

1. Steering Column Locks and Motor Vehicle Theft: Evaluations from Three Countries

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EDITOR'S NOTE: Evaluations of situational prevention are often short-term and little is known about the durability of its successes, which makes this case study particularly important. Originally published in Crime Prevention Studies (Webb, 1994), it shows that the success of steering column locks in reducing auto theft has been maintained for a substantial time period—for nearly forty years in the case of Germany and for nearly thirty years in Britain and America where the locks were introduced later. The locks' effectiveness was first documented in Crime as Opportunity (Mayhew et al., 1976), the Home Office's initial venture in situational prevention. A journal reviewer of the publication said that the idea of reducing opportunities for crime would "never catch on;" Webb's case study shows just how wrong such predictions can be.

Introduction

The introduction of car security devices into car design has become an important approach to the prevention of car theft. This has focused on two aspects of car design: improving perimeter security to prevent breaking-in to cars, and installing systems that disable the vehicle when parked to prevent it from being unlawfully driven away.

In the early history of the motor car, there was very little in-built security with the cabs of the first vehicles being completely open. Gradually, as glass windows and locks were introduced to doors, the level of car security increased. However, this was not always seen as beneficial. In London, obstructions caused by parked vehicles had become a serious problem by the 1920s due to increased vehicle congestion and the lack of any properly developed car parking strategy. Physically moving parked vehicles, facilitated by the open cab design of the early vehicles, had been an important method of managing this problem. The more secure vehicle design of the closed and locked cab prevented this, so between 1928 and 1932 car owners were prohibited by law from locking their vehicles when parking them in public places.

As attention focused more seriously on the growing problem of car theft and the need for car security, door locking systems and devices for protecting ignition switches were improved (Karmen, 1981). T' shaped door handles and locks were replaced with 'D' shaped handles to prevent the use of pipes to break the handles off. Eventually, locks were incorporated into the door itself. For many years vehicles were started using push-button ignition switches. These were protected in the early days by removing handles or plugs, but after 1910 locks were built into ignition switches. Chrysler has been attributed with pioneering the modern key-operated starter switch in 1949 (Harding *et al*, 1987), a development which was quickly adopted by other manufacturers.

The growing problem of car theft, however, and the ease with which thieves were able to overcome the existing car security devices (see Karmen, 1981) led eventually to the introduction of legislation in Europe and the United States in the 1960s and 1970s which for the first time required manufacturers to fit cars with anti-theft devices. These regulations focused on preventing cars from being unlawfully driven away, and provided motor manufacturers with a number of options including transmission locks and devices to prevent the engine from running. The favored option adopted by nearly all manufacturers was the steering wheel or column lock, as this was considered to be more effective than the other devices.

The Introduction of Steering Column Locks in Europe and the United States

The Federal Republic of Germany (FRG) was the first country to make the incorporation of anti-theft devices in motor vehicle design compulsory. Regulations were drawn up on the design and fitting of protective devices against unauthorized use of motor vehicles in 1961, and these were included in the FRG Traffic Licensing Regulations in July of that year. The types of protective devices suggested by the regulations included gear box and gear lever locks and devices to prevent the engine from running. The vehicle manufacturers focused exclusively on the steering wheel lock.

The German regulations required all new cars and motor cycles capable of speeds of 25 km/h or more coming onto the road for the first time on or after the 1st July 1961 to be fitted with an anti-theft device that conformed to the standard. By 30th June 1962, all such vehicles on the road had to be so equipped. Stringent testing procedures were instituted to ensure locks complied with the recommended standard.

It was not until ten years later that motor manufacturers in Britain and the United States introduced steering column locks in their cars. In Britain, this was achieved through a

voluntary agreement negotiated between the Home Office and the Society of Motor Manufacturers and Traders (SMMT) in which every motor manufacturer gave an undertaking to fit anti-theft devices according to the agreed specification. The specification was similar to that introduced in Germany and, again, manufacturers opted for the steering column lock. However, unlike the German legislation the British agreement applied only to new passenger cars and did not cover motor cycles. Steering column locks were to be fitted to all new car models from the 1st January 1970 and to all cars of existing models coming on to the road for the first time on or after the 1st January 1971.

In 1970, shortly after the British agreement had been reached, the United Nations Economic Commission for Europe agreed a similar standard for anti-theft devices in motor vehicles (ECE Regulation 18). This regulation, which applied to all four-wheeled motor vehicles, was accepted by the UK in 1972. Acceptance of the regulation did not have the force of legislation. What it provided was a standard, and in accepting this standard Governments were undertaking not to introduce more stringent regulations that would prohibit the use of vehicles on its roads which conformed to the ECE regulation. However, this standard was eventually incorporated into legislation. In 1973 it was issued as a European Community Directive (Council Directive 74/6 I/EEC) and the type approval regulations for Great Britain were accordingly amended in 1975 (The Motor Vehicle (Type Approval) (Amendment) Regulations 1975).

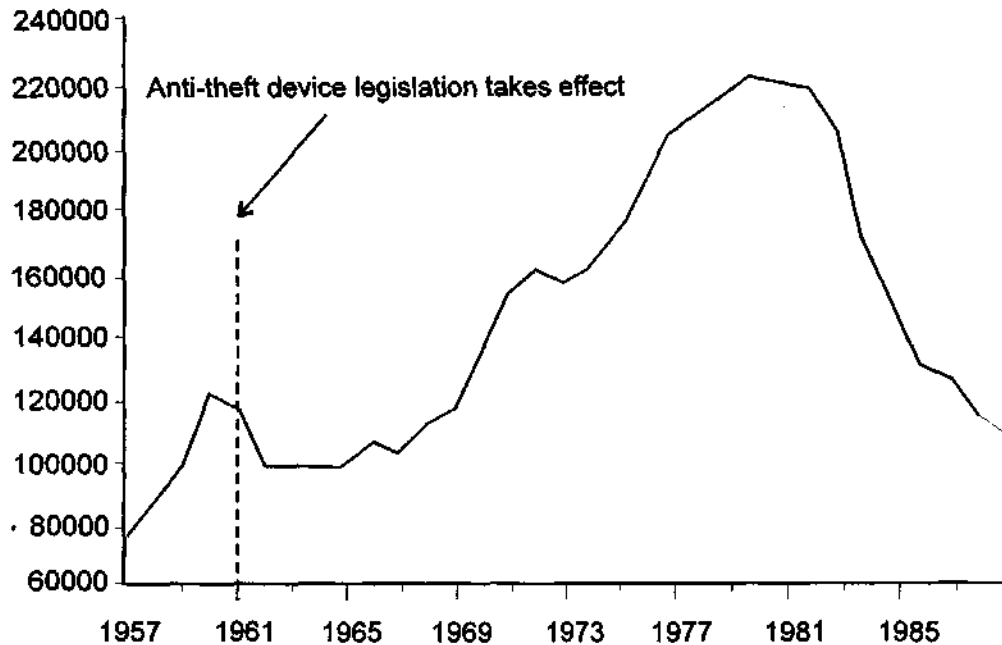
In the United States, concern in the mid-1960s about car theft was fueled by reports that so-called "joy-riders" were from 47 to 200 times more likely to be involved in a traffic accident than other drivers (Karmen, 1981). In 1966, Federal Motor Vehicle Safety Standard 114 was passed, although this was not to become effective until 1970. It required all manufacturers to equip new passenger cars with a key-locking system that prevented the car from being steered or driven forward without the ignition key. With the exception of SAAB, who focused on the prevention of forward motion, all of the major manufacturers selling cars in the US market began installing steering column locks in their vehicles in 1969 (Lee and Rikoski, 1984).

The Effect of Steering Column Locks on Motor Vehicle Theft in Germany

Shortly after the agreement between the SMMT and Home Office came into effect, doubt began to be expressed about the effectiveness of the steering column locks being fitted to cars. A report prepared by the Metropolitan Police in 1971 claimed that officers in the Traffic Division were able to overcome many steering column locks when trying to remove illegally parked cars. It was felt that, because there was no central testing of lock designs many were of inferior quality. The German regulations were considered much more stringent since these required the steering column locks to be approved by a central testing facility. In 1972, Metropolitan Police officers went to Germany to examine the methods used to test steering column locks and obtain views on the effectiveness of these locks and the standards set by ECE Regulation 18.

The report of that visit included an examination of thefts of all motor vehicles (including motor cycles as well as cars) in the Federal Republic of Germany between 1960 and 1970. The figures showed a reduction in thefts after the anti-theft regulations took effect in 1961 and that this lower level of theft was sustained until 1970 by which time theft figures had again reached pre-regulation levels. This pattern can be seen in figure 1 which shows thefts of motor vehicles in what was the Federal Republic of Germany between

FIGURE 1
NUMBER OF THEFTS AND UNAUTHORIZED TAKINGS OF MOTOR
VEHICLES IN GERMANY, 1957-1989



Source: Bundeskriminalamt, *Polizeiliche Kriminalstatistik*. Wiesbaden: Bundeskriminalamt

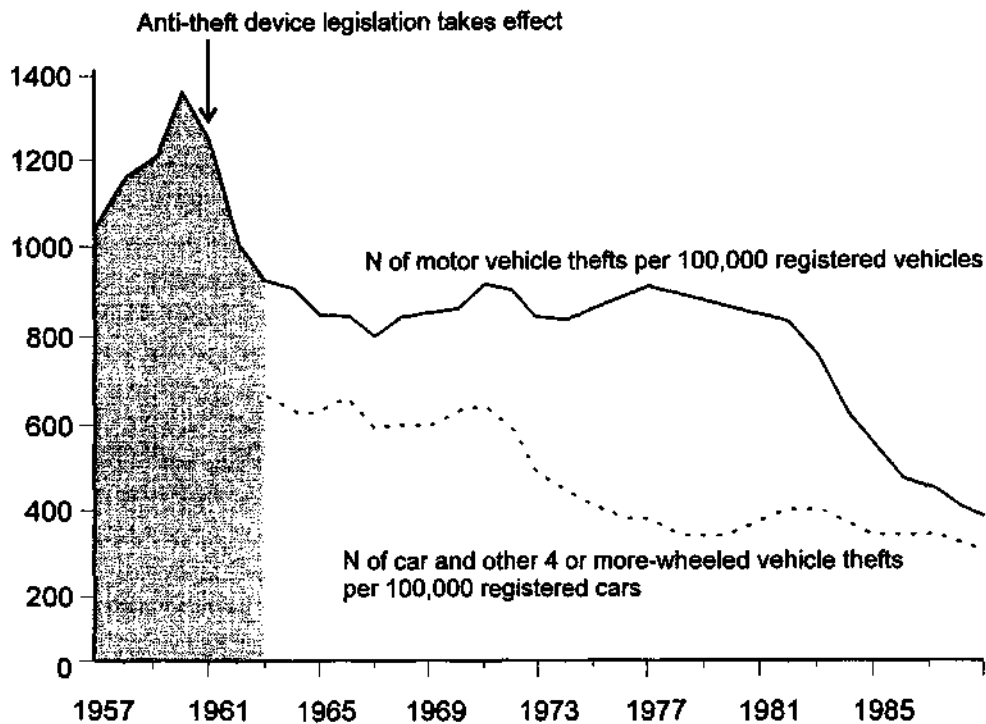
1960-1989.

Figure 1 shows a clear and immediate drop in thefts of motor vehicles after steering column locks were introduced in cars and motor cycles in 1961. Motor vehicle thefts in 1963, the first full year after steering column locks were fitted to all cars, were 20% lower than in 1960. This lower level of theft was sustained until the end of the decade. However, thefts began to rise towards the end of this period and continued to grow at a fast rate over the next decade. By 1980 the annual number of thefts and unauthorized takings of motor vehicles had reached twice that of 1960, the last year before steering column locks were introduced. The fall in motor vehicle thefts since 1980 is as dramatic as their growth during the previous decade, with thefts reducing to the numbers recorded 30 years ago. This sharp rise and fall in motor vehicle thefts is mainly due to changes in thefts of mopeds and motor cycles, which made up a substantial proportion of motor vehicle thefts. The drop in motor vehicle thefts in the 1980s follows the introduction of motor cycle helmet legislation in the FRG (Mayhew *et al.*, 1989). Theft of mopeds and motor cycles are examined in more detail later in this section.

Figure 1 suggests that steering column locks had only a relatively short term beneficial effect on the motor vehicle theft statistics in the FRG. However, when the increase in number of motor vehicles on the road is taken into account a rather different and more encouraging picture emerges. Figure 2 shows the number of thefts and unauthorized taking of motor vehicles for every 100,000 registered vehicles in the FRG over the last 30 years. This figure also shows the rate of theft and unauthorized taking specifically of cars and other vehicles with four or more wheels (e.g. buses, lorries, coaches). In 1963 the Bundeskriminalamt began disaggregating their vehicle theft statistics to show thefts of

these vehicles separately from thefts of mopeds and motor cycles. Lorries, buses and coaches were not included in the anti-theft legislation. However, these only made up a small proportion of "four or more wheeled vehicles." Most vehicles in this group are cars, so one might expect the pattern of theft for this group of vehicles to reflect theft of cars more

FIGURE 2
RATE OF THEFT AND UNAUTHORIZED TAKING OF MOTOR VEHICLES IN
GERMANY, 1957-1989 PER 100,000 VEHICLE REGISTRATIONS



Source: Bundeskriminalamt, *Polizeiliche Kriminalstatistik*. Wiesbaden: Bundeskriminalamt.
 United Nations, *Annual Bulletin of Transport Statistics for Europe*. New York: United Nations.

closely than theft of all motor vehicles.

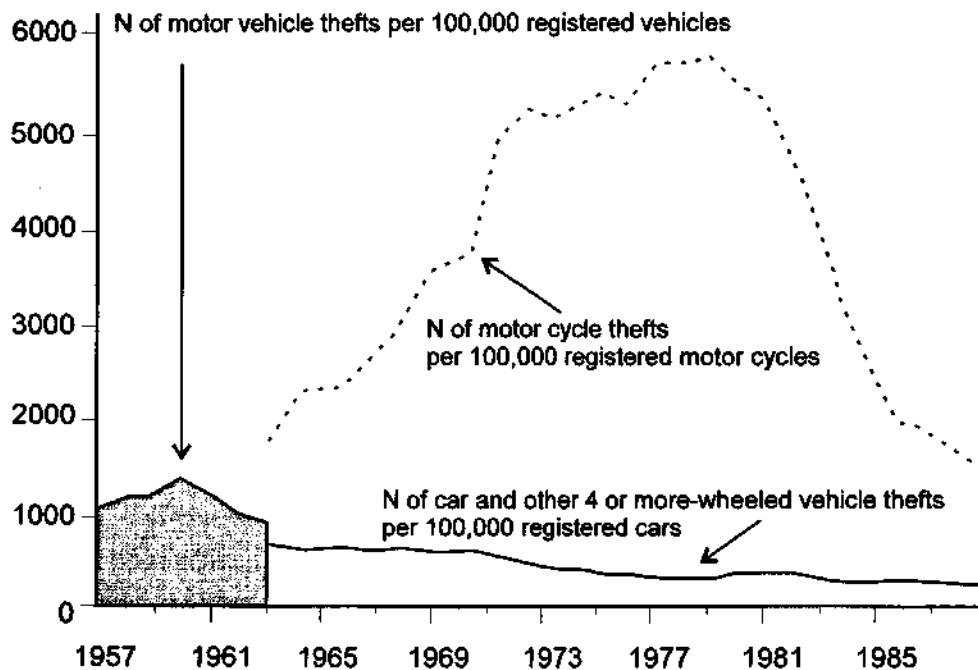
Since 1957, there has been a five-fold increase in the number of vehicles on the road in the FRG. When this phenomenon is taken into account, a much more positive picture of the risk of vehicle theft over the last 30 years is revealed. Figure 2 shows that after the anti-theft device legislation took effect, the rate of motor vehicle theft steadily fell over following the six years. Throughout the 1970s, the rate of vehicle theft remained stable. Although the number of vehicle thefts increased by 92% between 1969 and 1980, the number of vehicle on the road also increased by 91%. A second period of reducing theft rates can then be seen during the 1980s.

The pattern of theft for "four or more wheeled vehicles" between 1963 and 1972 is very similar to that for motor vehicles as a whole. However, the rate of theft of these vehicles continues to drop throughout the following decade in contrast with the rate for all vehicles which shows no reductions until the early 1980s. These data therefore suggest that steering column locks have had a more beneficial long-term effect on car theft. Unfortunately, it is not possible to assess the immediate effect of steering column locks on car theft since the motor vehicle theft statistics have only been disaggregated since 1963. It had been

thought that car theft had reduced substantially following the introduction of steering column locks. Mayhew *et al.* (1976) reported a crime reduction of 63% for thefts of cars in 1963 compared with 1960. However, it has subsequently been discovered that the Bundeskriminalamt report on which these data were based did not take into account the inclusion of motor cycles in the statistics prior to 1963 and their exclusion in this and subsequent years.

Although cars make up the vast bulk of motor vehicles in the FRG, they have not always been the main target of vehicle thefts. Since 1963, thefts of mopeds and motor cycles have made up between 40% and 70% of all motor vehicle thefts and unauthorized takings in the FRG. This, together with the much smaller number of mopeds and motor cycles on the road in the FRG compared with cars means that the risk of motor cycle theft is very much greater than that for cars. Figure 3 shows the rate of motor cycle and moped theft between

FIGURE 3
RATE OF THEFT AND UNAUTHORIZED TAKING OF MOPEDS AND MOTOR CYCLES COMPARED WITH OTHER MOTOR VEHICLES IN GERMANY, 1963-1989



Source: Bundeskriminalamt, *Polizeiliche Kriminalstatistik*. Wiesbaden: Bundeskriminalamt
United Nations, *Annual Bulletin of Transport Statistics for Europe*. New York: United Nations.

1963-1989 compared with theft of other motor vehicles.

The growth in rate of moped and motor cycle theft between 1963 and 1980 is very marked, and reaches levels far in excess of the rate of car theft. Numerically, moped and motor cycle thefts had also grown to outnumber car thefts by 1973 and by 1980 made up 70% of all thefts of motor vehicles in the FRG. This is far greater than in Britain and the US where motor cycles have been found at various times to make up no more than 11% of vehicle thefts (Richards, 1993; Lee and Rikoski, 1984). The equally dramatic reduction in motor cycle theft that has taken place in Germany since 1980 follows the introduction

of motor cycle helmet legislation (Mayhew *et al*, 1989).

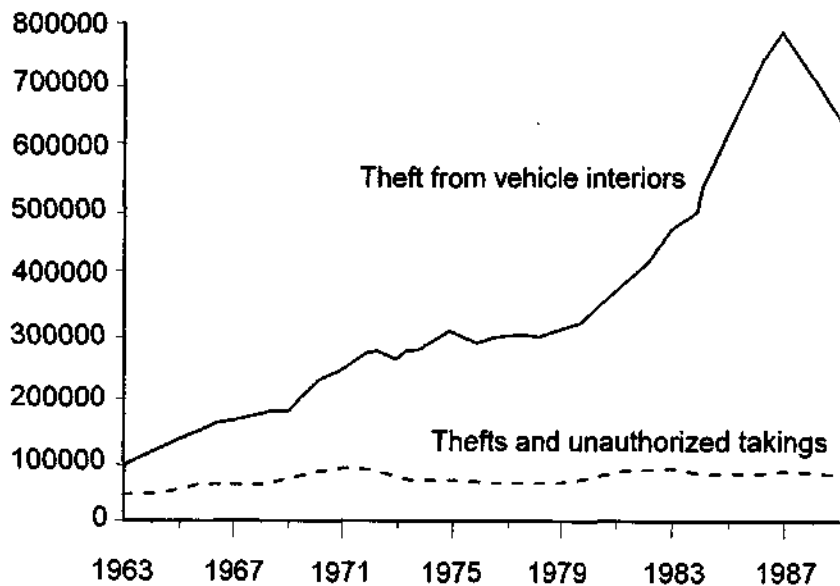
The rapid increase in the rate of theft of mopeds and motor cycles shown in Figure 3 suggests that steering column locks have been ineffective as a theft prevention device in these vehicles. Technically, the locks fitted to motor cycles and cars had to conform to the same standard. However, it may be easier to break steering column locks on motor cycles since handlebars enable much greater force to be applied to the lock than a steering wheel and the locks are more exposed to tampering. Motor cycles can also be moved by hand much more easily than cars. Even with the steering column lock applied, the front wheel can be raised so that the motor cycle can be wheeled away. It may even be possible to lift some light mopeds completely off the ground.

It is important to note, however, that Figure 3 shows thefts of all mopeds and motor cycles, including those with speeds of less than 25kmh which were not covered by the anti-theft device legislation. Transport statistics show that small mopeds make up a large proportion of the moped and motor cycle population in Germany. In 1967, 1972 and 1977 mopeds with an engine capacity of 50cc or less made up 72%, 86% and 77% of all mopeds and motor cycles on the road in Germany respectively.

Figure 4 provides further evidence that steering column locks have had a beneficial long term effect on theft of cars. This figure compares the pattern of theft of cars and other 4-or-more wheeled vehicles 1963-1989 with thefts from the inside of these vehicles.

The growth in theft from cars in the FRG over the 30 years since the anti-theft device regulations became effective is very striking, and bears resemblance to the pattern seen in Britain over the same period (Webb and Laycock, 1992a). Thefts of cars in the FRG, however, have remained at much lower levels throughout this period. This contrasts with the situation in Britain where thefts of and from cars were reported throughout the late

FIGURE 4
NUMBER OF THEFTS AND UNAUTHORIZED TAKINGS OF, AND THEFTS
FROM THE INSIDE OF CARS AND OTHER 4 OR MORE-WHEELED
VEHICLES IN GERMANY, 1963-1989



Source: Bundeskriminalamt, *Polizeiliche Kriminalstatistik*. Wiesbaden: Bundeskriminalamt

1960s and 1970s in very similar numbers. Together, Figures 2, 3 and 4 do seem to provide strong evidence that steering column locks helped to keep theft of cars in the FRG down to much lower levels than might otherwise have been expected in an environment where other forms of motor vehicle crime have been reported in large numbers.

The Effect of Steering Column Locks on Motor Vehicle Theft in Britain

In 1976 the Home Office published research which examined the effect of steering column locks on vehicle theft in Britain (Mayhew *et al.*, 1976). Unlike the situation in Germany, it was clear that the agreement negotiated between the Home Office and the SMMT had had little immediate impact on the overall vehicle theft figures. Thefts of motor vehicles in 1973, three years after the agreement had begun to be implemented, were 42% higher nationally than in 1969, the last year before steering column locks began to be fitted. Since the British agreement only applied to new cars manufactured in or imported into Britain, it might perhaps have been unrealistic to expect an immediate impact on the national vehicle theft figures.

However, an immediate impact on theft of new motor vehicles was found. New cars in the study sample accounted for 20.9% of all vehicles stolen in 1969 but only 5.1% of vehicle thefts in 1973. The reason why this had not been reflected in the overall theft figures was that thefts appeared to have been displaced to older vehicles unprotected by steering column locks. The risk of theft to these cars had nearly doubled over the same period.

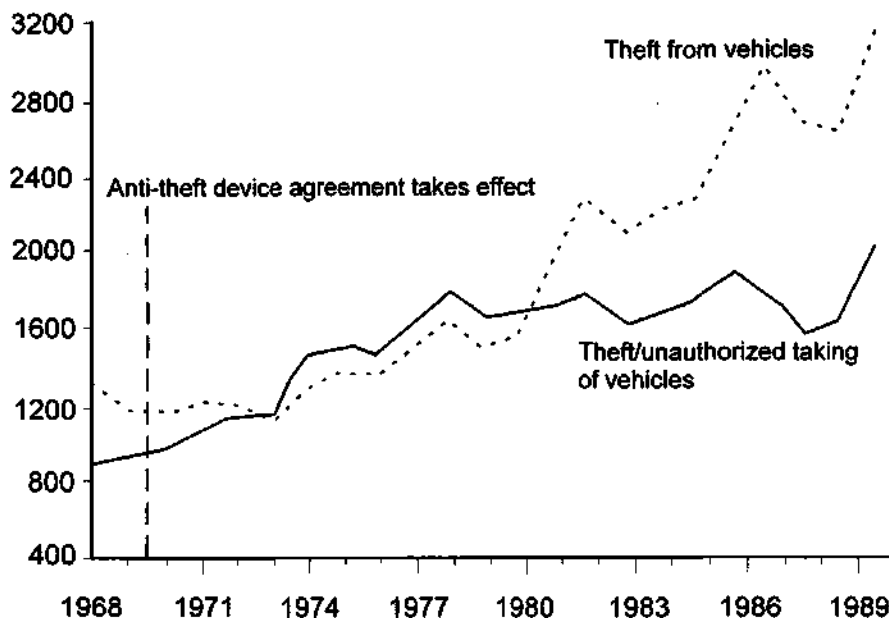
On the basis of these findings it was argued that overall vehicle theft figures might be expected to reduce as the proportion of cars on the road protected by steering column locks increased. In 1973, only 37% of cars in London were fitted with steering column locks. It was estimated that this would increase to 81% by 1980, and that at this point the more casual thefts of cars should show signs of reducing.

Figure 5 shows the rate of theft and unauthorized taking of motor vehicles in England and Wales between 1968-1990 compared with theft from vehicles. This rate is expressed as the number of thefts per 100,000 motor vehicles registered in Great Britain.

Figure 5 does not show any reduction in the rate of theft and unauthorized taking of motor vehicles in England and Wales after the anti-theft device agreement took effect. However, Figure 5 does show that as a proportion of all motor vehicle crime theft of vehicles has been reducing since 1980. Both theft of and from vehicles were reported in similar numbers between 1968 and 1980. Since 1980 thefts from vehicles have grown at a much accelerated rate, with the risk of this form of vehicle crime doubling between 1980 and 1990 from 154 thefts per 100,000 vehicles to 319 thefts. In contrast, the rate of theft of cars has stabilized since 1980 with very little increase over the following decade (169 thefts per 100,000 vehicles to 204).

These data do seem to provide evidence that the protection of a growing proportion of the motor vehicle population in Britain has helped to control vehicle theft. These data may also suggest, as in Germany, a displacement away from vehicle theft to other forms of vehicle crime, in this case stealing property from vehicles. However, some of the increase in theft from vehicles will be due to increased reporting. British Crime Surveys found that 30% and 40% of victims of such theft reported it to the police in 1981 and 1987 respectively (Mayhew, Elliott and Dowds, 1989). It is also likely that thefts from vehicles would have increased at the same rate even if theft of vehicles had remained unchanged. Webb and Laycock (1992a) suggest that the increase in theft from cars is partly due to the increased presence and attractiveness of in-car entertainment systems in cars.

FIGURE 5
RATE OF THEFT AND UNAUTHORIZED TAKING OF, AND THEFT FROM
VEHICLES IN ENGLAND AND WALES PER 100,000 VEHICLES REGISTERED
IN GREAT BRITAIN, 1968-1990

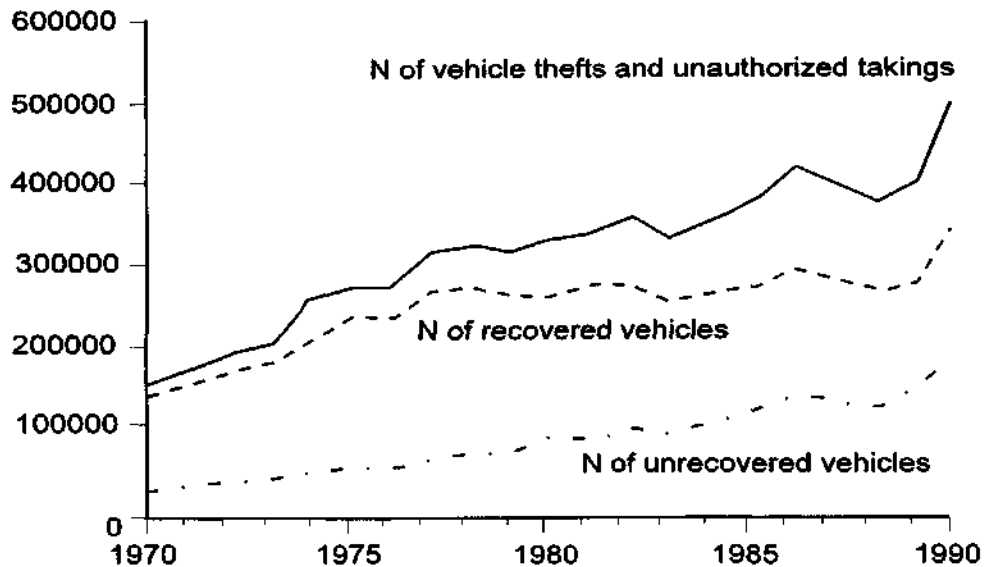


Source: Home Office, *Criminal Statistics England and Wales*. London: HMSO
 Department of Transport, *Transport Statistics Great Britain*. London: HMSO

There is further evidence of a change in the nature of vehicle theft in Britain that may be attributable to steering column locks and which may explain why the effect on national statistics is not as dramatic as might have been hoped. It has long been recognized that vehicle theft is a complex phenomenon, made up of a number of quite distinct problems. A key distinction is between the taking of vehicles for temporary personal use, and the theft of vehicles for financial gain. At the time of the original evaluation it was felt that steering column locks were most likely to deter the more casual and less determined thief who takes the vehicle for temporary personal use. In Britain, the national motor vehicle theft statistics do not distinguish these different types of theft. However, data are available which show whether stolen vehicles were subsequently recovered or not and these may distinguish thefts for temporary use from more professional theft for financial gain. Figure 6 shows these data. Thefts of vehicles which are not recovered will also include some insurance fraud where the owners are involved in the disappearance of their vehicle.

Most vehicles that are taken illegally are recovered some time later. Unrecovered vehicles make up the minority of thefts. However, Figure 6 shows that the balance between these two types of theft has been steadily changing over the last 10-15 years with an increasing proportion of stolen cars remaining unrecovered. This suggests that the vehicle theft problem in Britain is becoming less dominated by more casual thefts for temporary use and involves more theft for financial gain, with more professional theft or insurance fraud. These data support the view that the steering column lock policy in Britain has helped to reduce more casual thefts of vehicles. Clearly, however, these devices are less effective at controlling more determined theft which has increased.

FIGURE 6
NUMBER OF RECOVERED AND UNRECOVERED STOLEN VEHICLES
IN ENGLAND AND WALES, 1970-1990



Source: Home Office

The Effect of Steering Column Locks on Motor Vehicle Theft in the United States

Concern about the increasing problem of motor vehicle theft in the USA led the FBI to conduct a national survey on behalf of the Vehicle Theft Committee of the International Association of Chiefs of Police (FBI, 1975). The survey was carried out during the months of September and October 1974 and collected data on 85% of all vehicles reported stolen nationally in that period. The information requested in the survey included location, time and place of theft; type, year and model of vehicle stolen; and details of offenders arrested. The data on type and year of passenger cars stolen were examined for evidence of the impact of the steering column locks which motor manufacturers had been fitting to new cars since 1969. Table 1 (next page) presents this analysis.

The data shown in Table 1 were interpreted as evidence that steering column locks were having a beneficial effect on vehicle theft. Cars protected by steering column locks made up nearly 58% of cars on the road in the US in 1974 but only 45% of vehicles stolen in that year, suggesting that they were less at risk than might have been expected.

No data were collected on the situation before steering column locks began to be fitted by motor manufacturers, so the conclusion that Table 1 shows the effect of steering column locks must be treated cautiously. Houghton (1992) reports that older cars are more at risk of theft in Britain than younger models, despite having steering column locks, and that similar results have been found in Australia. Although newer cars are more likely to have better security, there may also be other reasons why older vehicles are more at risk of theft. For example, since older cars are more likely to be owned by poorer sections of the population, they are more likely to be parked in high crime areas and less likely to be garaged.

TABLE 1
TYPE AND YEAR OF PASSENGER CARS STOLEN
IN THE UNITED STATES SEPTEMBER-OCTOBER 1974

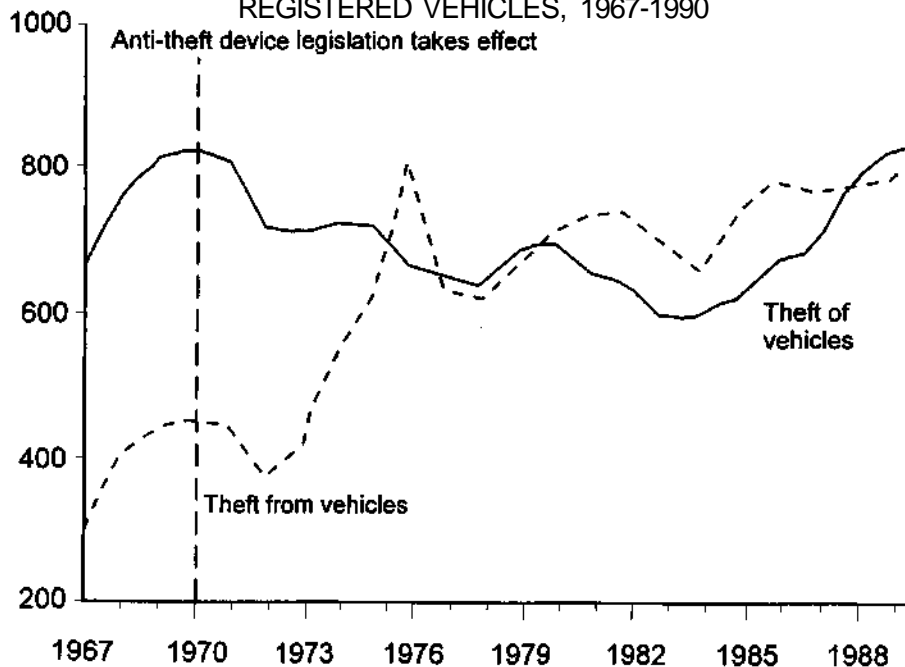
	1968 and older models	1969 and newer models
As a proportion of all vehicles on the road	42.1%	57.9%
As a proportion of all vehicles stolen	54.7%	45.3%

Source: FBI (1974), *Crime in the United States: Uniform Crime Reports 1974*. Washington, DC: US Department of Justice.

Source: FBI (1974), *Crime in the United States: Uniform Crime Reports 1974*. Washington, DC: US Department of Justice.

Figure 7 shows the rate of theft of and from all motor vehicles in the US per 100,000 registered vehicles between 1960-1990. This graph shows a rapid growth in the rate of auto theft in the four years before the anti-theft device regulations became effective in 1970. This is followed by an immediate reduction in the rate of theft. How far this can be attributed to the introduction of steering column locks in new cars is uncertain. The same pattern can also be seen for theft from vehicles, which would not be expected to be affected by steering column locks. In addition, the British data suggest that one would not expect to see such an immediate reduction in the rate of auto theft as the legislation only affected new cars.

FIGURE 7
RATE OF AUTO THEFT AND THEFT FROM VEHICLES IN THE USA PER 100,000 REGISTERED VEHICLES, 1967-1990



Source: US Department of Justice, *Sourcebook of Criminal Justice Statistics*. Washington, DC: US Department of Justice

However, the rate of auto theft continued to drop throughout the 1970s until 1983 when it began to grow rapidly. Theft from cars increased enormously during this period. This does provide much stronger evidence that the protection afforded to an increasing proportion of the US vehicle population by steering column locks has had a beneficial effect on auto theft, at least for a decade.

Further support for the view that steering column locks reduced the risk of auto theft in the US comes from work which has examined the impact of more general social factors on the US automobile theft rate (Cohen *et al.*, 1980). It was found that the automobile theft rate between 1973-1977 was much lower than would have been expected on the basis of population density, unemployment rate, proportion of population aged 15-24, and number of automobiles per capita. It was felt that this lower rate of theft was due in part to the introduction of improved vehicle ignition security systems.

The data from Britain suggest that, since only new vehicles were fitted with these devices, one might not have expected to see any impact on national figures for some years. However, Table 1 suggests that the vehicle population in the US is fairly young with only 42% of cars on the road being six or more years old. Also, in the eight years following the introduction of steering column locks the number of registered vehicles increased at an average annual rate of 4% in the US and 2.5% in Britain suggesting that the size of the new vehicle population was increasing faster in the US than in Britain. In this context, introducing steering column locks in new cars may have had a faster impact on the general security level of the US vehicle population.

It has also been suggested that the higher level of vehicle ownership in the US compared with Britain means that more potential offenders may have legitimate access to a car (Clarke and Harris, 1992a). Increased car security may have a greater impact under these circumstances where young people have less need or are less motivated to steal cars for temporary use.

British data presented earlier suggested that steering column locks had helped to reduce theft of vehicles for temporary use but not theft involving permanent loss of the vehicle which had been increasing. Clarke and Harris (1992a) report that the same trend may also be taking place in the US, with reductions in the proportion of arrests for vehicle theft involving juveniles, auto theft clearance rates and recoveries of stolen vehicles. However, Clarke and Harris conclude that the evidence for such a change in the nature of auto theft in the US is not very strong, pointing out discrepancies between two sources of data on recovery rates and the fact that changes in arrests and clearance rates may be explained by changes in enforcement priorities.

Conclusions

There is a considerable amount of evidence that action taken by Governments leading to the introduction of steering column locks by motor manufacturers has had a beneficial effect on motor vehicle theft. Data from three countries show that overall motor vehicle theft rates either reduced or stabilized after anti-theft device legislation and agreements became effective, and that this effect was sustained over long periods. British data suggest that these locks have had most effect on the more casual takings of motor vehicles for temporary use.

Variations in the vehicle theft patterns in the three countries examined reflect the speed with which vehicle populations were protected by steering column locks. Only in Germany

has an immediate reduction in vehicle theft been found which is clearly associated with the anti-theft device policy requiring all cars and motor cycles to be fitted with steering column locks within a very short period. Car theft has continued to reduce to rates which are much lower than in either Britain or the US. The stronger effect of steering column locks on the vehicle theft rate in the US, where only new cars were fitted with these devices, compared with Britain appears to be related to the faster renewal of the vehicle population in the US.

It has been suggested that, by requiring cars to be fitted with anti-theft devices within a very short period the FRG legislation helped to destroy a car theft "culture" amongst juveniles (Clarke and Harris, 1992a). The immediate effect of the FRG regulations specifically on cars is not known. However, this view is supported by data suggesting displacement of theft away from cars to unprotected mopeds but no displacement back to cars after helmet legislation reduced moped and motor cycle theft. Evidence of displacement was also found in Britain, but this involved thieves focusing on other cars not fitted with steering column locks rather than on other types of vehicle, so that there was less dramatic impact on the car theft culture.

Since the anti-theft device regulations were introduced, the motor vehicle crime problem has changed considerably in nature in all three countries. This may partly be due to the improved protection of cars from being unlawfully driven away with criminal activity focusing on other forms of motor vehicle crime. It may also reflect changes in availability and demand for vehicles and vehicle parts. Theft from vehicles has grown rapidly in all three countries studied here to become, in numerical terms, one of the biggest crime problems faced by these countries. Webb and Laycock (1992a) suggest that, at least in Britain, the growth in theft from vehicles is associated with the fitting of radio-cassette players as standard equipment in mass market cars. There is also evidence from Britain, and perhaps the US, that theft involving permanent loss of the vehicle, either through thieves stealing for financial gain or insurance fraud, is growing. Anecdotal evidence suggests that this is also a growing problem in Germany involving cross-border trafficking of stolen vehicles into eastern Europe. Clearly, attention now needs to focus on these aspects of the motor vehicle crime problem which lie outside the scope of the anti-theft device regulations introduced in the 1960s and 1970s.