rate above or below the median theft rate.

(b) *Application.* These procedures apply to each manufacturer that plans to introduce a new line into commerce in the United States on or after April 24, 1986, and to each of those new lines.

(c) *Procedures.* (1)(i) For each new line introduced before the 1997 model year, each manufacturer uses the criteria in appendix C of part 541 of this chapter to evaluate each new line and to conclude whether the new line is likely to have a theft rate above or below the median theft rate established for calendar years 1990 and 1991.

(ii) For each new line to be introduced for the 1997 or subsequent model years, each manufacturer shall use the criteria in appendix C of part 541 of this chapter to evaluate each new line and to conclude whether the new line is likely to have a theft rate above or below the median theft rate.

(2)(i) For each new line to be introduced before the 1997 model year, the manufacturer submits its evaluations and conclusions made under paragraph (c)(1)(i) of this section, together with the underlying factual information, to NHTSA not less than 18 months before the date of introduction. The manufacturer may request a meeting with the agency to further explain the bases for its evaluations and conclusions.

(ii) For each new line to be introduced for the 1997 or subsequent model years, the manufacturer shall submit its evaluations and conclusions made under paragraph (c)(1)(ii) of this section, together with the underlying factual information, to NHTSA not less than 15 months before the date of introduction. The manufacturer may request a meeting with the agency during this period to further explain the bases for its evaluations and conclusions.

(3) Within 90 days after its receipt of the manufacturer's submission under paragraph (c)(2) of this section, the agency independently evaluates the new line using the criteria in appendix C of part 541 of this chapter and, on a preliminary basis, determines whether the new line should or should not be subject to §541.2 of this chapter. NHTSA informs the manufacturer by letter of the agency's evaluations and

VOLVO

Volvo Cars of North America, Inc.

November 6, 1998

Mr. Thomas Eldridge
US Department of Justice
Room 2213
950 Pennsylvania Ave., N.W.
Washington, DC 20530

RE: Department of Justice: Auto Theft and Recovery, Federal Register Volume 63, Number 176, pages 48758-48760, Request for Comment.

Dear Mr. Eldridge:

The following comments (10 copies enclosed) are provided in response to the above referenced Request for Comment. The comments represent the position of Volvo Car Corporation, Gothenburg, Sweden, and Volvo Cars of North America, Inc., Rockleigh, New Jersey.

Volvo appreciates the opportunity to comment on this issue and has provided the following details for your consideration.

As stated in the Federal Register notice, the Department of Justice (DOJ) seeks comments regarding the practicality and effectiveness of applying the Federal Motor Vehicle Theft Prevention Standard (49 CFR 541) to the remaining lines of passenger motor vehicles (except light duty trucks) to substantially inhibit chop shop operations and motor vehicle thefts. Additionally, the DOJ seeks comments regarding the additional costs, effectiveness, competition, and available alternative factors associated with the expansion of these requirements to the remaining lines of passenger motor vehicles (except light duty trucks).

OVERVIEW

At 63 FR 48758, it is stated that,

> "[T]he Anti Car Theft Act of 1992 ("ACTA"), as amended, requires the Secretary of the Department of Transportation to expand the scope of its existing automobile parts marketing program to include certain unmarked passenger motor vehicles – *unless* the Attorney General finds that such a program would not substantially inhibit chop shop operations and motor vehicle thefts." (Emphsis not added.)

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We strongly believe that parts-marking NOT be expanded to the remaining lines of passenger motor vehicles.

The following points, which support our conclusion, will be developed in this letter.

- The intent of 49 CFR 541, 542, and 543 (the "theft prevention standards") to deter auto theft and, if a theft occurs, to recover the vehicle, was originally intended for 'high-theft' lines.
- Parts-marking does not deter auto theft, whereas, anti-theft systems do deter auto theft.
- DOT recommended expansion of the 49 CFR 543 exemption and therefore encourages the implementation of anti-theft systems.
- Anti-theft systems will continue to increase in both sophistication and implementation over time, significantly reducing auto theft, and therefore, the consequent need for parts-marking.
- It is difficult to objectively and statistically measure the cost/benefit of parts-marking.
- Requiring parts-marking on 'low-theft' vehicles, with an increase in cost of the vehicle, will not provide the vehicle owner with a tangible benefit.

Therefore, the following specific issues are to be considered in light of the Request for Comment, and provide a foundation for our determination above.

SPECIFIC ISSUES

Summary of 49 CFR 541, 542, and 543

In accordance with 49 CFR 541, 542, and 543 (the "theft prevention standards"), new (or newly badged) vehicles must receive a theft 'classification' or determination from NHTSA. Vehicles are determined by NHTSA to be either 'low-theft' vehicles or 'high-theft' vehicles. The definition of 'low-theft' line and 'high-theft' line is based upon the established 1990/91 median theft rate, which has been determined by NHTSA to be 3.5826 vehicle thefts per thousand vehicles produced (59 FR 64164 as implemented by 49 CFR 541.4(b)(4)). Vehicles with a theft rate below the 1990/91 rate have been classified as 'low-theft' lines, whereas vehicles with a theft rate above the 1990/91 rate have been classified as 'high-theft' lines.

Most vehicles determined to be 'low-theft' are not subject to the 49 CFR 541 'parts-marking' requirements which essentially require 'high-theft' vehicles' 18 major body (including engine and transmission) parts to be marked with identifying numbers, and furthermore, marked in such a manner as to facilitate tracing of those parts if the vehicle is stolen and the parts cannibalized for unintended use, typically at a site commonly referred to as a 'chop shop'.

Most vehicles determined to be 'high-theft' are subject to the 49 CFR 541 'parts-marking' requriements as noted above.

However, there are limited exceptions regarding these requirements. In some cases, low-theft vehicles are subject to parts-marking; conversely, high-theft vehicles may not be subject to parts-marking. The details are, of course, contained within the standards.

Therefore, it can generally be stated that the intent of 49 CFR 541, 542, and 543 ("the theft prevention standards") is to deter motor vehicle theft, and if such a theft occurs, to facilitate the tracing and recovery of the vehicle, primarily for vehicles determined by NHTSA to be 'high-theft' vehicle lines.

In fact, 49 CFR 543 states that its purpose is to provide an "...exemption from the parts-marking requirements of the vehicle theft prevention standard for passenger motor vehicle lines which include, as standard equipment, an anti-theft device if the agency concludes that the device is likely to be as effective in reducing and deterring motor vehicle theft as compliance with the parts-marking requirements." (49 CFR 543.2) Moreover, this standard applies to high-theft lines.

In other words, the theft prevention standards allow for a 'replacement' of the parts-marking requirement with that of the provision that an anti-theft device be provided on a specific vehicle if certain conditions are met.

Interestingly enough, ACTA stated that, "...parts marking could be required even if a high-theft line is equipped with an effective anti-theft device." (59 FR 10756) This would, in our opinion, be defeating the intended purpose of the theft prevention standards.

NHTSA Federal Register Publications of Annual Theft Data & NHTSA's 'Low-Theft' Determination of Volvo Vehicle Lines

NHTSA has always determined, pursuant to 49 CFR 542, 49 CFR 541 Appendix C, and the annual review of vehicle exposure theft data, that Volvo vehicle lines are low-theft lines. This is, or was, true for the 240, 740, 760, 780, 850, 940, 960, S/V/C 70, S/V 90, and S80. Therefore, these vehicles (those still in production) are not subject to the parts-marking requirements.

Moreover, we strongly believe that those vehicles should not be subject to any new, or otherwise (existing), parts-marking requirements.

In providing its low-theft determination, NHTSA has essentially determined that parts-marking is not required on Volvo vehicles due to the factors within 49 CFR 541 Appendix C for those vehicles determined to be low-theft prior to their introduction, as well as, the infrequent theft of those vehicles once they have been introduced into the fleet.

In so doing, NHTSA has indirectly implied that parts-marking is not a necessary, nor a cost effective deterrent to motor vehicle theft. Therefore, requiring such a process (extending parts-marking to low-theft vehicles not currently covered within the standards) in the near future is unwarranted.

To illustrate the low-theft nature of some of the Volvo vehicle lines, the following information is provided, originally published at 63 FR 36478 and at 62 FR 44416. Those Federal Register notices were the publication of NHTSA's final theft data for 1996 and 1995 respectively.

Model	1996 Theft Rate	1996 Theft Ranking
850	1.9376	136/204
940 (a)	1.2257 (a)	169/208 (a)
960	1.0949	169/204
240 (b)	1.3346 (b)	N/A (b)

(a) Data for MY/CY 1995; last year of 940 production and rate determination by NHTSA.
(b) Data for MY/CY 1993; last year of 240 production and rate determination by NHTSA.

The 1996 median theft rate was 3.28 vehicle thefts per thousand vehicles produced. There were 204 vehicles ranked in total, 71 vehicles having a larger theft rate than the 1990/91 median theft rate of 3.5826 vehicle thefts per thousand vehicles produced.

The 1995 median theft rate was 3.57 vehicle thefts per thousand vehicles produced. There were 208 vehicles ranked in total, 85 vehicles having a larger theft rate than the 1990/91 median theft rate of 3.5826 vehicle thefts per thousand vehicles produced.

The 1990/91 median theft rate of 3.5826 vehicle thefts per thousand vehicles produced was published at 59 FR 12400 on March 16, 1994, and is now codified at 49 CFR 541.4(b)(4).

Therefore, when examining the above theft rates for Volvo vehicles, it is clear that Volvo vehicles (without parts-marking) have always had theft rates well-below the 1990/91 median theft rate, as well as, well-below the median theft rate for the particular MY/CY combination under review by NHTSA.

Volvo Anti-Theft (and Security) Systems Technology

Anti-theft (and security) systems technology, both within the automobile industry, as well as, in other industries, will continue to grow in both sophistication and implementation over time.

Specifically, within the auto industry, and particularly for Volvo, vehicle systems and features such as:

- electronic 'rolling codes'
- immobilizers (disabling the vehicle's ignition, fuel, and starter systems)
- ignition and door locks which lack internal (mechanical) cylinders
- alarms (mass movement sensors, inclination sensors, glass-break sensors)
- laminated glass
- emergency roadside assistance systems
- keyless remotes ('key fobs') with locking and panic alarm features
- exterior lighting systems (for approaching and leaving the vehicle)
- VIN code incorporation within the vehicle's electronic modules

all provide a significant and measurable deterrent to vehicle theft. In other words, theft becomes harder and harder on a vehicle which contains these systems or features.

The aforementioned systems, many of which have been introduced on Volvo vehicles over time, in addition to other theft-deterrent factors (per 49 CFR 541 Appendix C), for example, vehicle image, have all contributed to the *determination by NHTSA that Volvo vehicles are low-theft* vehicles, and are therefore not subject to the parts-marking requirement of 49 CFR 541.

Highway Loss Data Institute (HLDI) Research Reports

The Highway Loss Data Institute (HLDI), an organization sponsored by insurance companies which examines, among other things, vehicle theft and collision loss, as well as, occupant injury, has issued a number of reports specifically pertaining to vehicle theft. Two of these reports, along with their major findings, are summarized below.

"Insurance Special Report: Theft Loss Factors (1990-97 Models)"

This report addresses a number of issues, which may have an effect upon theft loss experience, specifically, anti-theft devices, vehicle age, vehicle redesign, and metropolitan area.

HLDI reports that, "...factory-installed passive immobilizing *anti-theft devices* have been found to significantly reduce insurance theft losses." In fact, the largest decrease in theft occurred during the model year in which the *anti-theft device* was initially installed. (Emphasis added.)

HLDI reports that, "...as vehicles age, both the frequencies and average dollar amounts of their theft claims decrease...", and that, "...vehicles with low overall theft losses when new continue to have low overall theft losses when older."

Therefore, the HLDI reports suggest that anti-theft devices are effective in deterring auto theft, that older vehicles are not as desirable to the car thief, and that vehicles with low overall theft losses (i.e., low-theft vehicles) continue to have a low theft exposure.

These findings reaffirm our position that low-theft vehicles not be subject to the parts-marking requirements of the theft standards, and is especially true for (low-theft or high-theft) vehicles equipped with effective anti-theft devices.

"Insurance Theft Report (1995-97 Passenger Cars, Pickups, Utility Vehicles, and Large Vans)"

In this report, HLDI has presented the results from a review of the theft exposure of 221 vehicles. Within this report, the Volvo 850, 940, and 960 lines' theft loss experience is reported. *It should be noted that none of the Volvo vehicles are currently subject to the parts-marking requirement.* In each case, the specific Volvo vehicle is ranked very low (low theft loss experience) within its specific category (e.g., sedan, wagon), as well as, within the entire passenger car category.

Of note, the Volvo 940 and 960 line have been placed by HLDI into the "luxury" car segment, a segment having a larger-than-average theft loss experience when compared to the average of the entire passenger car fleet; however, the Volvo 940 and 960 lines have very low rates.

These results reaffirm NHTSA's low-theft determination of Volvo vehicles and support our position that low-theft vehicles not be subject to the parts-marking requirements of the theft standards.

Issues Within The Department of Justice (DOJ) Federal Register Notice

Survey entitled, "Opinions of 47 Auto Theft Investigators Regarding Automobile Component Parts Anti-Theft Labels"

This survey/report was conducted as part of a Federal grant by the DOJ in order provide evidence of the usefulness of the current parts-marking program. The Request for Comment delineates the eight (8) major findings of the report.

While the findings provide evidence (and it should be noted that the evidence consists of opinions of those surveyed) that parts-marking is effective, those polled stated that parts-marking would be more effective if, for example, labels could not be removed.

Additionally, the survey reported that investigators suggested that the parts-marking requirements would be more effective through better training regarding label tampering, legislation regarding label tampering, and stamping the VIN on the component part, as opposed to, label affixation.

Lastly, another finding was that, "investigators were about evenly divided regarding whether anti-theft labels deter professionals or amateurs from stealing or stripping cars." In other words, even professional auto theft investigators did not all agree that parts-marking was an effective deterrent to auto theft.

Therefore, while the survey did not address the effectiveness of anti-theft devices, but rather the effectiveness of parts-marking labels, the results concluded that parts-marking would be more effective via changes to the process for label affixation (e.g., 'permanent' VIN-stamping), and legislation regarding label tampering.

Report Concerning National Auto Theft Data

In making a determination of the effectiveness of parts-marking, the DOJ is also preparing a report concerning, "...a cross-sectional time series analysis of national auto theft data." It is stated that this report should be completed no later than the end of 1998. However, as comments are due on this notice by November 10, 1998, there is insufficient time for review, analysis, and comment on this report to be provided as part of this response to the Request for Comment.

Therefore, this Request for Comment may be premature.

NHTSA Theft Reports

"Effects of the Motor Vehicle Theft Law Enforcement Act of 1984"

NHTSA undertook this study as an attempt to assess the effectiveness of parts-marking and the vehicle theft standards. The aforementioned report was published in 1991. Among other findings, the report contained the following results:

- There was no statistically significant improvement in the recovery rates of marked cars compared to unmarked cars.
- Other factors may mask the effectiveness of parts-marking.
- Parts marking is useful for detecting, recovery, and prosecution, but will not deter auto theft.

Furthermore, DOT recommended that:

- Determination of theft classification should be based upon the median theft rate using the most current data.
- Redesignation of a car line from high-theft to low-theft should be based upon actual theft experience.
- Exemption should be granted for an unlimited number of car lines per manufacturer for anti-theft systems.

Therefore, the NHTSA study essentially determined that, although there may be beneficial differences regarding the recovery rates of marked cars vs. unmarked cars, the differences cannot be objectively nor statistically measured, as other factors may overshadow the effectiveness of parts-marking. Furthermore, DOT found that parts-marking is not useful for deterring auto theft, but that anti-theft systems are useful for deterring auto theft, which is emphasized via their recommendation to extend and increase the parts-marking exemptions for certain anti-theft systems.

"Auto Theft and Recovery: Effects of the Anti Car Theft Act of 1992 and the Motor Vehicle Theft Law Enforcement Act of 1984"

As was intended with the previous study, NHTSA undertook this most recent review of the theft laws and implementing standards in order to assess the effectiveness of parts-marking and anti-theft devices upon motor vehicle theft and recovery. This study was originally published in 1997. Although the initial (1991) study was conducted before a sufficient amount of field data could be collected and thoroughly (statistically) analyzed, the 1997 study was not similarly limited.

Among other findings, the report contained the following results:

- Certain types of factory-installed anti-theft devices "...unequivocally show effectiveness...", upward of 70%, while others show less, but meaningful effectiveness, i.e., as a means of deterring auto theft.

- A reaffirmation of the 1991 report in which the theft rate, as well as, the recovery rate, between marked and unmarked cars was found to be statistically insignificant.

- Although the effectiveness of parts-marking was intended for evaluation, "...biases in the data obstructed the evaluation of parts marking and made it essentially impossible to attribute a specific percentage reduction in thefts or increase in recoveries to that remedy."

- Moreover, "...the analyses did not generate a reliable quantitative estimate of the reduction of thefts or enhancement of recoveries attributable to parts marking, and they did not lead to an unequivocal conclusion that parts marking has been effective."

- Although in some cases, parts-marking is shown to provide limited effectiveness, as vehicles age, the effectiveness rapidly decreases, and essentially vanishes when vehicles are approximately two years old.

- The report states that in the very long-term, parts marking and anti-theft devices reduce theft rates, but that, "...so many other factors could be affecting theft trends over a 20-year period that it would be foolhardy to attribute the observed long-term reduction to parts-marking."

- Because of the timing of the report, data were not available for certain low-theft lines (and multipurpose passenger vehicles) which became subject to the parts-marking requirements starting in the 1997 model year.

Therefore, the NHTSA study, while intended to reveal clear and convincing evidence of the effectiveness benefits of parts-marking, falls far short of providing such evidence and therefore, reaching such a conclusion. In contrast however, the study does provide a meaningful and quantitative measure of the benefits of anti-theft systems toward the reduction of auto theft.

CONCLUDING REMARKS

In conclusion, and based upon the details provided herein, we firmly believe that parts-marking NOT be expanded to the remaining lines of passenger motor vehicles.

We base our conclusion on the following reasons:

- The intent of 49 CFR 541, 542, and 543 (the "theft prevention standards") to deter auto theft and, if a theft occurs, to recover the vehicle, was originally intended for 'high-theft' lines.

- Parts-marking does not deter auto theft, whereas, anti-theft systems do deter auto theft.

- DOT recommended expansion of the 49 CFR 543 exemption and therefore encourages the implementation of anti-theft systems.

- Anti-theft systems will continue to increase in both sophistication and implementation over time, significantly reducing auto theft, and therefore, the consequent need for parts-marking.

- It is difficult to objectively and statistically measure the cost/benefit of parts-marking.

- Requiring parts-marking on 'low-theft' vehicles, with an increase in cost of the vehicle, will not provide the vehicle owner with a tangible benefit.

We trust that these comments will contribute to the rulemaking process. If additional information is required on this matter, do not hesitate to contact me at 201-767-4772 or Martin Rapaport of my staff, at 201-768-7300, ext. 7283, at your convenience.

Drive Safely,

VOLVO CARS OF NORTH AMERICA, INC.
Product Strategy and Business Development

William Shapiro, P.E.
Director, Regulatory Compliance and Environmental Affairs

cc:

Mr. James K. Robinson, Department of Justice, Assistant Attorney General
Mr. L. Robert Shelton, NHTSA, Associate Administrator for Safety Performance Standards (NPS-01)
Mr. William H. Walsh, NHTSA, Associate Administrator for Plans and Policy (NPP-01)

VOLKSWAGEN

9 November 1998

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Mr. Thomas Eldridge
U.S. Department of Justice
Room 2213
950 Pennsylvania Avenue N.W.
Washington, D.C. 20530

Subject: *Auto Theft and Recovery*
Department of Justice Request for Comments published in the Federal Register September 11, 1998 (63 Federal Register 48758)

Dear Mr. Eldridge:

These comments to the subject Notice are submitted by Volkswagen AG, Audi AG, and Volkswagen of America, Inc. (Volkswagen).

Volkswagen had previously submitted comments on August 8, 1997 to the NHTSA (DOT) Docket 97-042; Notice 1, Request for Comments to the Preliminary Report on the Effects of the Anti-Car Theft Act of 1992 and the Motor Vehicle Theft Law Enforcement Act of 1984. The substance and conclusions of those comments submitted to NHTSA continue to apply and are incorporated into this submission by reference.

The Anti-Car Theft Act of 1992 (ACTA) requires DOT acting through the NHTSA to expand the vehicle parts marking requirement to all passenger motor vehicles, except light-duty trucks unless the Attorney General finds "that requiring such additional parts marking for all of the applicable passenger motor vehicles would not substantially inhibit chop shop operations and vehicle thefts". Therefore, the issue for the Attorney General Report is whether parts marking has any **substantial** effect on chop shop operations and vehicle theft.

The DOT Report to the Congress dated July 1998 (prepared by NHTSA) is the Final Report arising from the Preliminary Report that was the subject of comments in Docket 97-042. In the Report, NHTSA analyzes the effects of parts marking and anti-theft devices on various types of vehicle thefts and attempts to reach some quantifiable conclusions. The Report presents the most comprehensive study available on the issue facing the Department of Justice. As will be further discussed in these comments, Volkswagen believes that the Report is clearly inconclusive on the effects of parts marking on chop shop operations or vehicle thefts.

The ACTA does not define the term "substantially" but Webster's 9th New Collegiate Dictionary defines it as "considerable in quantity" or "significantly large" or "not imaginary or illusory". Volkswagen submits that the inconclusive findings of the NHTSA Report to the Congress dated July 1998 on the effect of parts marking on motor vehicle thefts actually support a finding that expanded parts marking would not inhibit chop shop activity and vehicles thefts to a degree that qualifies as "substantial".

Discussion of NHTSA Report to the Congress dated July 1998

Motivations for Theft

On Pages 5 through 7, the Report discusses theft motivations. It is the thefts for obtaining vehicles or parts for resale which are relevant to parts marking. This includes thefts for:

- Chop shop operations in which vehicles are stolen for parts removal and resale.
- Theft and re-tag cases where a vehicle is stolen and sold for registration under another VIN number.
- Export sale of vehicles.

Thefts for insurance fraud for the purpose of filing false claims, or for transportation for the purpose of committing a crime, or for joyriding or temporary transportation are not deterred by or related to vehicle parts marking. The thefts for chop shop operations, theft and re-tag, and for export (along with thefts for insurance fraud according to NHTSA) account for most of the unrecovered vehicles. Therefore, any relationship of parts marking to theft is essentially represented by the group of vehicles that are not recovered. In that regard, the Report on Page 6 states that before parts marking, passenger cars represented 57% of the unrecovered stolen vehicles, but from 1987 through 1995, this percentage of unrecovered vehicles increased to over 62%. Further on Pages 8 through 13, the Report presents statistics indicating that the vehicle theft recovery rate has remained relatively consistent for the years 1984 through 1995.

On Page 15 of the Report, NHTSA suggests that the unrecovered theft rate may be considered as a sort of "surrogate" for the chop shop, re-tag and export theft rates that may have some relationship to parts marking. Then, after all of its analysis, NHTSA states on Page 16, that "the analyses did not generate a reliable quantitative estimate of the reduction of thefts or enhancement of recoveries attributable to parts marking, and they did not lead to an unequivocal conclusion that parts marking has been effective".

NHTSA then claims that in spite of this, the analysis were not totally inconclusive or neutral and summarizes "five indications" with regard to the possible relationship of parts marking to vehicle theft. These, however, include so many caveats and qualifications that they cannot be considered conclusive or even indicative of any trends. A reading of the "five concrete indications of benefits for parts marking", with all of the

caveats and confounding factors, merely confirms that no verifiable effect of parts marking on relevant motor vehicle theft experience can be identified.

The NHTSA reports two other issues that contribute to the inconclusive results of the data analysis. These are that the parts marking of vehicles was not applied randomly but rather to high theft car lines, and secondly, the fact that the initial effect of parts marking was reduced in subsequent years, probably due in part to the development by professional thieves of means of removing the markings.

Insurance Claim Data

Insurance claim data analysis is discussed on Pages 30 to 37 of the Report. In summary, NHTSA states that the data show that the theft for major parts for which marking is applicable in the regulation dropped for both marked and unmarked vehicle car lines. In comparison, the theft for major vehicle parts that are not designated for marking in the regulation has increased for both marked and unmarked vehicle car lines over the same time period. From this, NHTSA suggests that parts marking has provided a deterrent to thieves to the extent that they are less willing to steal major parts that are designated for marking (and which may be marked on certain vehicles) and instead they are stealing major parts which are not required to be marked on any vehicle. Volkswagen submits that this NHTSA conclusion from the insurance data is really a guess and a suggestion and not a deduction that necessarily follows from the insurance claim data.

Law Enforcement Impacts

The NHTSA Report (Pages 28 through 30) as well as the Department of Justice Federal Register Notice discusses comments submitted by, and survey results from, the law enforcement community which indicate a support for parts marking. The support is indicated on the basis that parts marking assists in the arrest and prosecution of chop shop operators and professional auto thieves. However, Volkswagen believes that these views are not relevant to the finding directed by Congress which is required to focus on the "inhibition" from parts marking of chop shop operations and vehicle thefts and not on its effect on arrests and prosecutions.

It is interesting to note the significant differences in the district attorney and law enforcement survey results between 1991 and 1996.

In the NHTSA surveys conducted for the 1991 Report to Congress, 96% of the district attorneys reported that convictions were not affected by parts marking. Also most auto theft investigators with law enforcement agencies anticipated no reductions in auto theft for chop shop operations, even though most of them felt that parts marking could assist in identifying and recovering stolen parts and vehicles when the occasion arose.

In the 1996 survey conducted for the 1998 NHTSA Report, almost half of the district attorneys reported an increase in convictions and attributed this to the 1984 and 1992 statutes (although apparently not necessarily to the parts marking provisions). The

1996 survey indicated that 2/3 of the district attorneys increased their prosecution efforts with one-half of them indicating motivations arising from the Federal statute. According to NHTSA, the 1996 survey of law enforcement investigators show a relatively even split between those who felt that parts marking would deter professional auto thieves and those who did not.

Volkswagen believes it is reasonable to conclude from the reported studies that the increased law enforcement activity against motor vehicle theft would take place regardless of parts marking and is not reliant upon it. Although no specific data is identifiable in the NHTSA Report, it appears that the trend from 1991 to 1996 for increased arrests, prosecutions and convictions resulted in spite of the fact that the number of theft-attractive car lines exempt from parts marking pursuant to 49 CFR Part 543 (based on the use of a standard factory installed anti-theft devices) has increased over that period (the portion of the theft-attractive vehicle fleet that is parts marked has been decreasing). [The 1991 MY Listing of Highway Theft Car Lines (44 Federal Register 37326, September 11, 1990) showed 107 car lines parts marked and 32 exempt while the 1996 MY Listing of High Theft Car Lines (60 Federal Register 36231, July 14, 1995) had 109 parts marked car lines and 69 exempt.] The fact that the rate of non-recovered vehicle thefts has remained relatively even during the period (Page 13 of the NHTSA Report), while the number of car lines with anti-theft devices has proportionally increased in comparison to the number of car lines with parts marking, is also indicative of the non-identifiable effect of parts marking on the relevant category of vehicle thefts.

While the NHTSA Report would support continued or possibly expanded parts marking, the documentation and substance of the Report do not objectively support that position. In fact, one of the assumptions of NHTSA is that a theft reduction of 2% would justify the estimated cost of parts marking. Such a conclusion is clearly unwarranted since there is no indication that parts marking would reduce vehicle theft by as much as 2% and the cost estimate is most certainly too low. (In the House Report Number 102-851(I) on the Anti-Car Theft Act of 1992, the Committee states on Page 2832 that "auto manufacturers estimate that the current program costs approximately $6 per car". FBI estimates of $3 per car are stated in the Report but it would seem that vehicle manufacturers have more familiarity with the true costs than the FBI.)

Parts Marking Cost Issues

Although the Department of Justice findings are not to consider the cost of parts marking, the factor will have to be considered by NHTSA in any rulemaking. Section 33105 of the Cost Savings Act states that the cost limitations apply to any standard under Section 33102 or 33103. Any DOT rulemaking action following on the findings of the Department of Justice Report will be conducted pursuant to Section 33103(c) and will therefore have to consider the cost impact on vehicle manufacturers. As discussed on Pages 25 through 27 of the Report, NHTSA estimates an average cost of parts marking per vehicle in 1995 dollars to be $4.92. This is based on a study conducted for the 1991 Report to Congress and NHTSA assumes that no additional costs have been

identified to this time. Volkswagen submits that the costs of compliance are significantly higher and may exceed the statutory limit in Section 33105 for small volume manufacturers or for the production of vehicles which are produced on an assembly line that manufacturers vehicles that would have to be parts marked for the United States market in a small volume relative to vehicles being produced for other markets and not required to be parts marked.

An additional burden arising out of parts marking is the requirement to mark all replacement parts for the originally marked parts on the vehicle as long as such replacement parts are provided by the vehicle manufacturer. This adds cost and burden that is additional to the vehicle production. The cost of this does not produce value that would inhibit chop shop activity or vehicle theft. The NHTSA Report to Congress states on Page 19 that it found no relationship between vehicle age and theft rate. Thus long term parts marking of replacement parts, the relative cost of which actually increases over time as the volume of replacement parts sold decreases, would have no benefit. The conclusion that parts marking does not substantially inhibit chop shop activity or theft in general would appear to apply to vehicles regardless of age.

Summary and Conclusion

As required in ACTA and as indicated in the Department of Justice Notice, the regulatory action by NHTSA to expand parts marking is to begin unless the Department of Justice makes a finding that such action would not substantially inhibit chop shop operations and motor vehicle thefts.

Volkswagen believes that the best available study of vehicle theft experience as related to parts marking, the NHTSA Report to the Congress dated July 1998, does not objectively conclude that additional parts marking would substantially inhibit chop shop operations or vehicle thefts. The reported survey results from the law enforcement community may suggest that parts marking assists in successful prosecution against motor vehicle and motor vehicle parts theft, but this is not conclusive to the statutory criteria for the Department of Justice finding because the increased prosecution and conviction is primarily dependent on law enforcement priorities and resources regardless of the existence of vehicle parts marking. An indication from surveys that law enforcement is assisted by the presence of parts marking in some cases, does not rise to a level of benefit that would "substantially inhibit chop shop operations and vehicle thefts".

Volkswagen therefore believes that the record leads to a conclusion that expanded parts marking would not substantially inhibit chop shop activity or vehicle thefts.

Please contact me or Steven G. Jonas (248) 340-5097 if you desire further information regarding these comments.

Sincerely,

VOLKSWAGEN OF AMERICA, INC.

Dietmar K. Haenchen
Process Leader
Safety Affairs and Vehicle Testing

SGJ/blb

NATIONAL AUTOMOBILE DEALERS ASSOCIATION
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Legal & Regulatory Group

November 10, 1998

Mr. Dean Googasian
U.S. Department of Justice (DOJ)
Room 2213
950 Pennsylvania Avenue, NW
Washington, D.C. 20530

Re: Auto Theft and Recovery; 49 USC § 33103

Dear Mr. Googasian:

The National Automobile Dealers Association (NADA) represents 20,000 franchised automobile and truck dealers who sell new and used motor vehicles and who engage in automotive service, repair and parts sales. Together they employ in excess of 1,000,000 people nationwide, yet over 80% are small businesses as defined by the Small Business Administration.

Earlier this year, DOJ asked for comments on the effectiveness of the federal vehicle theft standard. 63 Fed. Reg. 48758, et seq. (September 11, 1998). The Attorney General has until December 31, 1999, to determine whether the vehicle theft standard has been effective in substantially inhibiting the operation of chop shops and motor vehicle theft and whether antitheft devices have effectively substituted for parts marking in substantially inhibiting motor vehicle theft. 49 USC § 33103(d). NADA is pleased that this evaluation is underway and looks forward to the Agency's final recommendations.

Deterring vehicle theft is of significant importance to automobile and truck dealerships. New and used vehicles in inventory and service customer vehicles are prime targets for vehicle thieves. As a result, dealers regularly face major vehicle theft deterrence expenses (e.g., special lighting, fences, key control systems, security guards) and, when thefts occur, dealers often suffer significant out-of-pocket expenses and increased insurance premiums. Thus, methods and devices that effectively deter vehicle theft are of direct benefit to dealers and their operations.

Of course, the operative word is "effective." Clearly, vehicle theft rates have declined in the 1990's. Many factors have contributed to this trend including better law enforcement, improved economic conditions and improved theft deterrence. Unfortunately, the Department of Transportation's (DOT) 1998 Report to Congress, suggests that it will be difficult to isolate the parts marking standard's impact, if any, on reduced theft rates or on chop shops. In part, the standard's neutral or marginally positive effectiveness may well be due to such short comings as under utilization by the insurance industry and by law enforcement, and by inadequacies associated with the standard itself (i.e., easily removable labels). If possible, the DOJ should assess whether any improvements to the standard or its utilization could result in commensurate cost-effective increases in theft deterrence.

The best antitheft devices seem to yield positive effectiveness results, despite their relatively high cost. Manufacturer installed antitheft devices are increasingly found in new motor vehicles. Moreover, dealers and other aftermarket installers sell and install a significant number of antitheft devices, aided in part by the discounts many insurance companies offer, either by choice or by state law.

While the parts marking standard has long been enthusiastically endorsed by law enforcement and insurance representative as useful to their post-theft recovery and investigative work, clear cut positive deterrent effectiveness benefits will be difficult to identify. On the other hand, it would appear that well designed antitheft devices have had identifiable positive impacts on inhibiting the operation of chop shops and on motor vehicle theft and that these devices have proven to be effective, despite their higher cost.

On behalf of NADA, I thank DOJ for the opportunity to comment on this matter.

Respectfully submitted,

Douglas I. Greenhaus
Director, Environment, Health and Safety

Mercedes-Benz

Mercedes-Benz
of North America, Inc.

November 10, 1998

Mr. Thomas Eldridge
U.S. Department of Justice
Room 2213
950 Pennsylvania Ave., N.W.,
Washington D.C. 20530

Re: Federal Register Vol. 63, No. 176, September 11, 1998
Notices
Auto Theft and Recovery
Request for Comments

Dear Mr. Eldridge,

The following comments are being submitted by Mercedes-Benz of North America, Inc. (MBNA) on behalf of our parent company, Daimler-Benz AG (DBAG), Stuttgart, Federal Republic of Germany in response to the request for public comment on the effectiveness of parts marking and related issues.

MBNA believes that modern immobilizer systems provide much better security for our customers. These security systems are standard on all of our vehicle lines in the United States and render parts marking as obsolete. Mercedes-Benz sees no customer benefit in the parts marking requirements because of our immobilizer strategy.

If you require additional information or clarification please contact me at 201-573-2616, or Mr. Robert Munson at 201-573-2514.

Thank you for your consideration of these comments.

Sincerely,

Daniel J. Selke
Manager
Safety Engineering

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American Automobile Manufacturers Association

CHRYSLER CORPORATION Ford GM General Motors

November 10, 1998

Mr. Thomas Eldridge
U.S. Department of Justice
Room 2213
950 Pennsylvania Avenue, N.W.
Washington, D.C. 20530

Re: Auto Theft and Recovery
Request for Comments

Dear Mr. Eldridge:

The American Automobile Manufacturers Association (AAMA), whose members are Chrysler Corporation, Ford Motor Company, and General Motors Corporation, respectfully offers the following in response to the Department of Justice's request for comments, published in the Federal Register on September 11, 1998, regarding auto theft and recovery matters. These comments specifically focus on (1) what the Attorney General is required to decide in this area under the Anti Car Theft Act of 1992 (the Act), (2) what evidence the 1998 report of the National Highway Traffic Safety Administration (NHTSA) provides on the issues involved, and (3) other subjects referred to in the Act.

AAMA and its members are of the opinion that NHTSA has not provided evidence that parts-marking has to date substantially inhibited so-called "chop shop" operations and vehicle theft, and we are not independently aware of any other such evidence. Accordingly, AAMA submits that the Attorney General should find that there is no basis to think that expanding parts-marking will substantially inhibit such activity in the future.

Sincerely,

Phillip D. Brady
Vice President and General Counsel

Enclosure

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AAMA Response to the Attorney General's September 11, 1998 Notice: Auto Theft and Recovery

1) Introduction

The American Automobile Manufacturers Association (AAMA), whose members are Chrysler Corporation, Ford Motor Company, and General Motors Corporation, respectfully offers the following in response to the Department of Justice's request for comments, published in the Federal Register on September 11, 1998, regarding auto theft and recovery matters. These comments specifically focus on (1) what issue the Attorney General is required to decide under the Anti Car Theft Act of 1992 (the Act), (2) what evidence the 1998 report of the National Highway Traffic Safety Administration (NHTSA) provides on the issues involved, and (3) other subjects referred to in the Act. As requested in the notice, we have tried to avoid repeating the content of AAMA's submission to NHTSA about the agency's 1997 Preliminary Report. In addition, this is not a comprehensive analysis of every aspect of the 1998 NHTSA Report because portions of that report are not germane to the Attorney General's decision.

2) What the Attorney General Is Required to Decide

49 U.S.C. §33103(b) requires the Secretary of Transportation to extend the theft prevention standard "unless the Attorney General finds, based on information collected and analyzed under section 33112 of this title and other information that the Attorney General develops after providing notice and an opportunity for a public hearing, that applying the standard prescribed in subsection (a) to the remaining lines of passenger motor vehicles (except light duty trucks) not covered by the standard would not substantially inhibit chop shop operations and motor vehicle thefts. The Attorney General also shall consider and include in the record additional costs, effectiveness, competition, and available alternative factors." 49 U.S.C. §33103(c).

It is helpful to look at the history surrounding this law to understand what it means. In 1984, the Motor Vehicle Theft Law Enforcement Act was passed. NHTSA then issued a theft prevention standard applicable to vehicles with high theft rates, 49 C.F.R. Part 541, and mandatory parts marking began in model year 1987. In 1991, NHTSA presented a report to Congress indicating that statistical analysis of theft and recovery rates could not demonstrate the effectiveness of parts marking. Based on support of parts marking from some law enforcement officials, NHTSA recommended that the standard be continued with minor changes.

The Anti Car Theft Act of 1992 expanded the number of vehicle lines that were required to have parts marking and restricted the number of exemptions for vehicle lines equipped with anti-theft devices. It also incorporated two contingencies based on findings of the Attorney General:

- Parts marking will be expanded to more vehicles unless the Attorney General finds doing so will not substantially inhibit chop shop operations and motor vehicle thefts (§33103(c)).
- Parts marking will be terminated if the Attorney General finds, not later than December 31, 1999, that the theft prevention standard has not been effective in substantially inhibiting chop shop operations and motor vehicle thefts (§33103(d)(1)(A)) or exemptions will remain available if the Attorney General finds that anti-theft devices are an effective substitute for parts marking (§33103(d)(1)(B)).

In 1992, some members of Congress wanted to expand parts marking to all vehicles. Others opposed expanding it because statistical evidence of its effectiveness was unavailable. The compromise was to expand it to additional vehicles, make further expansion dependent on a finding about its effectiveness, and to include a "sunset" provision that could lead to the elimination of parts marking if it was found to be ineffective.

What Congress wanted is explained in the Senate debate:

> Mr. HATCH.
>
> This bill includes new requirements for the Attorney General. Would my colleague from South Dakota address the new role of the Attorney General in this legislation?
>
> Mr. PRESSLER.
>
> I would be happy to address the issue raised by my distinguished colleague. Title III of the bill expands the current motor vehicle parts marking requirements to combat chop shops. In doing so, it provides new direction and authority for the Attorney General. First, the Attorney General, after public notice, must make a "finding" that additional parts marking is working before the Secretary of Transportation can initiate the second rulemaking. Second, the Attorney General, by December 31, 1999, must make a determination, after notice and public hearing, whether one or both of the rules expanding the parts marking requirements have been effective in substantially inhibiting chop shop operations.
> In order to perform these tasks effectively, the Attorney General must thoroughly analyze the data collected under section 615, "Insurance Reports and Information." I am concerned that under existing law this information has been less than adequate. I would like assurances that this information will be forthcoming. I also want to make sure the Attorney General's analysis of this information is fair and the findings unbiased. There has been a great deal of controversy over this section of the bill. This controversy should be put to rest. If the parts marking works, we should continue to require it. If parts marking doesn't substantially reduce chop shop operations and motor vehicle theft, we ought to eliminate the requirement.
>
> 138 Cong. Rec. S17960, 17962 (Oct. 8, 1992).

Returning to the statutory language, the Attorney General is asked to determine whether expanding parts marking will "substantially inhibit chop shop operations and motor vehicle thefts." While this calls for a prediction of the future, it is clear in context that the prediction should be based on an analysis of whether parts marking to date has substantially inhibited chop shop operations and motor vehicle theft. Senator Pressler specifically referred to an analysis of the data collected under section 615 (§33112), which requires certain insurers to provide annual data on vehicle thefts and recoveries.

The Department of Justice notice describes several types of evidence that the Attorney General will consider:

- NHTSA's 1991 and 1998 reports to Congress.
- A report of a survey of auto theft investigators prepared for the Department of Justice.
- An analysis of auto theft data being prepared for the Department of Justice.

It is consistent with the law and the legislative history for the Attorney General to consider statistical analyses that attempt to assess the effect of parts marking on chop shop operations and motor vehicle theft. The 1998 NHTSA Report is one such attempt. The notice also refers to a pending study commissioned by the Department of Justice. AAMA's members would like the opportunity to review and comment when that study is completed.

In contrast, the survey of auto theft investigators and law enforcement "testimonials" found in the NHTSA reports are interesting, but irrelevant to the issue the Attorney General must decide. Nothing in the survey report indicates that any of the 47 auto theft investigators has done a statistical analysis of data to arrive at his or her opinion about whether parts marking has a deterrent effect. Therefore, those opinions are of virtually no value to the Attorney General in making the required finding.

The survey of auto theft investigators and information in the NHTSA reports would be relevant if Congress had asked the Attorney General to collect and rely on anecdotes about the use of parts marking in investigations and prosecutions of vehicle theft. But Congress did not do so. The question is whether parts marking did or will "substantially inhibit" chop shops and vehicle thefts. Information that does not answer that question should not affect the Attorney General's finding on this key issue.

3) What the NHTSA Report *Really* Shows About Effectiveness

The 1998 NHTSA Report responds to the Congressional mandate for a wide variety of information about vehicle theft, including information about the effect of the parts-marking standard. NHTSA was not asked, however, to opine on the question Congress assigned to the Attorney General. In looking at the NHTSA Report, therefore, one must examine (1) the basis for and validity of its conclusions and (2) the relevance of those conclusions to the question assigned to the Attorney General.

a) Antitheft Devices Substantially Inhibit Theft

NHTSA's 1997 Preliminary Report said there was "no strong evidence that factory-installed antitheft devices have a different effect than parts marking."[1] The 1998 Report corrects that misstatement, finding for at least one type of factory-installed antitheft device that the data "unequivocally show effectiveness."[2] It added that the system

> . . . was associated with an immediate, and persistent 70 percent reduction in the theft rate and a 58 percent reduction in the unrecovered-theft rate. This device appears to be quite effective in reducing both "professional" and "casual" thefts.

There is no logical reason why this effect would be restricted to one manufacturer. As AAMA pointed out in its submission to NHTSA on the Preliminary Report, HLDI and NICB data shows the effectiveness of antitheft devices on vehicles of a number of manufacturers.

In the Report's detailed analysis of the data, the contrast between the results for antitheft devices and parts-marking is stark:

> Figure A-17 tracks the theft rate differential - the difference between the 2's and 0's in Figure A-16. This differential is relatively constant and close to 1.00 during MY 1988-91, and it drops abruptly to a relatively constant -0.75 in MY 1992-95. The drop clearly coincides with the introduction of antitheft devices in the GM cars. Figure A-17 should be contrasted with Figure A-8, a corresponding analysis of the effect of parts marking. In Figure A-8, the small effect of parts-marking (if any) is obscured by a steady downward trend throughout 1984-89 (regression to the mean). In Figure A-17, the effect of antitheft devices is so large as to completely overshadow any other trends, such as regression to the mean.[3]

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[1] Preliminary Report, ix (June 1997).

[2] 1998 Report, xii.

[3] 1998 Report, A-37.

Although NHTSA attempts elsewhere in the Report to edge parts-marking into the glow of the spotlight earned by antitheft devices, it is a step forward that the 1998 Report does acknowledge the strong evidence of the substantial effectiveness of antitheft devices in inhibiting theft.

b) Parts-marking Has Not Been Shown To Be Effective

If someone tried to testify in court as an expert witness that parts-marking was effective, based on five *indications, hedged with caveats*, that parts-marking *quite possibly* had beneficial effects *at times*, the opinion would almost certainly be excluded. Similarly, if someone tried to testify in court as an expert witness that "it is essentially impossible to reliably attribute a specific percentage reduction in thefts" to parts-marking, but that the effect is "apparently greater than 2 percent," the opinion would also likely be excluded.

The same applies out of court simply as a matter of common sense--contradictory and equivocal statements are meaningless. All of these qualifications make it very clear that parts-marking has not been shown to be effective.[4]

Faced with the strong evidence for the effectiveness of antitheft devices and the absence of such evidence for parts-marking, the Report attempts to combine the two. It asserts that the approach of the Act "views both parts-marking and factory-installed antitheft devices as effective deterrents."[5] We think that mischaracterizes the Act and its history.

In 1984, Congress mandated parts-marking for some cars and permitted exemptions for antitheft devices if they were likely to be at least as effective. In 1992, there was evidence that antitheft devices reduced theft rates, but no evidence that parts-marking could reduce theft rates. Congress extended parts-marking, but it also put it on "probation" by simultaneously establishing a mechanism for its termination if it was not shown by the end of 1999 to inhibit theft substantially. Congress did not adopt the view that parts-marking was effective in reducing theft rates--it extended the experiment and provided a means to terminate it if it was not effective.

The Report moves from that false premise to claim that parts-marking and antitheft devices have complementary roles. But it said two paragraphs earlier that antitheft devices were "quite effective" for both "professional" and "casual" theft. When the data shows that antitheft devices reduce professional theft by 58 percent[6] and that parts-marking *might* reduce theft by more than two percent *at some times*, it is a far stretch to describe these as complementary roles.

The question that Congress wants answered is whether parts-marking alone has been effective in substantially reducing theft rates. When the Report starts analyzing combined effects, it is no longer helping the Attorney General to answer that key question.

The bottom line is that the Report does not provide evidence, based on NHTSA's analysis or any other analysis, that parts-marking *substantially* inhibits chop shop operations and vehicle theft.

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[4] It is interesting that the Report asserts (xviii) that "[p]arts marking deters professional thieves . . ." while the rest of the Report demonstrates that this is theory unsupported by any unequivocal evidence.

[5] 1998 Report, xii.

[6] The change in the unrecovered theft rate, which NHTSA uses as a surrogate for professional theft.

4) Other Factors

The Act requires the Attorney General to make a specific decision (will parts-marking substantially inhibit theft?), but also says that the Attorney General shall consider and include in the record "additional costs, effectiveness, competition, and available alternative factors." We have already addressed effectiveness.

a) Costs of Additional Parts Marking

The cost-benefit analysis of existing parts-marking in NHTSA's report to Congress uses inconsistent data and understates the percentage of theft reduction that is required to reach the point where benefits equal costs. If one follows NHTSA's approach using consistent data, however, it is very clear that the costs of expanding parts-marking will be many times the potential benefit.

NHTSA's Analysis of Existing Parts-Marking

The Report (p. 26) describes how NHTSA determined the theoretical percentage theft reduction (1.6%) at which the costs and benefits of parts marking would balance. This is shown in the column labeled "1. NHTSA Report" in the table below. This analysis, however, compares apples and oranges by using the total of all car thefts at one point and then switching to the estimated cost of just total loss and near total loss thefts at another point. If all thefts cost $19,832 per vehicle, then the total cost of thefts would be $23 billion, not the $4-8 billion estimated in the Report.[7]

We made two alternative calculations, keeping the apples in one and the oranges in the other. In "2. Total and near total loss estimate," we substituted an estimate of the number of all thefts that were total or near total losses, in order to be consistent with the cost per theft estimate used in the Report. The Report estimates that at least twenty-three percent of thefts are "professional" and that about eighty percent of vehicles are recovered.[8] As shown in the table, when we used an estimate that thirty percent of all thefts were in the total and near total loss category, the percent reduction in total/near total loss thefts to reach break-even was 5.3%. If the estimate for thefts in the total and near total loss category is changed to forty or fifty percent, the corresponding break-even percentage changes to 3.9 or 3.2%.

We did the analysis again ("3. All thefts estimate"). We used the same number of total thefts in the Report's analysis, but then used an estimate of the cost for all thefts (taking the Report's high end estimate of a total cost of $8 billion divided by 1,179,856 thefts in 1995). This resulted in an estimated break-even percentage of 4.6%.

[7] 1998 Report, 1.

[8] 1998 Report, x.

	1. NHTSA Report estimate	2. Total & near total loss estimate	3. All thefts estimate
No. of cars marked (95 MY (model year))	3,200,000	3,200,000	3,200,000
Cost of marking (95 MY)	$15,700,000	$15,700,000	$15,700,000
Thefts of marked cars (92-95 MY cars; thefts in 95)	50,131	15,039 (estimate that 30% of thefts are total or near total loss)	50,131
Cost per theft	$19,832 (92-95 MY for total loss and near loss only & with 1/3 markup)	$19,832 (92-95 MY for total loss and near loss only & with 1/3 markup)	$6,780 (NHTSA high end estimate of total economic loss per year/no. of thefts)
No. of reduced thefts at which benefits equal costs (Reduction for 92-95 MY)	792 (all thefts)	792 (total/near total loss only)	2,316 (all thefts)
Percent reduction in thefts to reach break-even (92-95 MY)	1.6% (all thefts)	5.3% (total/near total loss only)	4.6% (all thefts)

When the Report's analysis is redone on a consistent basis, the estimated percentage reduction required to balance costs and benefits is about two to three times higher than what was calculated in the Report.

Costs and Benefits of Additional Parts Marking

We next followed NHTSA's approach, with the corrections described above, to analyze the cost and benefit of expanding parts-marking to cars and multi-purpose passenger vehicles (MPVs) that are currently not marked and not exempt. We used NHTSA's estimate of the cost of marking each vehicle ($4.92).[9] Based on NHTSA's published information and information known to our member companies, we determined that there were 2,593,899 model year 1996 cars and MPVs that would be subject to an expanded parts marking requirement and that they experienced 6,830 thefts in 1996. Because the calculation in the Report was based on thefts for four model years, we multiplied the 1996 figure by four.

Subject to all of its many qualifications and caveats, NHTSA suggests that parts-marking may have reduced theft at certain times by two percent or more. Assuming a two percent reduction for the vehicles under consideration, there would be 548 fewer thefts (or 164 total/near total loss thefts, assuming those thefts represent thirty percent of all thefts). We then calculated the benefit from this reduction, using calculations like those in columns #2 and #3 in the previous table.

[9] 1998 Report, 26.

				Analysis of tota near total loss o
1) Cost of marking remaining vehicle lines				
No. of additional vehicles to be marked (Unmarked and non-exempt cars & MPVs 96 MY)			2,593,899	
Cost per marked vehicle (Based on Report estimate)		x	$4.92	
			$12,761,983	$12,761,983
2) Benefit of marking remaining vehicle lines				
Total thefts of "unmarked" vehicle lines (Unmarked cars & MPVs 96 MY x 4 years)	27,320			
Assume 2% effectivenes	x 0.02			
No. of thefts deterred	546			
a) Cost of a stolen vehicle (NHTSA estimate of total and near total loss costs)			$19,832	
No. of thefts deterred (Total & near total loss; 30% of all deterred thefts)		x	164	
			$3,250,861	$3,250,861
b) Cost of a stolen vehicle (NHTSA esti. of total economic loss / all thefts 1995)			$6,780	
No. of thefts deterred (All vehicle thefts)		x	546	
			$3,704,592	-
3) Excess of cost over benefit				**$9,511,122**

For a vehicle population that included high-theft vehicles, NHTSA found the cost and ■ marking were in balance.[10] For low-theft vehicles, one would expect the costs to outw■ What may be surprising is the wide margin by which the costs of expanded parts-mark■ benefits. The *potential* to obtain three dollars after a certain expenditure of twelve doll■ investment that American consumers would make voluntarily. Their government shou■ them.

b) Effect on Competition

Parts marking has an unfair effect on competition because it heavily favors the manufa■ fewest vehicle lines. For many foreign manufacturers, it would only take a few years t■ sufficient to avoid the costs of parts marking entirely.

Because domestic manufacturers provide American consumers with a much broader ra■ outcome is far different. At one exemption per year, it will take 22 years for Chrysler, and 23 years for GM to obtain exemptions for their current non-exempt lines.

Expanding parts marking will only exacerbate this unfair effect on competition. Even ■ exemption available per year, foreign manufacturers will be able to avoid most or all p■

c) Available Alternatives

Vehicle theft cannot be prevented solely by regulating the design of vehicles. Congres■ 1984 and 1992 by adopting a number of initiatives to aid and encourage law enforceme■ vehicle theft, including:

[10] 1998 Report, 26.

			Analysis of total & near total loss only	Analysis of all theft
1) Cost of marking remaining vehicle lines				
No. of additional vehicles to be marked (Unmarked and non-exempt cars & MPVs 96 MY)		2,593,899		
Cost per marked vehicle (Based on Report estimate)	x	$4.92		
		$12,761,983	$12,761,983	$12,761,983
2) Benefit of marking remaining vehicle lines				
Total thefts of "unmarked" vehicle lines (Unmarked cars & MPVs 96 MY x 4 years)	27,320			
Assume 2% effectivenes	x 0.02			
No. of thefts deterred	546			
a) Cost of a stolen vehicle (NHTSA estimate of total and near total loss costs)		$19,832		
No. of thefts deterred (Total & near total loss; 30% of all deterred thefts)	x	164		
		$3,250,861	$3,250,861	
b) Cost of a stolen vehicle (NHTSA esti. of total economic loss / all thefts 1995)		$6,780		
No. of thefts deterred (All vehicle thefts)	x	546		
		$3,704,592	-	- $3,704,592
3) Excess of cost over benefit			**$9,511,122**	**$9,057,391**

For a vehicle population that included high-theft vehicles, NHTSA found the cost and benefit of parts-marking were in balance.[10] For low-theft vehicles, one would expect the costs to outweigh the benefits. What may be surprising is the wide margin by which the costs of expanded parts-marking outweigh the benefits. The *potential* to obtain three dollars after a certain expenditure of twelve dollars is not an investment that American consumers would make voluntarily. Their government should not impose it on them.

b) Effect on Competition

Parts marking has an unfair effect on competition because it heavily favors the manufacturers with the fewest vehicle lines. For many foreign manufacturers, it would only take a few years to obtain exemptions sufficient to avoid the costs of parts marking entirely.

Because domestic manufacturers provide American consumers with a much broader range of vehicles, the outcome is far different. At one exemption per year, it will take 22 years for Chrysler, 16 years for Ford, and 23 years for GM to obtain exemptions for their current non-exempt lines.

Expanding parts marking will only exacerbate this unfair effect on competition. Even with only one new exemption available per year, foreign manufacturers will be able to avoid most or all parts marking.

c) Available Alternatives

Vehicle theft cannot be prevented solely by regulating the design of vehicles. Congress recognized this in 1984 and 1992 by adopting a number of initiatives to aid and encourage law enforcement efforts to address vehicle theft, including:

[10] 1998 Report, 26.

- providing Federal support to the states in the investigation of motor vehicle theft,
- increasing penalties for trafficking in stolen vehicles and parts,
- granting funds to state and local Anti Car Theft Committees to supplement non-Federal funds devoted to combating motor vehicle theft,
- establishing an information system to enable states to share information pertaining to the validity and status of certificates of title,
- establishing rules and procedures for vehicle salvage yards and junk yards to identify inventories, their sources, and disposition, and
- allowing random inspections of export vehicles and shipping containers to verify that vehicles being exported have not been reported as stolen.

Parts-marking is passive. Provisions like these that cause action are much more likely to have an impact. Federal grants to state and local organizations (such as Anti Car Theft Committees) devoted to combating motor vehicle theft are a good use of resources because they lead directly to action. These grants enable an increased, direct attack on the theft problem by enhancing law enforcement action against thieves, resulting in arrests and convictions.

For example, the Michigan Automobile Theft Prevention Authority (ATPA), a concept developed by the Anti-Car Theft Campaign Committee, was established in 1986 to combat theft directly. ATPA awards grants to law enforcement agencies, prosecutor's offices, and non-profit community organizations within the state. During ATPA's first 10 years, Michigan auto thefts declined by 19.6% while auto thefts were up nationally by 20.3%. ATPA grant programs have been recognized as a major reason for Michigan's accomplishments in vehicle theft reduction.

Apart from the Attorney General's immediate statutory responsibility to make a decision about parts-marking, the Justice Department, NHTSA, and Congress should assess the status of the implementation of each of the law enforcement initiatives in the 1984 and 1992 Acts, the effectiveness of those initiatives, and how resources can best be allocated to maximize their effectiveness. There is a great untapped potential here to reduce vehicle theft further.

Returning to vehicle design, the 1998 Report confirms other findings that antitheft devices cause a dramatic reduction in theft. The Report identifies no other vehicle design approach for which that is true. Not only have antitheft devices been effective, but their use is continuing to expand. Customers want them and are encouraged by the discounts that auto insurers offer for them. This is a market-driven solution and it works very well.

5) Conclusion

NHTSA has not provided evidence that parts-marking has substantially inhibited chop shop operations and vehicle theft, and AAMA and its members are not independently aware of any such evidence. There is no basis to think that expanded parts-marking will substantially inhibit chop shop operations and vehicle theft. The Attorney General should so find in accordance with the Act.

AIAM
The World's Leading Automakers

November 10, 1998

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Mr. Dean Googasian
U.S. Department of Justice
Room 2213
950 Pennsylvania Avenue N.W.
Washington, D.C. 20530

Subject: *Auto Theft and Recovery*
Department of Justice Request for Comments published in the Federal Register September 11, 1998

Dear Mr. Googasian:

The Association of International Automobile Manufacturers (AIAM) is submitting the following comments regarding the subject Notice. AIAM is a trade association that represents companies which sell passenger cars and light trucks in the United States that are manufactured both here and abroad.

The Anti-Car Theft Act of 1992 (ACTA) requires the Department of Transportation (DOT) to expand the vehicle parts marking requirement to all passenger motor vehicles, except light-duty trucks unless the Attorney General finds "that requiring such additional parts marking for all of the applicable passenger motor vehicles would not substantially inhibit chop shop operations and vehicle thefts". The National Highway Traffic Safety Administration is acting for DOT on this matter. The appropriate question is whether parts marking has any substantial effect on chop shop operations and vehicle theft.

In its Report to the Congress dated July 1998, NHTSA analyzes the effects of parts marking and anti-theft devices on various types of vehicle thefts in addressing the core question. However, AIAM believes that the Report does not reach well-supported conclusions on the effectiveness of parts marking to substantially inhibit chop shop operations or vehicle thefts. In fact, it can be argued that the opposite is the case.

BUCKLE UP AMERICA

ASSOCIATION OF INTERNATIONAL AUTOMOBILE MANUFACTURERS, INC.
1001 19TH ST. NORTH ■ SUITE 1200 ■ ARLINGTON, VA 22209 ■ TELEPHONE 703.525.7788 ■ FAX 703.525.8817
INTERNET: http://www.aiam.org

NHTSA Report to the Congress

Reason for Parts Marking

Parts marking can only be considered a possible deterrent for thefts of vehicles or parts for resale. Such thefts include chop shop operations, re-tag and resale, and export sale.

All other types of theft, for example for joy riding, are not deterred by parts marking. Thefts for chop shop operations, for re-tag, for export (which are the thefts that could relate to parts marking), and for insurance fraud account for most of the unrecovered vehicles. However, there has been virtually no change in the rate of unrecovered vehicles. In fact, the average rate for unrecovered vehicles for the years 1987 to 1995 appears to show a slight upward trend. Because of the relatively stable rate of unrecovered vehicles, NHTSA concludes that there is no reliable quantitative support that parts marking has been effective. Then with puzzling equivocation, NHTSA claims that there are "five indications" with regard to the possible relationship of parts marking to vehicle theft. However, these are so tenuous, according to NHTSA's own caveats and qualifications, that they cannot be considered conclusive or even indicative of any trends.

NHTSA lists two other factors that contribute to the inconclusive results of the data analysis. Namely, that the parts marking of vehicles was not applied randomly but rather to high theft car lines, and that the initial effect of parts marking was reduced in subsequent years, most likely due to the development of means of removing the markings.

Insurance Claim Data

Insurance claim data provide no conclusive indication of parts marking effectiveness. In its summary on this subject, NHTSA is left with asserting that insurance claim data show that the theft rate for major parts for which marking is applicable in the regulation dropped for both marked and unmarked vehicle car lines, but has increased over the same period for both marked and unmarked vehicle car lines for parts not designated for marking. NHTSA then reaches a wholly illogical conclusion that parts marking has provided a deterrent to thieves to the extent that they are less willing to steal major parts that are designated for marking and which may be marked and instead are stealing major parts which are not required to be marked on any vehicle.

Law Enforcement Impacts

Comments submitted by, and survey results from, the law enforcement community purportedly indicate a support for parts marking on the basis that parts marking assists in the arrest and prosecution of chop shop operators and automobile thieves. However, these views are not relevant to the finding directed by Congress which is required to focus on theft deterrence and not on arrests and prosecutions. The differences in the 1991 and 1996 district attorney and law enforcement survey results would indicate that the trend for increased arrests and prosecutions is more strongly influenced by a multitude of factors, including application of resources and low enforcement incentives and assistance programs included in the legislation, than by parts marking.

Summary and Conclusion

AIAM believes that NHTSA's study of vehicle theft experience, i.e., the NHTSA Report to the Congress, does not objectively conclude that additional parts marking would substantially inhibit chop shop operations or vehicle thefts, a criterion required to be met by ACTA. The survey results from the law enforcement community may suggest that parts marking assists in successful prosecution against motor vehicle and motor vehicle parts theft, but this is not relevant to the statutory criteria. AIAM believes the theft and recovery record reported in the NHTSA Report to Congress supports a conclusion that expanded parts marking would not inhibit chop shop activity or vehicle thefts.

Please contact me on 703-525-7788 if you have any questions regarding these comments.

Sincerely,

George L. Parker
Vice President for Engineering Affairs

cc: NHTSA

TEXAS ASSOCIATION OF VEHICLE THEFT INVESTIGATORS

10-09-98

Mr. Thomas Eldridge
Dept. of Justice
Room 2213
950 Pennsylvania Avenue, N.W.
Washington DC 20530

Dear Mr. Eldridge,

The Texas Association of Vehicle Theft Investigators, TAVTI is a statewide organization dedicated to the reduction of motor vehicle related crimes. Our membership represents law enforcement, insurance industry and private sector.

It is the opinion of the membership of TAVTI that parts marking is an extremely valuable tool in the fight against auto theft. It has proven to greatly reduce the marketing value of stolen property as well as a deterrent to theft itself.

However, there is one primary concern as it pertains to light trucks. As is common knowledge four of the top five vehicle stolen in Texas are trucks of some sort. It is also known with the tremendous influx of sport utility vehicles (SUV) onto the market trucks are beginning to move up quickly in the list of most stolen throughout the U.S. Therefore, it is the recommendation of TAVTI that light trucks be added to the list of vehicles subject to part marking.

Your consideration of this matter is truly appreciated.

Respectfully Submitted

Tommy Hansen

Sgt. Tommy Hansen, Chairman
Legislative Committee

LEGISLATIVE COMMITTEE

2026 SEALY, GALVESTON, TEXAS 77550

Phone: (409) 766-2333

TARRANT COUNTY AUTO THEFT TASK FORCE

Watch Your Car
TEXAS AUTOMOBILE THEFT PREVENTION AUTHORITY

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National Insurance Crime Bureau

North Richland Hills

River Oaks

Tarrant County District Attorney

Tarrant County Sheriff

Texas Department of Public Safety

White Settlement

Date: November 3, 1998

To: Thomas Eldridge

From: Jerry McCurry JMc

Subject: Federally Mandated Automotive Parts Labeling

I am sending this memo in response to the U.S. Justice Department's request for public comment regarding parts labeling by automotive manufacturers. It is a summation of the opinions of four of the Tarrant County Auto Theft Task Force's (TCATTF) most experienced vehicle theft investigators, and myself. The others are: Larry Barksdale - Fort Worth PD; Bill Cooper - Texas DPS; David Buchanan - Arlington PD; and Walt West - Arlington PD. The TCATTF is a highly respected unit which was a co-winner of the Vehicle Theft Award of Merit sponsored by the International Association of Chiefs of Police and the National Insurance Crime Bureau in both 1996 and 1998.

Parts labeling that is <u>applied by the manufacturer</u> and which is **visible without dismantling** is an **effective tool** in combating vehicle theft. If the labels are present they aid in identifying stolen parts. Their absence aids in establishing probable cause to investigate further, obtain search warrants, etc.

Parts labeling **would be a <u>very</u> effective tool if:**

(1) The vin or derivative was **permanently applied** (stamped, etched)
(2) It were a **felony to alter or remove** (it is currently a misdemeanor to do so in Texas, thus a thief can often reduce a potential felony theft to a mere misdemeanor if he can successfully remove or deface a permanent id number!)
(3) **Light duty trucks were included** (4 of Texas Top 5 stolen are trucks)

Additionally, "vin-switching" stolen vehicles is a common practice here, and we suspect everywhere. Labeling of a vehicle's major component parts by any person or means other than the manufacturer can aid a thief's efforts to conceal the true identity of a stolen vehicle. Example - If the thief were to intentionally obtain labels that were referenced to a vehicle that is not stolen, once applied to a stolen car they would tend to disguise the stolen vehicle as the non-stolen vehicle.

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TEXAS DEPARTMENT OF PUBLIC SAFETY

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ASST. DIRECTOR

October 5, 1998

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Mr. Thomas Eldridge
U.S. Department of Justice Room 2213,
950 Pennsylvania Avenue, N.W.,
Washington D.C.
20530

Re: Request for comment regarding part marking and chop shop impact.

Dear Mr. Eldridge,

This letter is to serve as a comment on the effectiveness of the part marking of certain vehicles determined to be in a high theft line. I am the Service Commander for the Motor vehicle Theft Service of the Texas Department of Public Safety. It has been the experience of this Service that the anti theft stickers are a great benefit to the recovery of stolen vehicles and the creation of probable cause for seizure for further investigation if a sticker is removed.

Texas now has a salvage inspection law that requires a total loss vehicle to undergo an inspection of the major component parts to determine if the parts are stolen. The lack of an anti theft sticker is probable cause for the failure of a vehicle to pass inspection. This closes a door for the use of stolen vehicle parts produced by theft and chop shops.

The number one vehicle style lost in Texas is the General Motors pick up truck. It is usually three times as likely to be stolen as the number two stolen vehicle which is the Ford pick up truck. The marking of these vehicles (half ton and three quarter ton trucks) would be a tremendous benefit to criminal investigations in this state.

While the use of a removable label is better than nothing, a stamped number would be harder to remove, easier to detect when altered and if removed could be subject to recovery by the use of heat and acid restoration.

Texas has seen a significant reduction in auto theft since 1991 and I believe that better manufacturer marking and better security built into vehicles accounts for some part of this success.

Sincerely,

David M. Griffith, Commander
Motor Vehicle Theft Service
Texas Department of Public Safety