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The extent of motorcycle theft

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The results of the latest motorcycle theft index (BTI) are discussed in this Findings. The BTI shows which makes and group of motorcycles (based on engine capacity), mopeds and scooters have been stolen in England, Wales and Scotland. Bike theft data from 2001 and 2002 are also discussed – this means that trends can be identified in theft rates and numbers, in a similar way to that of the Car Theft Index (CTI) which was first compiled in 1992. The CTI has allowed for informed discussion about volumes and patterns of theft. Laycock (2004) recently argued that it had acted as a lever for car security to become a marketing issue amongst manufacturers. It is hoped that the same might happen for motorcycles.

Key points

- The number of bikes stolen:
 - the *rate* of theft of motorcycles has fallen slightly from 39 per 1,000 in 2001 to 37 per 1,000 in 2003
 - the *number* of motorcycles stolen has risen from 48,412 in 2001 to 50,591 in 2003 but the number of registered motorcycles on the road has also increased, from 1,247,688 to 1,360,874.
- Certain types and ages of bikes are more likely to be stolen:
 - lower powered motorcycles (less than 125cc, including mopeds and scooters) are at much greater risk of theft than larger bikes
 - of these lower powered motorcycles, those less than five years old are at most risk of theft with a theft rate of 85 per 1,000 registered. This constitutes 60% of all thefts, while making up only 26% of all bikes registered. Larger motorcycles (more than 125cc) of all ages have a much lower average theft rate of 13 per 1,000 registered.
- In comparison to cars:
 - theft rates for motorcycles are much higher than those for cars. In 2003, the theft rate for motorcycles was 37 per 1,000 registered on the road compared with 10 per 1,000 for cars
 - there was a 5% reduction in the rate of motorcycle theft between 2001 and 2003 compared with a 23% reduction in the rate of car theft in the same period
 - 40% of all motorcycles stolen are recovered compared with a recovery rate of 79% for cars.
- Motorcycle security:
 - the high rates of theft for motorcycles, particularly those at the lower powered end of the market, should lead manufacturers, and those responsible for situational crime prevention, to take measures to improve the security of these bikes.

Analysis of the Police National Computer database provided an estimate of the number of motorcycle thefts which occurred each year between 2001 and 2003. The rates of motorcycle theft have reduced from 39 thefts per 1,000 on the road in 2001 to 37 per 1,000 in 2003 (Table 1).

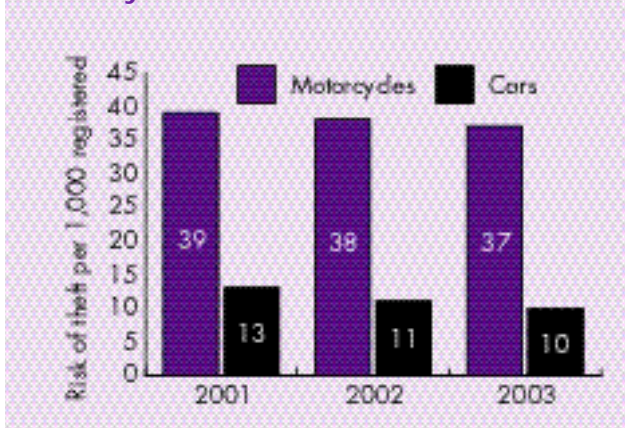
Table 1 Estimated number of motorcycle thefts in England, Scotland and Wales 2001/03*

	2001	2002	2003
Total no. of registered motor-cycles on the road (parc size)	1,247,688	1,298,195	1,360,874
No. stolen	48,412	49,636	50,591
Rate of theft (no. of thefts per 1,000 on the road)	39	38	37

Note: * See methodological note.

Number of motorcycles stolen

Figure 1 compares the rates of theft of motorcycles and cars from 2001 to 2003. Over this period, theft rates for cars were much lower than those for motorcycles. For example, in 2003 the rate of theft of cars was 10 per 1,000 registered on the road, compared with 37 per 1,000 for motorcycles. Figure 1 also shows the three-year trend for motorcycle and car theft. Both show falls, but in relative terms the decline in the rate of car theft has been greater. The fall from 13 thefts per 1,000 cars on the road to 10 per 1,000 is a 23% decrease compared with a decrease of only 5% for motorcycle thefts.

Figure 1 Comparison of theft rates for motorcycles and cars 2001/03

Brown and Sallybanks (1999) produced an estimated breakdown of vehicle theft by type of vehicle. At the time of this research, motorcycle theft constituted approximately 10% of combined car and bike theft. In comparison, by 2003 the total number of motorcycle thefts (50,591) made up approximately 15% of combined motorcycle and car thefts. Thus, it seems that the share of motorcycles in combined car and motorcycle theft has risen. Although the increase has been small year-on-year (12% in 2001, 14% in 2002, 15% in 2003), it suggests that the substantial gains made in reducing car theft are not being replicated for motorcycles.

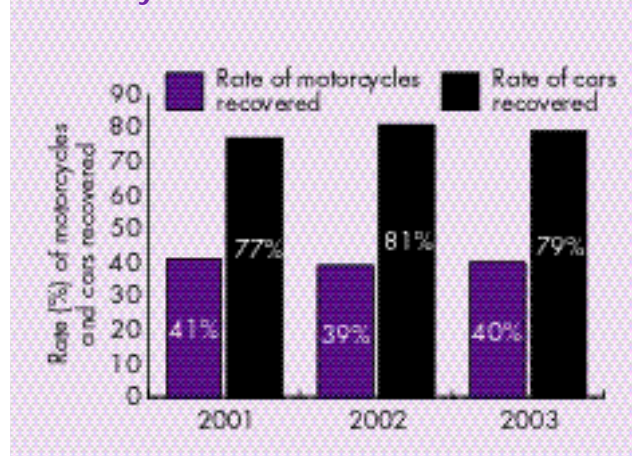
Number of motorcycles recovered

Analysis of motorcycle theft recovery was based on motorcycles stolen and recovered at any point over the 12

months. It is likely that some motorcycles stolen in each of the years included in the analysis were recovered in the following year, but these would be represented in the police data as 'not recovered', and thus not appear in the figures.

Figure 2 shows that around 40% of motorcycles were recovered each year between 2001 and 2003. This rate compares poorly with the recovery rates for cars. Braun (2003) suggested a number of reasons why motorcycles have relatively low recovery rates:

- the cost of spare parts is high. This has created a market of motorcycles being stolen and broken up for spares. These are then sold on to other owners
- fraudulent reports of stolen vehicles. It may be the case that insurance and maintenance payments can no longer be kept up by the owner. The motorcycle may be disposed of, reported stolen and the insurance claimed by the owner
- valuable high-powered bikes stolen for resale.

Figure 2 Comparison of recovery rates for motorcycles and cars 2001/03

When vehicles are recovered, the motivation behind the theft is probably for general temporary use. When the vehicle is not recovered, it is likely that a more organised approach has been taken and the motivation is likely to be for financial gain. As only 40% of the motorcycles included in the analysis were recovered, it is likely that the majority of the motorcycles were stolen for financial gain.

There is a noticeable difference between recovery rates for mopeds/scooters and larger motorbikes. In 2003, 46% of mopeds/scooters were recovered following a theft, in comparison with 35% of other bikes. If the above hypothesis is correct mopeds and scooters are more likely to be stolen temporarily, whereas larger bikes might be more attractive to those involved in theft for financial gain. However, as the majority of thefts were of lower powered bikes and 54% of mopeds and scooters were not recovered it suggests that there is still an element of organisation in most thefts. Also, it is arguable whether these types of theft (organised and temporary) are mutually exclusive. Anecdotal evidence from the police suggests that a recovered bike may also have parts missing which have been taken for resale.

Trends in the type and age of motorcycle stolen

It has already been seen that the risk of having a motorcycle stolen is far higher than that for a car. There are also differences in respective theft rates for both different types of motorcycles and their age.

Type of motorcycle stolen

Table 2 shows the number and risk of theft per 1,000 registered by engine capacity (cc) in 2003. It is clear that moped and scooter theft constitutes a much higher proportion of total motorcycle theft (52% of all thefts) than their contribution to the total motorcycle parc (23% of registered vehicles) might warrant. (The motorcycle parc is the total number of registered motorcycles on the road.) In fact thefts of bikes of 125cc or lower make up 77% of all motorcycle theft, while constituting only 35% of all registered bikes. These patterns of risk were similar to those in 2001 and 2002 when the same analysis was conducted.

Bikes with engine capacities over 125cc have a significantly lower risk of theft (Table 2). The motorcycles with the lowest risk of theft (7 stolen per 1,000 registered) are the 501cc–550cc and 751cc–900cc categories. In comparison, the average is about 14 for all motorbikes over 125cc. Again, analysis of the same data for 2001 and 2002 shows a similar pattern.

Age of motorcycles stolen

There have been several distinct trends in the rates of motorbike thefts according to their age (see Figure 3):

- theft rates of one-year-old and new motorcycles have reduced since 2001
- for motorcycles aged between two and five years, the picture is different. There appears to have been a shift in the length of time at which bikes remain at high risk. Thus, while motorcycles that were three-years-old in 2001 were stolen at a rate of around 30 per 1,000 registered, those of the same age in 2003 were at a significantly higher rate of theft, with around 50 stolen per 1,000 registered
- for older motorcycles (more than seven years of age) there has been another divergence in theft rates. Between 2001 and 2003 these bikes seem to have become less susceptible to theft.

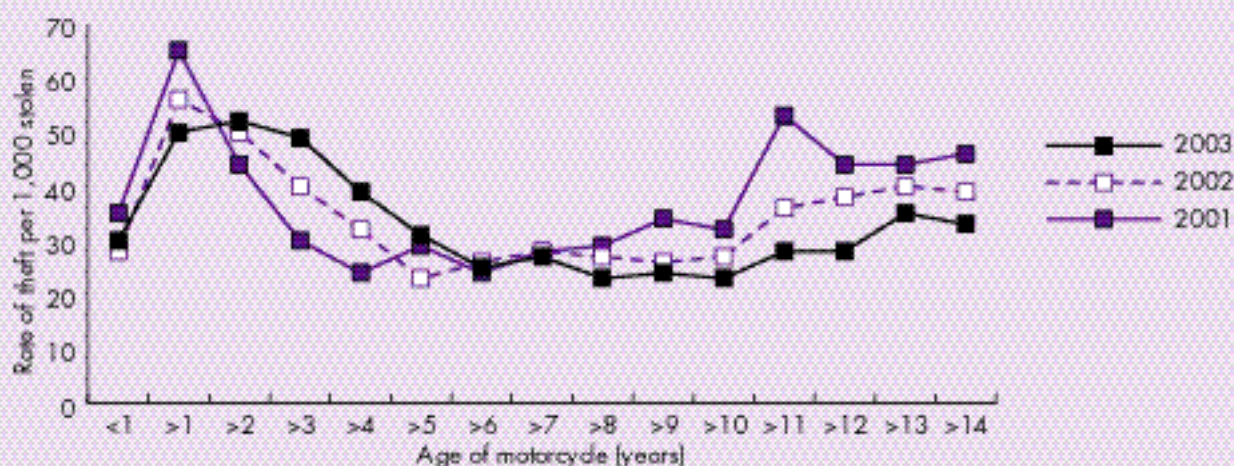
Figure 4 shows the rate of theft for motorcycles and cars from new to 14-years-old. There are substantial differences between their relative theft profiles. Aside from a general higher risk of theft for motorcycles (Figure 1), there is also a clear peak in thefts of new/nearly-new motorcycles with a theft rate of approximately 50 per 1,000 for bikes aged one to

Table 2 Estimated number, theft rate and proportion of all motorcycle thefts in relation to total number of vehicles, by engine capacity in 2003

	No. stolen	Theft rate per 1,000 registered	% of all thefts	% of all registered vehicles
Moped	12,499	89	25	10
Scooter	13,502	81	27	13
Motorcycle less than 101cc	4,328	82	9	3
Motorcycle 101–125cc	8,097	70	16	9
Motorcycle 126–200cc	307	20	1	1
Motorcycle 201–250cc	1,241	26	2	4
Motorcycle 251–300cc	37	17	–	–
Motorcycle 301–350cc	238	12	1	1
Motorcycle 351–400cc	1,064	27	2	3
Motorcycle 401–450cc	91	14	–	1
Motorcycle 451–500cc	738	12	1	4
Motorcycle 501–550cc	89	7	–	1
Motorcycle 551–600cc	3,510	19	7	14
Motorcycle 601–650cc	599	10	1	4
Motorcycle 651–700cc	127	12	–	1
Motorcycle 701–750cc	998	12	2	6
Motorcycle 751–900cc	515	7	1	6
Motorcycle 901–1050cc	1,665	13	3	9
Motorcycle over 1050cc	1,122	8	2	10
Total	50,766*	37	100	100

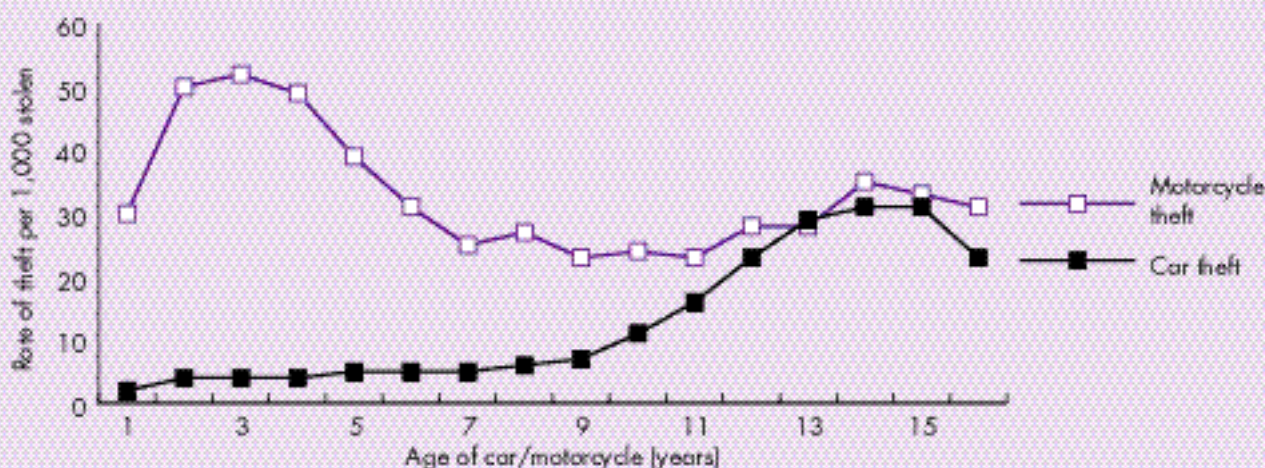
Note: * See methodological note.

Figure 3 Rate of theft in relation to age of motorcycle (2001/03)*



Note: * See methodological note.

Figure 4 Comparison of rates of motorcycle and car theft according to vehicle age in 2003



four-years-old. This is in comparison to a very low risk for all newer cars (approximately 5 per 1,000 for similar aged cars).

Reasons for these different trends

Difference in theft rates for newer motorcycles and cars

Assuming that both newer motorcycles and cars will generally be more attractive to offenders, then the expected profile of car theft in relation to age might be something like that seen for motorcycles in Figure 4. However, although newer cars may also be more attractive they are now harder to steal. This is mostly as a result of immobilisers but also because of other innovations in new car security. Clearly, these improvements in car security have not been replicated by similar innovations for motorcycles.

However, it is not necessarily security features alone that explain this discrepancy in rates of theft for cars and motorcycles. Houghton (1992) suggested that for cars, regardless of any security improvements, newer models are less likely to be stolen. He argued that new cars tend to be looked after better, are found in more affluent areas with less crime and are more likely to be garaged. These factors will all reduce risk of theft. New, lower powered motorcycles (see below for relative risks of theft in relation

to size and age of bike) are, on the other hand, generally much cheaper than new cars. As a result they may be more prevalent in less affluent areas which often suffer higher crime. These areas tend to have a lower proportion of housing with attached garages. It could also be the case that lower-powered bikes are owned predominantly by younger people in large urban areas and are used for commuting. All these factors are likely to make them more vulnerable to theft.

Which motorcycles are most vulnerable?

In an attempt to determine which bikes might be considered most vulnerable, data relating to age of and type of motorcycle have been analysed together. Using data for 2003, theft rates of relatively new (registered between 1998 and 2003) smaller motorcycles (mopeds, scooters, others less than 125cc) were analysed (Table 3). There were 30,501 thefts of these bikes which constitute 60% of the estimated total of 50,657 bikes stolen in 2003. Given that this category of motorcycle made up only 26% (356,356) of the total parc of registered bikes, it can be seen that they are disproportionately targeted.

Table 3 Thefts in relation to age and size of motorcycle 2003*

Bike type	First registered	No. of bikes on the road (parc)	% of the total parc	Thefts	% of total thefts	Theft rate per 1,000
Moped, scooter, bikes less than 125cc	1998–2003	356,356	26	30,501	60	85
Moped, scooter, bikes less than 125cc	Before 1998	119,923	9	8,268	16	68
Moped, scooter, bikes greater than 125cc	1998–2003	480,157	35	6,483	13	13
Moped, scooter, bikes greater than 125cc	Before 1998	402,999	30	5,405	11	13
Total		1,359,435	100	50,657	100	37

Note: * See methodological note.

Improved motorcycle security – recommendations

It may be that widespread employment of even relatively basic security measures, designed to deter ‘casual’ theft, could be important in tackling theft of low-powered motorcycles. The age profile of those riding these bikes tends to be slightly younger. Since this population is likely to be less security conscious, better systems fitted as standard by manufacturers, which do not rely on the rider to install and enable, could help reduce thefts of these motorcycles. At present, to comply with current EU regulations manufacturers need only fit a steering lock or a device that locks the transmission. According to the British Motorcycle Federation the effectiveness of these devices is limited and they can often be easily disabled.

Use of ground anchors

Ground anchors are important because anecdotal reports suggest that many motorcycles are stolen by lifting them onto the back of a van. Fixing a bike to such an anchor may help prevent this form of theft. The Home Office has been working with the Local Government Association (LGA) to produce standards and good practice on ground anchors, which the LGA have agreed to pass on to local authorities. If more anchors could be installed in new and existing parking areas, and motorcyclists persuaded to use them, a reduction in thefts might be achieved.

Safety measures fitted by manufacturers

A number of manufacturers are already exceeding current EU directive requirements by, for example, fitting chain/wire loops which pull out from the motorcycle. These allow the machine to be directly attached to an anchor rather than chaining it through the wheels, which can often be easily unbolted. This also has the advantage that it does not require the owner to carry a separate chain.

Some manufacturers fit marking systems as standard, while others are experimenting with keyless ignition, or smart keys, which make it more difficult to override the ignition system. ‘Positioning and location’ technology might be used more

widely in order to help prevent motorcycles being taken away in vans, and technologies to remotely immobilise a stolen bike could also be employed on a larger scale.

Such innovations could initiate a ‘copycat’ process, whereby manufacturers are encouraged to add progressively more sophisticated security features. This was the intention of the ‘British Insurance Car Security Award’ scheme which has been running for two years, and also the Home Office Car Theft Index. They are meant to act as a mechanism for manufacturers to market security to the consumer, and to make the consumer more aware of security when purchasing a car.

Tackling the trade in stolen spare parts

It could be that a rise in numbers of the motorcycles most vulnerable to theft will lead to a concomitant increase in the demand for spare parts. This is an argument based on an assumption that parts are expensive, and that such smaller bikes tend to be ridden by younger people with less disposable income. These are factors that tend to create an illegal market.

The low number of recoveries of stolen motorcycles suggests that this market may be substantial. Tackling the trade in stolen parts will depend largely on the extent to which a comprehensive system of parts-marking can be put in place. This should be done in a way that enables the police to easily identify the stolen parts. Other means for tackling this problem that are already in place include the Motor Salvage Operators Regulations (2002). The success or otherwise of these regulations obviously depends on the ability of police and local authorities to enforce them.

Publicity campaigns

Since it is now possible to identify the registered keepers of motorcycles shown to be most at risk of theft, local Crime and Disorder Reduction Partnerships could use targeted publicity campaigns. If owners of the most high risk group of bikes knew that there was almost a 10% chance of theft, they may be motivated to increase the security measures taken.

Future research

The low recovery rates for motorcycles implies that there is a substantial market for stolen parts or for whole bikes, particularly those that are relatively new. There is little evidence, apart from anecdotal reports, about the nature of these markets. Since owners of motorcycles are presumably also potential consumers of bikes or at least parts of bikes it could be useful to conduct work on the nature and extent of their knowledge about illegal markets for these goods. It might also be possible to gain an impression of those individuals committing offences related to motorcycles theft through analysis of data on convictions, and interviewing offenders may produce some information on how their networks are organised.

Methodological note

In 2000, it was estimated that the number of bikes stolen was 36,822 (see Braun, 2003). In this Findings, the number of thefts for the following year, 2001, has been stated as 48,412. This represents a large difference in such a short time scale, which can be attributed mainly to the methodology for calculating the adjustment figure – this should now be more accurate than those employed previously.

Some caution should be exercised in interpreting the figures for risk of theft of motorcycles and cars less than one-year-old. These show a relatively low risk of theft compared to nearly new motorcycles. This is because some motorcycles first registered in 2003 may have only been on the road (and therefore available to steal) for one or two months. It is not until all the motorcycles in one particular age group have been exposed to a full year on the road that a more precise estimate of theft risk can be measured.

The total number of motorcycles stolen varies on different tables throughout because the numbers stolen are estimates and generated using adjustment factors. The method used to calculate the adjustment is the same throughout. However, where different combinations of adjusted figures are employed, different totals will result. This method provides a more accurate adjustment for each group but does mean that totals do not always match. The original adjustment needs to take place because data taken from the Police National Computer (PNC) underestimates the total number of thefts. This is because some thefts do not get entered onto the PNC. For example, as the PNC does not get updated over the weekend, if theft and recovery takes place over this period the theft will not be recorded. Comparison of PNC data with that of individual police force theft data, which does record these thefts, enables an adjustment figure to be calculated.

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