The Role of Technology in Reducing Auto Theft

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Abstract

Over the past decade, the number of auto thefts has increased at an alarming pace. No longer the province of the teenager going on a joy ride, or the young thug stealing a car for drug money, auto theft has become big business. The purpose of this study is to examine what technology, in conjunction with the major players in the problem, can do to reduce the number of auto thefts. The security industry, the military, the automobile industry, the insurance industry, law enforcement, the government, and the people must form a united front to fight the problem of auto theft. This study shows that a unified effort does reduce the number of auto thefts, but more needs to be done in the future in order to manage the problem effectively.

Introduction

Auto theft has become a serious threat to the economic and psychological welfare of the citizens of the United States of America and the state of Florida. In the 1970's, the primary reason for stealing a vehicle was for transportation, but this has changed. According to a news release issued by the National Insurance Crime Bureau (1995), 82% of the vehicles stolen were either stripped (31%), or had parts stolen (31%), were wrecked (16%), or were burned or flooded (4%). Auto theft has become one of the major social problems facing the citizens and the law enforcement agencies of our country.

The number of auto thefts has increased dramatically in the United States over the last decade, and peaked in the early 1990's. There has been a small decrease since 1993 (Florida Motor Vehicle Theft Prevention Authority, 1993). Since 1971, auto theft has increased over 300% and 125% of this increase has occurred in the last eight years (Florida Motor Vehicle Theft Prevention Authority, 1993). These auto thefts represent a significant percentage of all thefts reported to law enforcement. These thefts have ultimately cost the citizens of the United States billions of dollars. In 1992, auto theft cost the citizens of the United States 7.6 billion dollars. In Florida, the loss was 580 million dollars for the same period of time (Florida Motor Vehicle Theft Prevention Authority, 1993). The cost of auto theft includes not only the cost and damage to the stolen vehicles, but increased insurance premiums, and, as always, the cost of the actual investigations.
The time has come for all citizens, government, and the private sector to mount an all out technological war to reduce the number of auto thefts, thereby reducing social costs and increasing public safety.

This paper addresses the following research questions:

- **What technology can reduce the number of auto thefts?**
- **What technological applications can, or have been developed by: 1) The Auto Industry; 2) The Military; 3) The Security Industry; 4) The Insurance Industry; 5) Law Enforcement; 6) Government?**
- **Which of these technological applications have or have not been effective, and why?**

Auto theft: The Problem

The following statistics and data illustrate the enormity of the problem Florida faces. In 1994, there were 122,839 vehicles reported stolen in Florida. This translates to 10,236 stolen per month, 2,362 stolen per week, 336 stolen per day, 14 stolen per hour, or 1 vehicle stolen every 4.28 minutes (FDLE UCR, 1994). In 1994, Metro-Dade County led the State in the number of auto thefts with 22,198, followed by Tampa with 11,011, and then by the City of Miami with 10,376 (Florida Department of Law Enforcement, Uniform Crime Report, 1994).

According to the National Insurance Crime Bureau's News Release (1995), if your car were stolen today, you would have a fifty-fifty chance of getting it returned within a week. Fifty-four percent of all vehicles stolen are located within a week. After that, the odds of recovery drop drastically. According to the NICB, hundreds of thousands of stolen U.S. vehicles are driven or shipped across our borders. Thousands go to "chop shops", where they are stripped and sold piece by piece to disreputable dealers. A small percentage are hidden or destroyed by the owners during insurance scams. Finally, many have altered Vehicle Identification Numbers or VIN's and are sold to unsuspecting customers.

The most common method of stealing a car is by using the keys (48.7%) that were left accessible to the thief. This is followed by damaging the steering column (37.8%). In 9.7%, the ignition switch is punched. In 1.2% of the thefts, the vehicle is towed away, and only in 2.6% is the traditional hot-wire approach used (Florida Motor Vehicle Theft Prevention Authority, 1993).

> Motor vehicle thefts, for the most part, are a crime of opportunity. Regardless of motivation, the abundance of vehicles on the road and their accessibility are significant contributing factors leading to such a high incidence of auto theft. According to the Florida Department of Highway Safety and Motor Vehicles, there were 13,216,731 vehicle registration transactions during the 1991-1992 fiscal year. This includes all transactions except mobile homes. Of this total, 7,943,641 were passenger vehicles most frequently parked in driveways, parking lots, and garages (Florida Vehicle Theft Prevention Authority, 1993, p. 2).

The same report indicates that the largest percentage of vehicles stolen are taken from private driveways or from parking lots of apartment complexes. The next highest number of thefts occur at commercial parking lots or parking garages (Florida Motor Vehicle Theft Prevention Authority, 1993). The Florida Motor Vehicle Theft Prevention Authority released these alarming cost factors related to auto theft. The estimated value of all vehicles stolen in the nation in 1992 was 7.6 billion dollars. In Florida, the loss was in excess of 580 million dollars. This translates to a cost of over forty dollars per year for every resident in the state of Florida.

These alarming figures might lend one to believe that only new, high priced, luxury vehicles were the target of auto thieves. While this is true in some cases, it is surprisingly not the trend. In 1994, the top ten stolen cars were: 1) the 1991 Honda Accord; 2) the 1990 Honda Accord; 3) the 1992 Honda Accord; 4) the 1993 Honda Accord; 5) the 1986 Oldsmobile Cutlass; 6) the 1987 Oldsmobile Cutlass; 7) the 1985 Oldsmobile Cutlass; 8) the 1984 Oldsmobile Cutlass; 9) the 1988 Honda Accord; 10) and the 1989 Honda Accord (Michigan Automobile Theft Prevention Authority, 1995). As you can see, new cars are not the primary target of the thieves. Many citizens are careless in securing their older vehicles

because they feel a thief would not be interested. According to the Citizens for Auto Theft Responsibility Newsletter (1995), this is not the case. Parts of older models are in high demand. Auto thieves strip these older vehicles and sell the parts for a total value of two to four times the value of the stolen vehicles. Even if your car is not stolen for parts, because it is an unpopular model, it still could get stolen to be used in another crime. It is a popular tactic for gang members to steal a non-conspicuous vehicle to use in a drive-by-shooting or any other crime. "A professional car thief who swipes a couple of cars a night can make up to $1,500. for a few hours work. No wonder car stealing is a growth industry" (Contavespi, 1994, p. 334).

In New York City, auto theft is a constant problem for the 1.8 million auto owners. Roughly $360 a year is tacked onto the average insurance premium because so many cars are stolen (Krauss, 1994). According to Krauss, in New York City, about 1,700 vehicles were stolen per 100,000 residents in 1992, which is significantly higher than the national average of 650 per 100,000 residents. Another alarming statistic pointed out by Krauss is that in New York City, more than 90% of these cases go unsolved. Another disturbing fact mentioned by Krauss is that auto theft is an entry level crime for organized-crime apprentices, who typically net between $200 - $400 per car. These apprentices steal the cars and bring them to chop shops where they are dismantled or resold, and sometimes even exported.

Krauss feels that since auto ownership became common in the 1920's, there have been waves of auto thefts and then periods of tapering off. He believes that trends have somewhat mirrored economic cycles. He also feels that in recent years, auto thefts have soared because of the involvement of organized crime. "The crime of auto theft, in fact, has changed radically in recent years, creating new challenges for the police, but also providing new opportunities to manage the problem. Auto theft was once the province of young thugs, who stole cars to get money for drugs or take joy rides" (Krauss, 1994, p. A21).

In this same article there are some concerns that the auto makers are ambivalent to the auto theft problem. Representative Charles E. Schumer, a Democrat from Brooklyn, felt the auto makers are dragging their feet in the security area. Schumer himself was the victim of two auto thefts. Andrew Karmen, an auto theft specialist at the John Jay College of Criminal Justice, contended that auto makers put profits above security. Consumers should be outraged that it is so easy to start a car without the key. Krauss goes on to say that the auto makers insist they are concerned about security, but are opposed to congressional mandates on parts identification numbers because they were expensive and ineffective. "Our basic position on parts marking is that they are a cost burden to the consumers with no benefit in terms of anti-theft prevention," said Patrick Morrissey, a General Motors spokesman in Washington. He estimates that the cost of marking parts was over 200 million dollars with no proven benefit (Krauss, 1994).

Not only has auto theft become a significant problem, but a new twist on the crime has reared its ugly head. The new twist is "car-jacking". According to a study done on motor vehicle theft in Florida, very few agencies had any experiences in dealing with car-jacking, but this has changed significantly (Florida Motor Vehicle Theft Prevention Authority, 1993). While robbery is the primary motivating factor in car-jacking, the motor vehicle theft is a secondary offense. One of the most alarming factors in car- jacking is that there is often violence associated with it. It is often perpetrated by a new breed of criminal, very often young and seemingly oblivious to the consequences of violence. This violence

associated with car-jackings have had a very negative effect on Florida's tourism industry as a result of several high profile murders of foreign tourists.

Auto Theft: Potential Solutions

What do we do to find a solution? This is no longer the isolated case of a teenager just going on a joy ride and abandoning the vehicle. Auto theft has become a widespread problem, resulting in the loss of billions of dollars in property across the nation, as well as billions of dollars in increased insurance premiums. There is the economic and psychological trauma inflicted on the victims. There are increasing numbers of cases resulting in the deaths of the car-jacking victims.

A thorough analysis of the problem reveals that it will take a joint effort with all societal partners working together, sometimes against their own corporate interests, in order to have a significant impact. Each partner must be willing to sacrifice against self-interest and work for the common good.

The participants in this undertaking are: 1) the auto industry; 2) the military; 3) the security industry; 4) law enforcement; 5) all levels of government; and 6) the auto owners themselves. Originally, one of this papers research questions was "What can technology do to reduce the number of auto thefts?" Perhaps the question needs to be expanded to read; "Can technology in conjunction with other factors, reduce the number of auto thefts?" In brief, the answer to the question is **yes.** One industry or entity cannot solve the problem alone, however, it will take a united effort of Herculean proportions, but that does not mean we cannot each contribute to the cause.

Auto industry

The auto industry has tremendous potential for making automobiles almost impossible to steal without very sophisticated knowledge. The problem is this is against their corporate interests. If someone steals your car and it is not recovered, you will have to buy another one, from the auto industry. The current incentive structure does not lend itself to major participation by the auto industry. Certain federal legislation has been enacted which has forced the automobile industry into acting more aggressively to prevent auto-theft. Mandatory parts marking is an example of this (Krauss, 1994). The Federal Anti-Theft Act of 1992 (FACTA) expanded vehicle parts marking to include all vehicle makers and models by 1997 (National Insurance Crime Bureau, 1995). The industry has done little on its own in this area.

Perhaps more legislation needs to be passed that dictates increased participation by automakers in the future. Micro chips in the ignition key, now available on some vehicles could be mandated. The automobile industry could make passive alarm systems standard equipment on all future models. A weak point in most vehicles that make them accessible to thieves is the steering column. The automobile industry could re-design the steering columns to make theft more difficult.

The Military

The military has secret technology that could work to eliminate the problem of car theft. Hi-tech satellites could be used to track automobiles that are stolen. These satellites are more sophisticated than those currently in use by private organizations. Vehicles could

easily be located after being stolen. The military must be willing to share its technological power.

The Security Industry

The security industry has a vested interest in the problem, and has made tremendous inroads into solving it. Simple anti-theft devices such as "the club" to exotic satellite tracking devices such as Lo-jack, the security industry is constantly working on solutions to auto theft.

The Insurance Industry

The insurance industry needs to keep up the good work in reducing the numbers of auto thefts through lobbying for tougher legislation. The insurance industry has lobbied in many states to have legislation passed that mandates fees be collected from each insurance premium to combat automobile theft. This money supports anti-theft authorities such as the Michigan Automobile Theft Prevention Authority (The Michigan Automobile Theft Prevention Authority, 1994). Reductions in premiums are given for the installation of certain security devices. The National Insurance Crime Bureau (NICB) partners people and technology to stop automobile theft. NICB On-Line provides computer access to the most comprehensive insurance claim and vehicle related information source. This service is provided to over 10,000 users. NICB was instrumental in solving the World Trade Center bombing though their VIN assist program. This program cross references partial VIN's for all cross matches (National Insurance Crime Bureau, 1995). They, however, can do more.

Law Enforcement

Law enforcement has created education programs such as Combat Auto Theft (CAT) and anti-auto theft task forces, but they can do more also. Law enforcement needs to make auto-theft a priority issue. Security measures need to be stressed over and over again at crime watch meetings, crime prevention fairs, and civic demonstrations. The citizens need to be educated through programs offered by law enforcement.

The Government

Finally, the government needs to do more. They have mandated that certain parts be mandated to be marked and this has helped, although exact statistics are not available. They have established anti-auto theft authorities which are patterned after Michigan's Auto Theft Prevention Authority, and this has had a substantial impact. In Michigan for example, automobile theft has decreased 21.3% between 1986 and 1993 (Michigan Automobile Theft Prevention Authority, 1995). They have mandated reductions in insurance rates for certain security devices and they have enhanced the penalties for the car-jacking.

The Federal Anti-Theft Act of 1992 (FACTA) makes car-jacking a federal offense, punishable by up to life imprisonment (National Insurance Crime Bureau, 1995). All of these have worked to some degree, but what we really need is a cohesive effort on the part of all the players to strike a fatal blow on auto theft.

Methods

This study was conducted primarily through the review of archival data. The data were collected from the automobile industry, insurance industry, security industry, governmental entities, law enforcement agencies at all levels, and citizen groups. This literature was gathered using the following methods: 1) Scanning relevant articles, 2) making telephone requests to the appropriate industries for information, and 3) searching library data bases.

The data received included journal articles, research reports, newspaper articles, news releases, trade publications, and annual reports; with the vast majority being promotional advertisements. Once the data were received, they were reviewed, analyzed, and evaluated, and placed with other data in the appropriate entry file, according to its value for this research project. Due to the sheer volume of data associated with this project, only extremely relevant data were used.

The volume of data received are a thorough indication of the magnitude of the problem. Many of the industries and governmental agencies went out of their way to assist in this project, resulting in very useful and informative data that assisted in the completion of this project.

There were several weaknesses related to the data in this report. Much of the information used was promotional in nature, supplied by industries themselves, and therefore is not scientifically valid. Another identified weakness was the lack of interest in auto theft prevention by the auto industry. A total lack of response on the part of the military presented another unexpected stumbling block, as one might have hypothesized the military to be a bonanza of information with sophisticated technological solutions to the problem of auto theft.

Results

All of the players associated with the problem of auto theft should unite in an effort to solve the problem of auto theft.

The military, possibly for security reasons, chose not to respond to requests for information. Because of this, a valuable source of information was unavailable.

The security industry was a wealth of information and appears to be in the forefront of solving the problem of auto theft. This industry is generally concerned with reducing auto thefts because it is their livelihood. Their present efforts range from a simple steering wheel lock, such as the club, to a sophisticated tracking system such as Lo-Jack or SatStar. Lo-jack and SatStar are very sophisticated tracking systems. Lo-jack uses a tiny transponder that can be tracked by specifically equipped police vehicles. SatStar uses twenty-four global positioning satellites and transmits the stolen vehicles location to a central receiving station. The bottom line is that security devices do work and can be very effective. According to an article in the Pittsburgh Gazette, "Piling on layers of security devices is the best defense against car thieves" (Gitman, 1995). Gitman advocates the use of a simple locking device such as the Club, along with an alarm system. Many security devices such as the SIS-2100 marketed by ConCours, Inc. makes a vehicle virtually impossible to start when it is activated. This system disables the starter and the electronic fuel pump when it is activated. What makes this system different is that it can be activated after a car has been stolen in order to disable the car. A 1-800 number is called and is given the owner's personal identification number and then a computer bounces a microwave signal off one of 48 low-flying satellites, and thus disables the vehicle (Box,

1995). The only drawback to this system is that it costs $1500.00. There is no doubt that cooperation between the auto industry and the security industry could make this system much more affordable.

The auto industry was generally not cooperative with this study and provided very little useful information. One exception was the Ford Motor Company, whose data will be discussed in the next section.

The insurance industry has several powerful incentives to reduce auto theft, and has reduced premiums to customers who have installed various security devices. They advocate parts marking and some states have banned the practice of using used parts to repair wrecked vehicles (Michigan Automobile Theft Prevention Authority, 1995). This has not only reduced the number of auto thefts, but is also good business.

Law Enforcement has attacked the problem at various levels. They have implemented task forces to attack the problem from a multi-jurisdictional level. They have educated the public through crime watch programs and programs such as Combat Auto Theft (Florida Motor Vehicle Theft Prevention Authority, 1993).

Government has legislated enhanced penalties for car-jacking. They have formed anti-theft authorities that help coordinate anti-auto theft efforts in the form of enforcement and public education about the problem. Such as in the case of the Michigan Automobile Theft Prevention Authority which has proved to be the most successful effort to date in the war on auto thefts (Michigan Automobile Theft Prevention Authority, 1995).

Discussion

The problem of auto theft is complex and similar to that of a jigsaw puzzle. All the pieces must fit together before the puzzle is finally solved. The major participants in the fight against auto theft must work together before the problem is solved.

Unlike other manufacturers, the Ford Motor Company offered a wealth of information. Ford has developed a tiny transponder that works on radio frequencies, and is concealed in the key and ignition systems of new Taurus LX, Taurus SHO, and Mercury Sable LS. This passive anti-theft system offers extra protection against auto theft. (The device is activated automatically when the key is removed.) The key contains one of 72 billion unique codes. Once the key is inserted, the code is matched electronically to the ignition system of the car. If they match, the car starts. The engine is immobilized and will not start if a counterfeit key is used, or if the ignition has been tampered with. This system was first made available in 1993 in Europe on over 750,000 vehicles. The system was available on Ford Escort RS and Fiesta Turbo and in 1994 in the United Kingdom. The theft rate on these models was reduced at a remarkable rate of 78% for 1994 (DiPietro, 1995).

> After a huge success in Europe, we're convinced that this technology puts the amateur out of business and makes it so difficult for professionals that we expect they'll simply avoidtrying to steal our PATS-equipped cars, said Frank Macher, Ford Vice President and GeneralManger, Automotive Component Division (DiPietro, 1995, p.2).

Manufacturers have also strengthened door locks, made locking mechanisms more difficult to defeat, and steering columns have been redesigned and strengthened. This makes the thieve's job more time consuming and difficult. Computer chips have been added to vehicle keys that must match a code in the ignition to start the vehicle. Although

this is less effective than Fords PATS System, it does help, especially against the amateur thief. In 1986, there were only 300,000 chips installed. In 1995, there were almost 10 million installed (Michigan Automobile Theft Prevention Authority, 1995).

The government is a key element in the prevention of auto theft. The state of Michigan was experiencing a severe auto theft problem in the mid 1980's, as was much of the nation. In 1986, The Automobile Theft Prevention Authority was established on a temporary basis. The program was very successful and given permanent status in 1992. Objectives were developed to guide the operation of the Authority. Many of these objectives were designed to enlist the aid of the entities associated with the problem or to support these entities. According to the impact of auto theft trends on insurance rates, the authority had the following objectives:

1. To provide financial support to the local department of state police and local law enforcement agencies for economic automobile theft enforcement teams.
2. To provide financial support to state or local law enforcement agencies for programs designed to reduce the incidence of economic automobile theft.
3. To provide financial support to judicial agencies for programs designed to reduce the incidence of economic automobile theft.
4. To provide financial support to local prosecutors for programs designed to reduce the incidence of economic automobile theft.
5. To provide financial support for neighborhood, community, or business organizations for programs designed to reduce the incidence of automobile theft.
6. To conduct educational programs designed to inform automobile owners of methods of preventing automobile theft and to provide equipment for experimental purposes, to enable automobile owners to prevent automobile theft.
7. To approve automobile theft prevention devices qualifying an insured for a premium discount for automobile comprehensive coverage (Michigan Automobile Theft Prevention Authority, 1995, p. 19).

The authority is funded by collecting one dollar on each non- commercial vehicle insured in the state of Michigan. This money has been used to provide over 44 million dollars in grants since 1986. The most exciting aspect of this concept is that it works. In 1993, Michigan residents experienced 56,670 motor vehicle thefts. The 1993 figure represents a reduction of 24.6% compared to the 75,123 thefts in 1985. Michigan dropped from the number two to number thirteen in the total theft rate and from number two to number six in total thefts. Since its inception in 1986, at least fourteen other states have formed anti-theft authorities (Michigan Automobile Theft Prevention Authority, 1995).

The Michigan Automobile Theft Prevention Authority has been a catalyst for change in the fight against auto theft. The Authority involved many of the major participants and united them in a cohesive effort. First, the Authority needed a source of funding. This was accomplished through a one-dollar surcharge on the cost of each non-commercial auto insurance policy. This surcharge was collected by the insurance companies and then forwarded to the Authority. This required the cooperation of the insurance industry.

The insurance industry has offered discounts on premiums for the installation of certain anti-theft devices. They have lobbied for legislation to mandate the marking of parts and tougher sentences for auto thieves and car-jackers. The industry has even been instrumental in influencing the passage of legislation, in Michigan, which ban the use of pre-owned parts in the repair of wrecked automobiles. This has removed much of the incentive to steal a car for parts.

The security industry has developed several products that claim they can stop auto theft. Much of the data that explains the effectiveness is in the form of promotional/advertisement literature and is suspect. The bottom line, however, is that anything is better than nothing.

Conclusions and Recommendations

"Can technology in conjunction with other factors reduce the number of auto thefts?" **The answer is an unequivocal "yes".** What is needed is a partnership between private industry, insurance, and government. The catalyst that is needed to make the solution a reality is a National Auto Theft Prevention Authority. This Authority should be modeled after Michigan's Automobile Theft Prevention Authority. Michigan efforts have reduced the number of auto thefts in that state by an amazing 24.6% over ten years (Michigan Automobile Theft Prevention Authority, 1995). At least fourteen other states have programs that are similar. Eventually, you may have a similar program in each state or fifty automobile theft prevention authorities. This is unnecessary!

Most of the current state programs are modeled after Michigan's successful program. They, for the most part, provide financial support to state and local law enforcement agencies. They provide financial support to judicial agencies to fight auto theft. The authorities support community based efforts to reduce automobile theft. Educational efforts to inform automobile owners about methods to prevent theft come under their control. Finally, the authorities qualify security devices for insurance premium discounts.

While state agencies are successful, the cost of having an automobile theft prevention authority in each state is staggering. The 1994 budget for The Michigan Automobile Theft Prevention Authority was 4.9 million dollars (Michigan Automobile TheftPrevention Authority, 1994). If one multiplies that by fifty states, the cost is astounding. A national association of state automobile theft prevention authorities has been established. The major goal of this association is to provide resources to states interested in developing automobile theft prevention authorities (Michigan Automobile Theft Prevention Authority, 1994).

The ideal situation would be to have one theft prevention authority for the entire country. A surcharge on insurance premiums could fund the authority. Administrative costs could be saved by having a central location and one board of directors. Programs could be developed on a national level This would place the entire nation on the same course of action in fighting auto theft. Jurisdictional problems could be solved on a national level. Long range planning and annual strategic planning sessions would make auto theft a less significant problem.

Chief Erik Sandvik began his Florida law enforcement career with the Pinellas Park Police Department in 1972 as a patrol officer. He has served as a patrol sergeant, detective sergeant, and patrol lieutenant before being promoted to captain where he commanded the Services Division and then the Operations Division. He also served as accreditation manager and was in charge of internal affairs. He retired from Pinellas Park in February of 1998 after over 26 years of service. In March 1998 he was selected as Chief of the Bartow, Florida Police Department. Chief Sandvik has an AA degree in Police Administration from St. Petersburg Junior College, a Bachelors degree in criminology from St. Leo College, and a Masters degree in Public Administration from Troy State University. Erik is a graduate of the Southern Police Institute. He is married to Lois and has three daughters and one grandson.

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