PARKING PATTERNS AND CAR THEFT RISKS: POLICY-RELEVANT FINDINGS FROM THE BRITISH CRIME SURVEY

by

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Abstract.- *Previous analyses of car theft data from the British Crime Survey (BCS) have suggested that usual place of parking (e.g., in the street or in a garage) is related to risk of theft, even allowing for the fact that parking options vary with otherfactors (such as living in an inner city) that themselves affect risk. However, theft risks have been assessed for people usually parking in different locations without taking account of precisely where thefts occurred. This problem was avoided in the current study, based on datafrom the 1988 BCS, by examining where car owners usually park In the day and at night, and by assessing their risks at these locations only. It was found that "usual" parking locations vary much more in risk than previously suggested. For example, parking In a domestic garage at night Is safer by a factor of 20 thanparking in a driveway or other private place, and safer by afactor of 50 thanparking in the street near home. (This underlines the need for more garage and off-street parktng, and suggests that people with garages should be encouraged to use them whenever possible. In order to capitalize on the greater night-time guardianship afforded to cars parked near home, consideration should be given to the development of "silent" car*

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alarms that sound only In the owner's home). A further Important jlndlng was that car owners are much more at risk when they venture from their usual parking place. Indeed, at least as many incidents involve temporarily parked cars as cars left in their usual parking place, even though the former are likely to have been left for much shorter periods. The analysis highlights the value of taking better account of the number of cars parked in different places at different times, or "parking exposure." In particular, more needs to be known about the risks attached to various short-term parking locations, including public parking lots.

INTRODUCTION

Car thefts account for a substantial proportion of known crimes, with a quarter of offenses against households identified by the British Crime Survey (BCS) involving thefts of and from cars and related attempts (Mayhew et al., 1093). This means that action to reduce car theft could make a substantial dent in the crime rate, a fact that has not escaped policymakers in many parts of the world (Clarke, 1991; Geason and Wilson, 1990; U.K. Home Office, 1988; Sandby-Thomas, 1992; Webb and Laycock. 1992). Unfortunately, they have been more successful in promoting measures with little scientific support, such as car-locking publicity campaigns and more severe sentences for juvenile thieves, than in persuading the motor industry to produce more secure vehicles [1], which has consistently been identified as the most promising preventive approach (Clarke and Harris, 1992a).

Reasons for the lack of success in improving vehicle security are not addressed in this paper; they reflect a variety of political and economic realities, including that manufacturers are increasingly concerned to reduce costs and politicians seem increasingly reluctant to intervene in the free market. While these attitudes persist, however, it is important to explore the scope for other preventive measures, one set of which concern the parking environment. Because nearly all auto theft involves vehicles left parked and unguarded, the policy question is: Can parking arrangements be changed so that auto theft can be reduced? This implies further questions about the practicality and cost-effectiveness of such changes and—for politicians and policymakers—about the immediacy and political visibility of any reductions in auto theft. Measures that are likely to be effective only at a local level or in the longer term are politically less attractive.[2]

To begin answering these questions, detailed information is required about the volume and the risk of theft at various locations. Volume and risks are not necessarily related. Thus, some public car-parks seem to have very high rates of theft (Webb et al.. 1992). but. since they accommodate only relatively few cars, may account for only a small proportion of the total volume of thefts in a particular town or city. Reducing thefts in these parking lots may therefore make little impact on car theft statistics, though this may be the most cost-effective way to use limited preventive resources.

Apart from helping to decide where to focus effort, detailed information about risks and volume of theft will assist judgments about the likely costs and the feasibility of preventive action. Because car theft is more than three times as likely at night than in the day (Mayhew et al.. 1993). these data are needed for both night and day. This paper: (1) reviews what has already been learned from the BCS[3] concerning volume and risks of car theft at different parking locations and identifies important gaps; (2) presents fresh analyses of BCS data designed to fill some of these gaps, (3) identifies new research needs; and, (4) discusses possible policy directions.

PREVIOUS ANALYSES

Based on data from all four sweeps of the BCS. Mayhew et al. (1993) reported an analysis of the location of "car thefts" (thefts of cars, thefts from cars and attempts), which showed that 57% occurred while the car was parked "at home." This includes domestic garages (1% of all offenses), off-street private parking and estate garages (22% of all offenses), and the "street near home" (34% of all offenses). Over 90% of the "at home" offenses occurred at night (6 p.m. to 6 a.m.) and, in fact, 53% of all BCS car thefts occurred at home at night. This analysis produced very similar results to those of Hope (1987), who used data from the first two sweeps of the BCS (1982 and 1984) to look at the location of all "autocrime": car thefts and vandalism of vehicles.

Cars are generally parked for most of the time at their owners' homes, and it is unsurprising that the greatest number of thefts take place there. What is needed, therefore, are figures for the relative risks of various "at home" and other parking locations, which take account of "parking exposure," i.e., the numbers of cars parked at the different locations by day and night.

Some BCS analyses have attempted to address the issue of parking exposure (Gottfredson, 1984; Mayhew et al., 1003). For instance, Gottfredson's analysis of 1082 BCS data compared annual risks of car thefts for owners who usually parked at night, in a garage, in other private parking, and on the street. Risks of thefts were nearly four times lower for those who usually parked in a garage (6% of owners experienced a theft) than for those who parked in the street (23%). The risks for those using other private parking, such as a driveway, fell midway (14%).

However, Gottfredson's (1984) analysis (and that of Mayhew et al., 1993) included all thefts, by day and night, wherever these occurred, rather than only thefts which actually took place at the usual night parking place. Had only these latter thefts been included, risks would have been much lower than suggested by Gottfredson's figures. Moreover, *differences* between the risks of theft for the various "home" locations are likely to have been greater. This is because only a small proportion of all thefts experienced by those who usually parked in a garage at night might have actually occurred there, with many more occurring during the day or from some other place at night where the car was temporarily parked. Conversely, a much larger proportion of all thefts experienced by those who parked in other (less secure) "home" locations at night might have occurred in these locations and relatively fewer elsewhere. This would lead to the security of garages being underestimated to a larger extent than that of other home parking locations.

A further limitation of the existing risk estimates is that they take no account of other factors related to theft risk, which are also themselves likely to be related to different parking arrangements. A number of such factors have been identified in BCS analyses (Gottfredson. 1984; Hope 1987; Mayhew et al.. 1993). Thus, risks of car theft are greater for those living in apartments, maisonettes, and terraced houses, and for those who rent accommodation. There are also large *area* differences in risk, with the highest risks in inner cities, multi-racial areas, and the poorest council estates. Car owners in all these cases would be more likely to have to park on the street at night. In addition, they would be more likely to have older cars and to live in places with relatively few cars and with a concentration of youthful offenders—all of which have been shown to increase risks of victimization (Clarke and Harris, 1992a).

These findings raise the possibility that parking arrangements *per se* may be less important determinants of auto theft risk than some of the other factors with which they are related and for which they may to some

extent provide a surrogate measure. This is the familiar problem in social science research of identifying the most influential among a group of interrelated explanatory variables. The usual solution involves regression analysis which, in theory, can identify the relative contribution to explanation made by each of the variables once others have been taken into account. An analysis of this kind is reported by Mayhew et al. (1993) using 1988 BCS data, in which they seek to rank the significance of variables related to car thefts "around the home." "Street parking at night" was found to be a more important variable than many others included in the analysis, but no more important than residence in "flats/terraces" and less so than "inner-city" location. This may suggest that focusing on parking arrangements would not be as fruitful for policy as focusing on residence in the inner city or in flats and terraced houses (though it is unclear what policy implications would follow, apart from manipulating parking arrangements). However, "thefts around the home," the dependent variable taken, was not confined simply to thefts from vehicles in their usual place of parking, though this is what would be needed in order to measure accurately the contribution of usual place of parking.

To summarize, existing BCS analyses do not allow a clear statement of the importance of parking arrangements in determining auto theft. Gottfredson's (1984) analysis, which produced conservative estimates of variation in risk, suggests that nighttime parking arrangements heavily influence risks of theft, with parking on the street at night being about four times as risky as parking in a garage. Mayhew et al.'s. (1993) regression analysis suggests, on the other hand, that parking arrangements are only one of many variables affecting risk and may not be the most important of these.

PRESENT ANALYSES

To clarify the picture from existing BCS analyses, data from the 1988 BCS were reanalyzed to look in more detail at actual risks of theft, by day and night, for various parking locations. Risks of theft were calculated[5] for groups of owners defined by the locations where they "usually parked."[6] Risks could not be calculated for all locations because of the small numbers of vehicles at risk, or because no thefts were experienced

Table 1: Usual Parking Place Risk of Theft by Day and Night, British Crime Survey 1988

	NIGHT			DAY		
		THEFT RISK [2]			THEFT RISK [2]	
"Usually parked" location	Owners Usually Parked [1]	At Usual Parking Location	Anywhere	Owners Usually Parked [1]	At Usual Parking Location	Anywhere
HOME ENVIRONMENT						
Private domestic garages	35.0%	0.3%	8.3%	15.6%	N/A	2.0%
Driveway and other private	37.1%	7.1%	14.3%	20.8%	0.3%	4.5%
Street outside home	24.3%	16.7%	25.0%	12.2%	1.1%	3.7%
ELSEWHERE						
Other street	0.5%	N/A	6.3%	8.2%	5.3%	8.3%
Work car-parks/ garages	1.0%	N/A	16.7%	35.6%	1.3%	4.8%
Other car-parks	0.2%	N/A	N/A	3.1%	9.1%	9.1%
Other	1.9%	N/A	9.1%	4.3%	N/A	N/A

(1) "Usually parked" percentages refer to *vehicles* not owners; they relate to parking patterns for both the main car of car owners, and to their second cars if they had one.

(2) The "theft risk" refers to car *owners*, being based on thefts for owners which took place in the specified locations. It was not possible from the 1988 BCS to say whether it was the main or second car that was the target of theft. Another analysis, restricted only to those who owned one car, showed similar theft risks, but because of the smaller numerical base, the results are more unstable. Risks refer to the full BCS "recall period" of about 14 months and to thefts of, theft from, and attempts.

N/A = not available because of small numbers.

at some locations by those who "usually parked" there. Nevertheless, the results presented in Table 1 ("Theft risk where usually parked") show substantial variations in risk. For example, only 0.3% of those parking at night in a domestic garage were victims of theft compared with 7.1% of those parking in a driveway or other private place and 16.7% of those parking in the street outside the home.[7] In other words, parking in a domestic garage at night is about 20 times safer than in the driveway or other private place and about 50 times safer than on the street.

It is also evident from Table 1 that, compared with the risk of theft at night in the home environment, the risk of theft during the day is generally low. This may partly be a result of the guardianship provided in the day by household members or neighbors—guardianship that cannot be exercised at night because of sleep or darkness.

Theft risks were also calculated for owners who "usually parked" in various locations irrespective of where the thefts occurred ("Theft risk anywhere." Table 1). This resulted in the risks for different parkers being greatly reduced; indeed, becoming much more like those previously published by Gottfredson (1084). For instance, those parking in domestic garages at night were only three times less likely to experience a theft "anywhere" than those who parked in the street outside their homes (respectively, a theft risk of 8.3% and 25%). In comparison, when looking only at thefts occurring at the usual place of parking, garage parkers were 50 times less likely to experience a theft than street parkers (respectively, a risk of 0.3% and 16.7%).

Most people's day and night parking routines fall into one of a few basic patterns, of which the associated risks of theft are shown in Table 2. Once again, risks are presented separately for thefts occurring where usually parked and those occurring anywhere. Risk figures for usual place of parking confirm the very substantial protection conferred by domestic garages, where thefts were about 60 times less frequent for usual parkers than for the street outside the home, and about 20 times less frequent than for drives and other private places.

. Again, this range of risk is greatly reduced when thefts occurring "anywhere" are included, with, for example, the risks for owners who usually kept their cars on the street outside the home being only four times greater than for those who usually kept them in a garage. It appears that the unavoidable risks of temporary parking are sufficiently high to nullify many of the benefits of secure usual parking. This is especially evident for those usually parking in domestic garages: While only 0.3% of these owners experienced a theft from the garage, as many as 8.3% suffered a

Table 2: Patterns of Usual Parking and Risk of Theft, British Crime Survey 1988

NIGHT	DAY	OWNERS USUALLY PARKED[1]	THEFT RISK[2] AT USUAL PARKING LOCATION	THEFT RISK[2] ANYWHERE
Private domestic garage	Private domestic garage	14.9%	0.3%	8.3%
Private domestic garage	Work car park/garage	11.9%	1.4%	16.7%
Drive and other private	Drive and other private	14.1%	7.1%	20.0%
Drive and other private	Work car parks/garages	13.3%	8.3%	25.0%
Street outside home	Work car parks/garages	8.3%	16.7%	33.3%
Street outside home	Street outside home	10.6%	20.0%	33.3%
Other combinations		26.7%	11.1%	25.0%

(1) First car only

(2) Theft risks refer to any car, to the BCS full "recall period" of about 14 months and to theft of, theft from, and attempts.

theft "anywhere." For other groups of owners the difference is not as marked, but even so there are at least as many incidents of theft involving temporarily parked vehicles as there are thefts involving vehicles left in their usual parking location, despite what are likely to be much shorter times at risk for the former.

DISCUSSION

Earlier analyses of BCS data have shown that more than half of all car thefts occur when the car is parked at home at night. Given that this is where cars spend most of their time, the result may not be surprising. Earlier analyses also showed, however, that the actual parking location affected the risk of theft, with those who parked in domestic garages being three or four times less likely to experience a theft than those who parked

on the street outside their homes. A limitation of these risk figures was that thefts occurring at the actual place of usual parking were not separated from thefts occurring elsewhere. This was remedied in the present analyses, with the result that much larger variations in risks relating to different parking locations were found than in previous studies. In particular, the comparative safety of parking in domestic garages was revealed more clearly, with the risk of theft proving to be at least 50 times lower than in the street outside the home.

These findings underline the need to provide more garages and off-street parking in new housing, especially in the light of current forecasts that growth in vehicle ownership is likely to be highest among those with the least access to off-street parking (Watts. 1002). Wider provision of such parking would be expensive, however, and its impact on overall rates of theft may be relatively modest since it is temporary parking that presents the higher risks.[8] A less costly approach might be to encourage those with access to garages to use them whenever possible, rather than being tempted to leave their cars for brief periods in the driveway or in the street.[9] This may be particularly important for those living in high-theft neighborhoods or those owning frequently-stolen models, such as high-performance versions of inexpensive cars (U.K. Home Office, 1001; Houghton, 1002). Before embarking on a publicity campaign aimed at those with garages, however, it would be important to consider the scope for displacement of theft to those without garages. Consistent with the economists' Pareto principle, it is not a good use of government resources to reduce risks for some people only at the cost of increasing risks for others (Clarke, 1001).

Another way to reduce theft from the home environment might be to capitalize on the guardianship afforded by owners through encouraging the development of "silent" car alarms which sound only in the home of the owner. Not only would the person most likely to intervene thereby be alerted, but others in the neighborhood would not be disturbed. Such alarms ought to be on the government agenda for discussion with vehicle manufacturers.

The present analyses have suggested that car owners are more at risk when they venture away from their usual place of parking and have to park temporarily elsewhere. Risks of temporary parking seem to be considerably higher than of usual parking, given the much shorter "parking exposure" times of the former. More must be discovered about these risks. For some short-term parking locations, the risks are likely to be

much higher than any found in the present analyses. They are also likely to vary considerably with the nature of the journey. For instance, a late-night outing to a pub might be much more likely to result in theft than an early-evening outing to a church social.

Temporary parking increasingly takes place in public car-parks, which recent studies have shown can vary markedly in their risks of theft. For example, parking lots serving railway stations have been shown to be especially vulnerable in studies undertaken in the U.S. (Mancini and Jain, 1987). Australia (NRMA, 1090) and England (Laycock and Austin, 1992). Risks are low for parking lots with attendants, but they are high for those with pedestrian throughways (Webb et al., 1992). Moreover, it has proved possible to reduce thefts by the introduction of attendants (Laycock and Austin, 1992) and the provision of closed-circuit television or improved natural surveillance (Poyner, 1991; Tilley. 1993). Since car-parks are managed facilities, the scope for improving security is particularly great. Costs would undoubtedly prohibit all of them from being made more secure and, in order to determine preventive priorities, detailed information is needed about those most at risk.

Future research should also address some particular limitations of the present analyses. Victims should be asked directly whether thefts occurred in the usual parking place rather than inferring this from theft locations. Second, more detailed information about the nature of usual parking locations should be collected since risks may vary considerably even within particular location categories. For example, Poyner and Webb (1991) found that garages located next to the house and facing the street seemed to be considerably more secure than those located away from the house, at the end of the garden or in a separate garage block. Similar variations in risk will almost certainly exist within other location categories. Third, distinctions should be made between varieties of car theft (particularly "theft or and "theft from" the vehicle) since there appear to be important differences in the determinants of risk (Poyner and Webb, 1991; Webb et al.. 1992). Fourth, patterns of parking and risks of theft for different vehicles belonging to the same household need to be separately analyzed. Some inaccuracy was introduced in the present analyses because it was not possible to link specific incidents of theft to particular vehicles.[10] Fifth, given recent arguments about the need to focus on repeat victimization when formulating preventive policy (Farrell and Pease 1993), it would be useful to discover whether repeat victims of car theft are distinguished by their parking habits.

A further important limitation of the present analyses was that the "usual parking" question provides only a crude method of standardizing "parking exposure." In particular, cars "usually parked" at different locations may be left unattended for different periods of time. For example, a car "usually parked" in the daytime on the street outside the home may be left for much longer than cars "usually parked" in a work car-park, if only because some travel time would be involved for the latter vehicles. Cars usually parked at different locations may also vary in their likelihood of being used for short journeys. For instance, cars in the driveway may be more conveniently used for short outings to the local shops than ones usually kept in the garage or on an estate car-park. More detailed information about the duration of different categories of parking needs to be collected.

Finally, small numbers and lack of information prevented the study of possibly important interaction effects. The correlation of many of the parking variables with others, such as inner-city residence or living in apartments or terraces has been mentioned above. But there maybe other relationships between how people live, what kinds of cars they own and what facilities they have for parking that affect risk. For instance, those with garages may often be older people, who are less likely to venture out at night in search of entertainment. They may also be less likely to own the kind of cars that appear to be most attractive to thieves (U.K. Home Office, 1991; Clarke and Harris. 1992b). If so, these variables may account for some of the lower risks of theft experienced by these owners.

More detailed understanding of these matters is required, and the 1994 BCS will include additional questions to be asked of a larger number of respondents. The new questions will permit more detailed breakdowns of daily parking. Respondents will be asked how long cars were parked in different locations, how secure these locations were likely to be, how much passing "guardianship" they would attract, etc. More questions are also included on the kinds of vehicles owned, assessing features which are known to be attractive to thieves, such as high performance. And it will be possible to determine which particular vehicle, if more than one was owned, was the target of theft. These data should supply a more accurate and wider range of risk estimates for a variety of vehicles, journeys and parking conditions, as well as permitting study of interaction effects.

SUMMARY AND CONCLUSIONS

While accepting that the best long-term means of reducing car theft is to improve the built-in security of new cars, the objective of the present BCS analysis was to identify possible means of enhancing the security of parking locations. It was shown that "usual" parking locations vary considerably more in their risks of theft than suggested by previous studies. In particular, cars parked in domestic garages were found to be even more secure than previously thought. Because of the high cost of garages, the policy implication may relate less to their increased provision than to encouraging their increased use when available. Because so much theft occurs in the home environment at night, the development of built-in "silent" alarms that alert only the owner of the vehicle should also be considered.

The present analyses also drew attention to the need for more information about the high risks of temporary parking and about the risks of parking in public car-parks. The first of these needs, in particular, will be addressed in the 1094 BCS at the same time as some other deficiencies of the present data will be remedied. The improved information will assist in determining preventive priorities, especially if high-risk locations with real potential for being made more secure can be identified.

While improved information is vital, it will never be enough on its own. It also needs to be interpreted within a model of the relationship between auto theft and parking, or preferably between auto theft and a wider range of explanatory variables. One approach to developing such a model is represented by Mayhew et al.'s (1993) multiple regression analysis referred to above, which attempted to identify the most influential among the variables known to be related to car theft. However, as usual in such cases, it suffered from multicollinearity, i.e. many of the explanatory variables were ecologically highly inter-related and their influence was difficult to separate. It also suffered from the small number of cases, which prevented separate analysis of the various kinds of car theft. The latter is important because of differences between thefts committed for different purposes. For example, so-called joyriding by teenagers is a quite different activity, involving differently motivated groups of offenders using different methods, from theft of cars for resale by professional gangs (Clarke and Harris. 1992 b).

A more fundamental problem of Mayhew et al.'s (1993) approach, if treated as an exercise in model building, is that the BCS does not collect information for all variables that may be important and, indeed, it is doubtful that any single data source could do so. For example, the nature of the vehicle is important in determining likelihood of theft, yet it would be impossibly expensive to collect enough data through the BCS to provide reliable risk estimates for different models of cars. It might also be difficult to collect enough information through the BCS about the nature of different parking locations, though these factors are also likely to be important determinants of risk.

Preferable to the "bottom up," data-driven approach to model building exemplified by Mayhew et al.'s (1993) analysis, wherein the model emerges from a multivariate analysis, is a "top-down," concept-driven approach in which dependent variables are selected on the basis of some formal theoretical constructs. One such model would be the "lifestyle" theory developed by Hindelang et al. (1978) to predict an individual's risk of becoming a victim in a personal crime. This could possibly be adapted to serve as a model of car theft victimization, though not without the addition of some variables specific only to car theft, including usual parking and the nature of the vehicle. The unit of analysis might also need to be changed from the vehicle owner—which it would be if it were simply a development of Hindelang et al.'s model—to the vehicle itself. This might force researchers to focus more upon attributes of the vehicle and its use than on the owners and their lifestyles. After all, it is the vehicle, not the owner that is targeted by thieves.

With the vehicle as the unit of analysis, the model would be more properly regarded as one of target vulnerability than of victimization risk. However, models of target vulnerability, most of which have been developed to assist research into burglary, have usually taken the offender as the unit of analysis and have utilized a decision making or rational choice framework (e.g.. Brantingham and Brantingham, 1978; Cornish and Clarke. 1986). Recent studies in which young car thieves have been interviewed about their methods and motives (e.g.. Spencer, 1992; Light et al., 1993) might provide sufficient data to permit a "rational choice" model of auto theft, or at least of joyriding, to be constructed.

Whether the vehicle or the offender provides the better starting point for a model of target vulnerability remains to be seen. In our view, the test should be which approach provides the better framework to assist in determining policy options. This may seem an excessively narrow ap-

proach to most crimlnologists, whose general purpose in developing theoretical models is to enhance scientific understanding by validation of models through empirical testing. Because of the great difficulty, if not impossibility, of measuring enough variables in a sufficiently general sample, we are not so interested in this rigorous approach to model building. Indeed, we are doubtful that validation of a model is often a realistic objective. Nevertheless, we believe that theoretical models can provides a useful means of harnessing academic rigor and administrative pragmatism with the goal of preventing harmful and wasteful crime, and that these should be high on the agenda for future research into car theft.

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NOTES

1. In Britain, the last major success achieved by government in developing more secure cars was the agreement obtained from manufacturers at the beginning of the 1970s to introduce steering locks on all new cars (Webb. 1994). Since then, improvements have been made in the security of individual models, but without much evidence that this has been due to government pressure.

2. The principal policy focus on parked cars has involved "lock-your-car campaigns." These have been criticized for raising fear and for "blaming the victim." More important, there is, at best, only mixed evidence that these campaigns succeed in reducing theft (Burrows and Heal, 1979; Riley and Mayhew, 1980; Monaghan. 1989). However, they serve the valuable political purpose of demonstrating concern about crime and are likely to survive for this reason if no other.

3. The BCS measures the extent of criminal victimization among a representative sample of the adult population of England and Wales. It has been conducted four times to date (1982, 1984, 1988 and 1992), with a fifth sweep currently underway. The samples in each sweep have been slightly in excess of 10,000. Respondents are interviewed face-to-face and asked about offenses they have experienced in the past year. Information on a number of personal and household variables is also collected. Details of the findings of the latest sweep are in Mayhew et al. (1993).

4. Also "all thefts," but this Is less relevant for present purposes.

5. An alternative approach, which was rejected, would have compared the percentages of people who "usually parked" at different locations with the percentages of all BCS thefts occurring at these same locations. Under this comparison, theft counts would not have been confined only to cars "usually parked" at the various locations, but would also have included other cars temporarily parked there, with the result that risk calculations would be much inflated.

6. In the 1988 BCS, car owners in half of the sample (N=3,881) were asked where they usually parked their cars during the day or night. (A survey by LEX [1900] also asked about usual parking places at night, with results extremely close to those from the 1988 BCS.) Just under 750 had been a victim of at least one car theft over the previous calendar year (1987) up until the BCS interviews—an average period of 14 months. "Car thefts" were as defined in this paper (i.e. thefts of cars, thefts from cars, and attempts), though the majority of offenses were thefts from cars, whether from the inside or outside. A small number of incidents involving car thefts are excluded in the analyses when they were categorized under other BCS offense headings (e.g., burglaries in which cars were the target, or arson in which cars were stolen and burnt out).

7. A limitation of this analysis (as well as that presented in Table 2) is that some of the parking locations merge more than one specific location code. This applies to "private domestic garages" (comprising garage for the house/flat, and a row of garages for flat/estate), "drive and other private" (comprising carport/ carspace/ garden/ drive, and car park for estate), and "other" (comprising a miscellany of other, unspecified locations). Thus, in some cases it would be possible for a vehicle which was "usually parked" in one location to have been subject to theft in another location within the same broader category of "usual" parking, albeit not the actual location in which it was parked. The same point applies to other usual parking locations (e.g.. other streets), when a theft may have occurred in an "other" street, but not actually the one where the owner usually parks. This Introduces some unknown, but probably small, error into the risk calculations. The limitation is due in part to having to combine the small numbers available for analysis and in part to the fact that victims were not asked specifically whether the theft occurred where they usually parked.

8. Garages provide security for other vulnerable property in addition to cars—for example bicycles—and may therefore have a wider role in reducing thefts from around the house.

9. Insurers offer lower premiums to those with garages, but do not demand evidence of their use. Perhaps they could exact a penalty from policyholders with a garage who experience a theft when the car was parked at home but not in the garage.

10. Distinguishing between vehicles belonging to the same household could also provide a means of controlling for some household and locational variables in comparing risks of different parking arrangements.

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