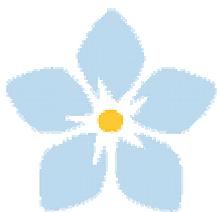




Theft of vehicle number plates: a problem analysis

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Executive summary

How big is the problem?

According to the British Crime Survey (BCS), in 2004/05 number plates were stolen in 1.9% of all thefts from vehicles, and in 5% of thefts where vehicle external parts are taken.

Number plate thefts as measured by the BCS have increased from 3 in every 10,000 motor vehicle owners interviewed in 2002/03, to 10 in every 10,000 vehicle owners in 2004/05.

This, against a backdrop of reducing thefts from vehicles generally, suggests something is driving up the problem. One likely candidate is the widespread introduction of ANPR cameras, which may also encourage false reports of theft. Another candidate is the Register of Number Plate Suppliers, which attempts to exert more control over the supply of number plates. This, though, seems only to have had a weak effect which is dissipating.

Police recorded crime data provide a more complete picture of the scale of the problem, as the BCS excludes thefts from commercial vehicles. Police figures suggest there were around 33,000 recorded number plate thefts in 2004.

London is a hot spot for number plate theft and metropolitan forces generally show higher risk of number plate theft.

Why are number plates stolen?

The front and rear plate is stolen in more than 75% of incidents, indicating that most theft is committed for vehicle cloning purposes. This includes:

- *Cloning stolen vehicles for sale* - there is some evidence that this could be a major driver of number plate theft, but insufficient to be clear. Many

stolen vehicle clones seem to acquire number plates from sources other than theft.

- *To commit a crime (not drive-off)* – there is little evidence that this is a major motivation for number plate theft.
- *For free fuel* – up to 20% of stolen number plates are detected on vehicles driving off from petrol forecourts without paying for fuel. These offenders are not fussy about matching the ‘donor’ with the ‘recipient’ vehicle.
- *For immunity from traffic related fines* – this also appears an important driver, with thefts concentrated in London and increasing after the congestion charge was introduced. It could also motivate false reporting, considered a substantial problem in London although there is no clear data available yet.

Impact of the Register of Number Plate Suppliers (RNPS)

West Midlands Police data show that single plate theft increased after the RNPS was introduced, thereafter reducing. Thefts of both front and rear plates have been reducing for some time, and were unaffected by the RNPS. This suggests that the RNPS tempted some, probably less serious offenders, to try theft, but not having the skills to remove both plates quickly and intact, or the motivation to learn, they subsequently gave up. Whether they gave up the effort to obtain false plates completely or found other ways of doing so is not known. There are acknowledged loop-holes in the RNPS system which they could have learned to exploit. Serious vehicle cloners requiring both plates do not appear to have turned more to theft to obtain number plates.

What cars are targeted?

Number plates are stolen from older cars. ‘Donor’ vehicles were on average 7 years 7 months old, with 11 year old cars being targeted the most. Cars one year old or less make up just 4% of victimised vehicles.

In terms of volume, thefts are focused on mass market cars. Thefts to discontinued mass market models fall, while thefts to replacement models increase. There is some evidence of variation in risk between different models and further research is required to test the possible reasons for this.

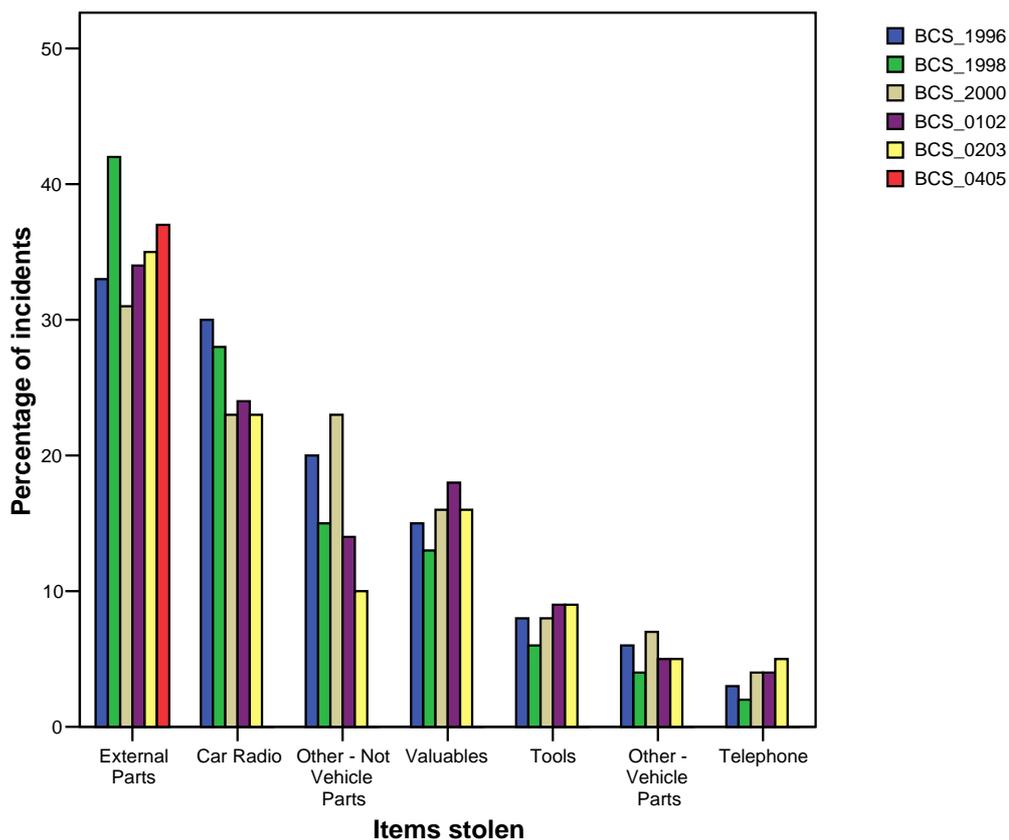
Recommendations

1. Make number plates harder to remove. Tamper proof plates that cannot be removed intact quickly would prevent thefts and impact on associated problems such as petrol drive-offs and traffic offences.
2. To maximise impact, a strategy needs to be developed for speedily covering 80% of the vehicle parc. Focusing only on new cars will delay and reduce the size of impact on theft.
3. Reducing cloning of stolen vehicles will require identifying and closing down other ways in which false plates are obtained. Research is needed to establish how new identities are acquired for stolen vehicles, and what might be done about these sources of supply.
4. EVI will make the number plate redundant as a means of vehicle identification, and reduce all the problems associated with number plate theft discussed here. The introduction of EVI should be speeded up.
5. Reducing false reporting could provide a quick win. A study of its scale and how it might be prevented should be undertaken.
6. Police records should be used for monitoring the problem, either via a regular trawl of selected forces or a regular download from the PNC. Combining production of the Car Theft Index with analysis of number plate theft might be considered

1. How big is the problem?

1.1 The British Crime Survey (BCS) is regarded as the most authoritative source of data on the scale of crime in England & Wales. Until relatively recently, thefts of number plates were recorded by the BCS within the larger category of thefts of vehicle exterior fittings. Previous research¹ has established that vehicle external parts² are the most common target for thieves. As a proportion of all thefts from vehicles, these have been growing steadily from 31% in 2000 to 37% in 2004/05, as Figure 1 shows.

Figure 1. Items stolen from vehicles, BCS 1996-20002/03³ (04/05 data presented for external parts only)



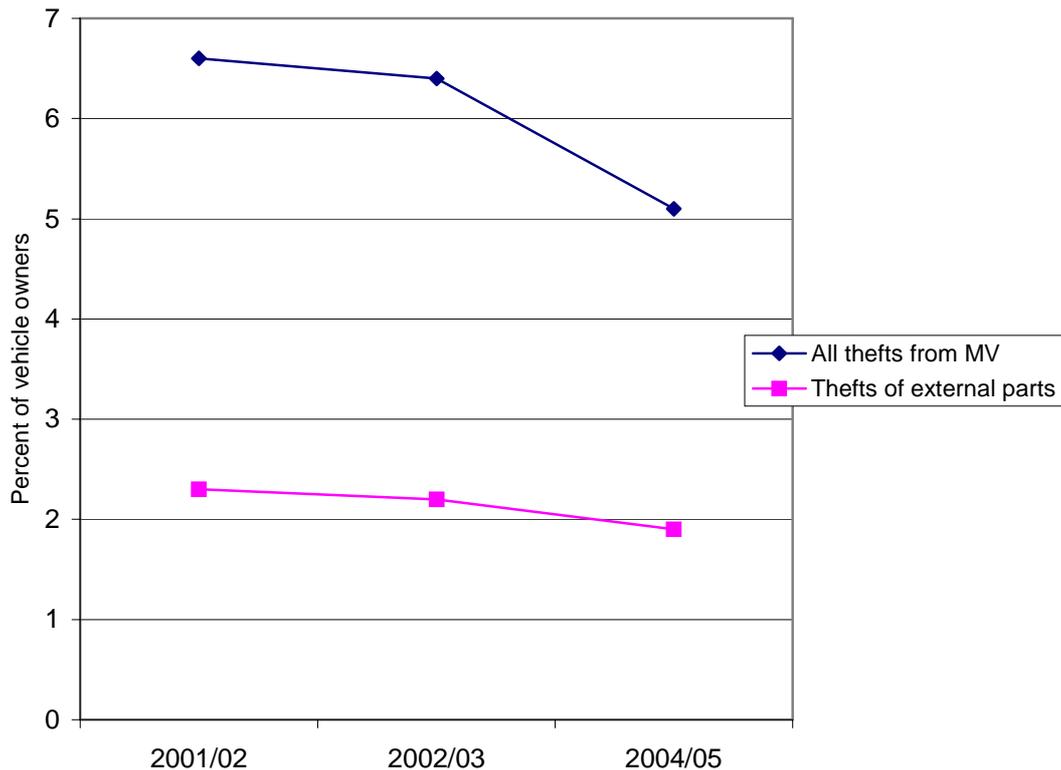
¹ Sallybanks and Thomas (2000), 'Thefts of external vehicle parts: an emerging problem', in *Crime Prevention and Community Safety: An International Journal*, Vol 2, No 3.

² The phrase 'external parts' used throughout this report includes the BCS category of exterior fittings plus wheels

³ Source: Simmons, J. & Dodds, T. (2003), *Crime in England & Wales 2002/2003*. Table 4.08. London: Home Office.

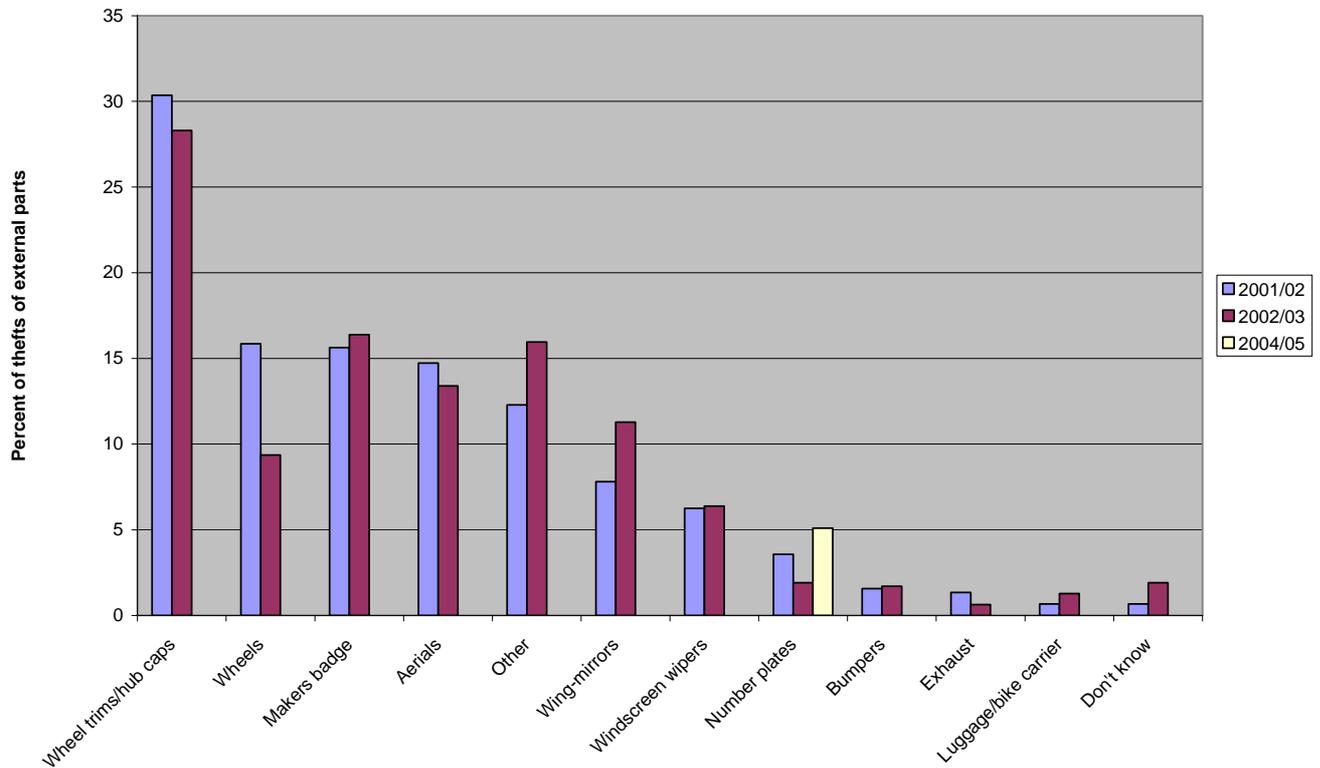
1.2 The increasing dominance of external parts theft, however, arises because the incidence of other thefts has fallen sharply as Figure 2 shows. Thefts of external parts have remained fairly stable, with an incidence rate each year of around 2% of vehicle owners.

Figure 2. Incidence rate of thefts from motor vehicles



1.3 Since 2001/02, more detail has been available from the BCS on the various vehicle fittings and parts stolen. Figure 3 shows how these thefts break down, for two sweeps of the BCS plus 04/05 for number plates.

Figure 3. External vehicle parts stolen, BCS 2001/02 and 2002/03 (04/05 data shown for number plates only)



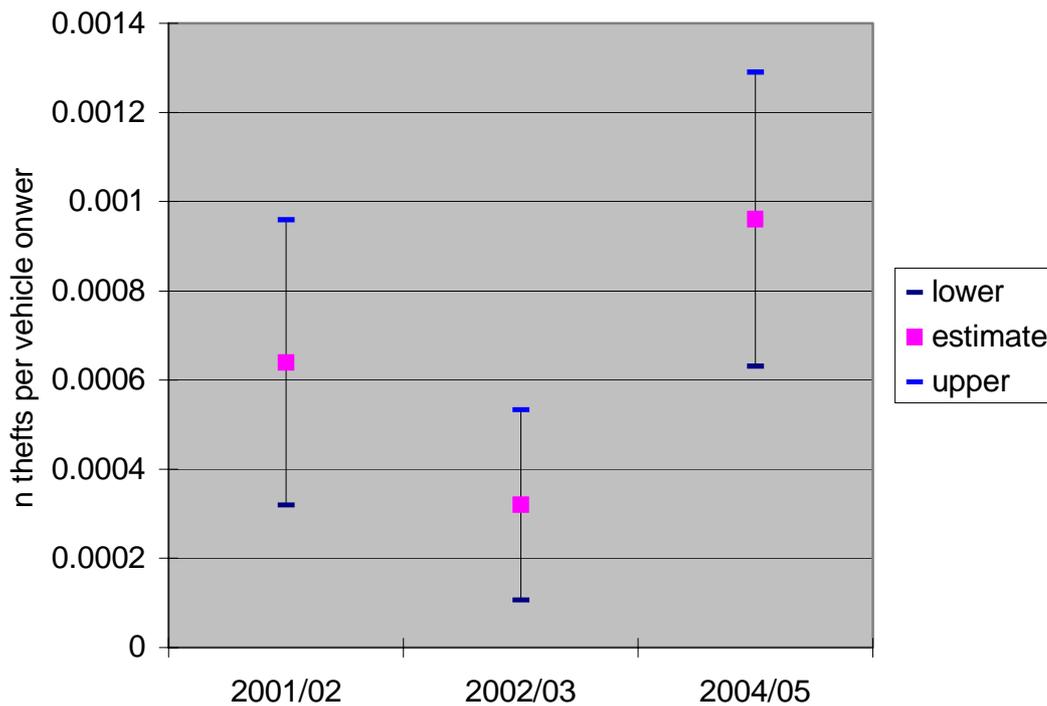
1.4 Clearly, number plates are taken relatively infrequently compared with other external vehicle parts such as wheel trims and wheels, makers badge, aerials, wing mirrors and windscreen wipers. In 04/05 number plates made up just 5% of all thefts of exterior parts and 1.9% of all thefts from motor vehicles.

1.5 Many number plates, however, are stolen to facilitate the commission of other offences. This is a 'gateway' crime, so that the picture presented in Figure 3 under-plays the likely benefits of reducing it. Moreover, Figure 3 suggests that this is a growing problem.

1.6 Figure 4 shows the incidence rate of number plate theft expressed as a proportion of all motor vehicle owners interviewed, for each of the three

sweeps of the BCS. It also shows the confidence limits for each estimate. Confidence limits take into account sampling factors, and show the range in which we could expect the estimate to fall if we did the survey again.

Figure 4. Incidence rates and confidence limits for number plate theft, BCS 2001/02 – 2004/05



1.7 As Figure 4 shows, in 2002/03, the incidence rate for number plate theft was 3 in every 10,000 motor vehicle owners interviewed in the BCS. In 2004/05 this had grown to 10 in every 10,000 vehicle owners. As there is no overlap between the ranges for these two years, we can be fairly sure this is a genuine increase and not a consequence of sampling differences. Figure 4 does, however, show considerable overlap between 2001/02 and 2004/05. The conclusion seems to be that thefts of number plates have increased since 2002/03, but probably not beyond their level in 2001/02. This increase is more significant, however, given the context of falling thefts from vehicles generally.

1.8 The 04/05 BCS figure scales up to 21,677 thefts nationally (England & Wales), with an upper and lower estimate of 28,189 and 13,000 respectively⁴. Unusually, even the upper estimate is less than that derived from police recorded figures for 2004. Figures supplied by 17 forces in England & Wales, discussed below, produce a rate of 15 recorded number plate thefts per 10,000 registered cars, which translates to 32,516 recorded number plate thefts in 2004.

Table 1. Estimates of number of number plate thefts in England & Wales

Based on BCS 04/05	Estimate of number of recorded thefts, from data supplied by 17 police forces 2004
Upper limit: 28,189	32,516
Estimate: 21,677	
Lower limit: 13,000	

1.9 Given that police recorded crime figures usually underestimate crime victimisation, because of under-reporting and recording, it is surprising to see that the recorded crime estimate is higher than that derived from the BCS which doesn't suffer from such problems. There are a number of possible explanations for this:

- perhaps the main one is that the police data include commercial vehicles, and therefore provide a more complete picture of the problem.
Commercial vehicles are not covered by the British Crime Survey

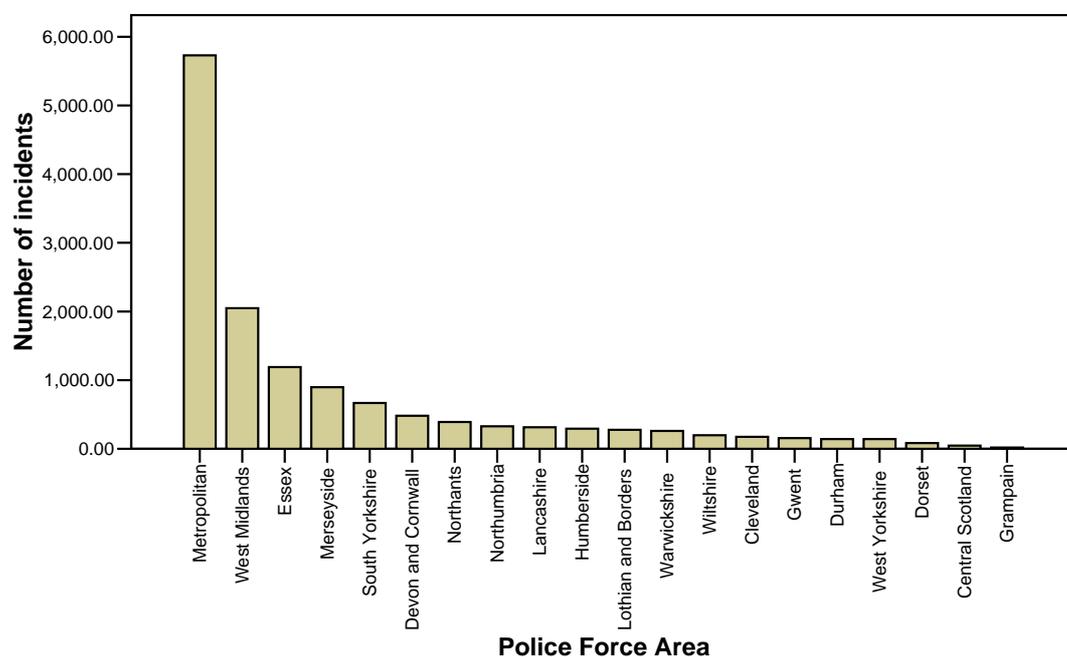
⁴ On the basis that there were 21,677,300 registered cars in England & Wales in 2001. Source: http://www.dvla.gov.uk/public/press_releases/2003/p_release_0303_appendix.htm

- the police data include false reports, considered by some (especially in London) to be quite a problem although its extent has yet to be established. This is discussed further below.
- the police data suffer from sample bias. Six of the seven metropolitan forces in England submitted figures for 2004 compared with only 30% of non-metropolitan forces. Metropolitan forces tend to suffer higher rates of theft. Scaling up on the basis of this sample would therefore over-estimate the size of the problem nationally.
- the police data are unreliable. Comments in their survey returns show that many forces had great difficulty identifying these incidents from their crime recording systems. This paper, though, includes only those forces that appeared to have supplied more reliable data. Moreover, difficulties in identifying and retrieving records of number plate thefts seem as likely to under- as well as over-estimate the problem.

2. Are there any hot spots?

2.1 Figure 5 shows the results of a survey conducted by DVLA of all police forces in Great Britain. It shows the number of incidents of number plate theft for those 19 forces that were able to provide such figures for the calendar year 2004, plus the figures we extracted from West Midlands Police systems.

Figure 5. Number of thefts of number plates recorded by police forces, 2004

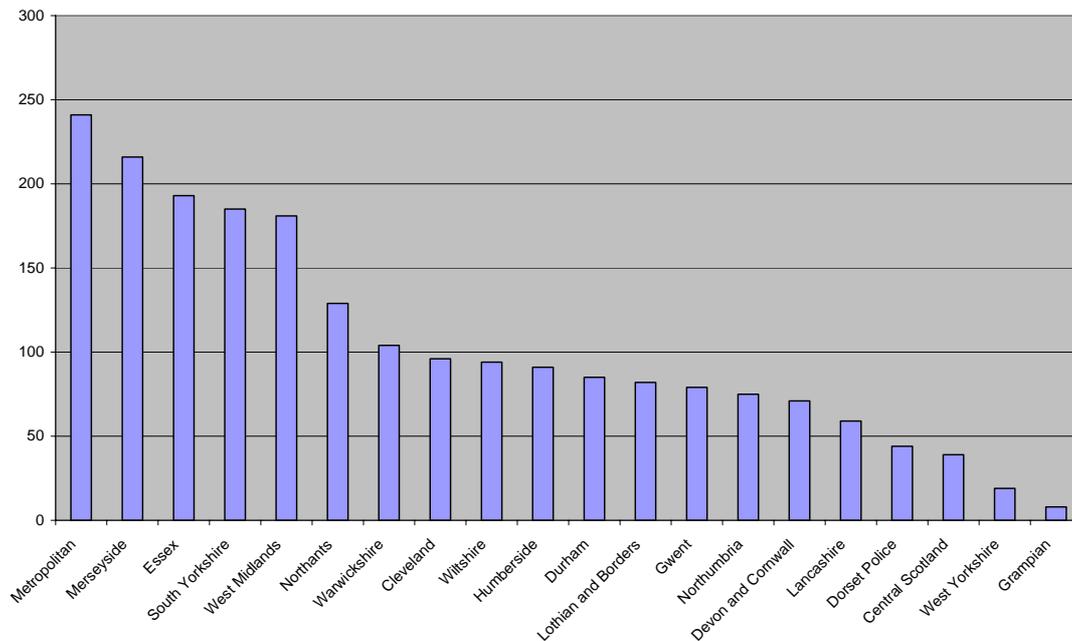


2.2 The geographic variation in Figure 5 is very striking indeed with London being a massive focus for the problem. London accounts for nearly half (49%) of all incidents reported by these forces, and nearly a fifth (18%) of all recorded incidents estimated for England & Wales. Clearly, any effort to reduce the scale of the problem nationally needs to focus its efforts here.

2.3 One of the reasons why London is so dominant in Figure 5 is simply because there are more people and cars in the Metropolitan Police area compared with other forces. Figure 6 shows recorded thefts as a rate per 100,000 licensed cars in the area. While London retains the top spot, its

dominance is much reduced, showing a risk rate more comparable to other metropolitan forces.

Figure 6. Number of thefts of number plates per 100,000 licensed cars⁵ in force areas



2.4 The average rate for this sample is 140 thefts per 100,000 cars. Figure 6 shows that four of the five forces with rates above the average are metropolitan forces. One possible explanation for this is that the high density of traffic in these areas brings with it greater traffic control and enforcement activity. The most robust example is the congestion charge in London and its associated enforcement led by automated number-plate reading cameras. High levels of detection activity could motivate number plate theft, stolen plates being used to hide the identity of transgressing vehicles and make them immune to detection. There is also the suggestion that better traffic enforcement could provoke false reporting of number plate theft, to enable traffic offenders to escape punishment. This is discussed further below.

⁵ 2001 figures from http://www.dvla.gov.uk/public/press_releases/2003/p_release_0303_appendix.htm

2.5 The appearance of Essex as a high risk area is curious. Nearly 10% of thefts from vehicles in Essex involve a number plate theft, high compared with an average for this sample of 4%. One plausible explanation worth exploring further is this is a congestion charge effect. The London congestion charge may stimulate thefts of number plates in neighbouring force areas, enabling visitors, commuters and businesses to travel in and out of the congestion charge area with immunity from detection.

2.6 The reason for the low rates in Northumbria and West Yorkshire, both metropolitan forces, is unclear and deserves attention. Reliability of recording and data retrieval may be an issue. It is evident from some of the comments by forces in their returns to DVLA that this offence was not an easy one to identify in crime recording systems.

Risky locations?

2.7 Analysis of 12,922 incidents of number plate theft in the West Midlands Police over a six year period reveals little useful data on location. 'Road' is given as the location in 40% of cases and 'car park' in 20% of cases. Driveways to houses do seem less at risk, with only 10% of number plates being taken from cars parked here. We know from other work that driveways are generally safe from vehicle crime.

3. Why are number plates stolen?

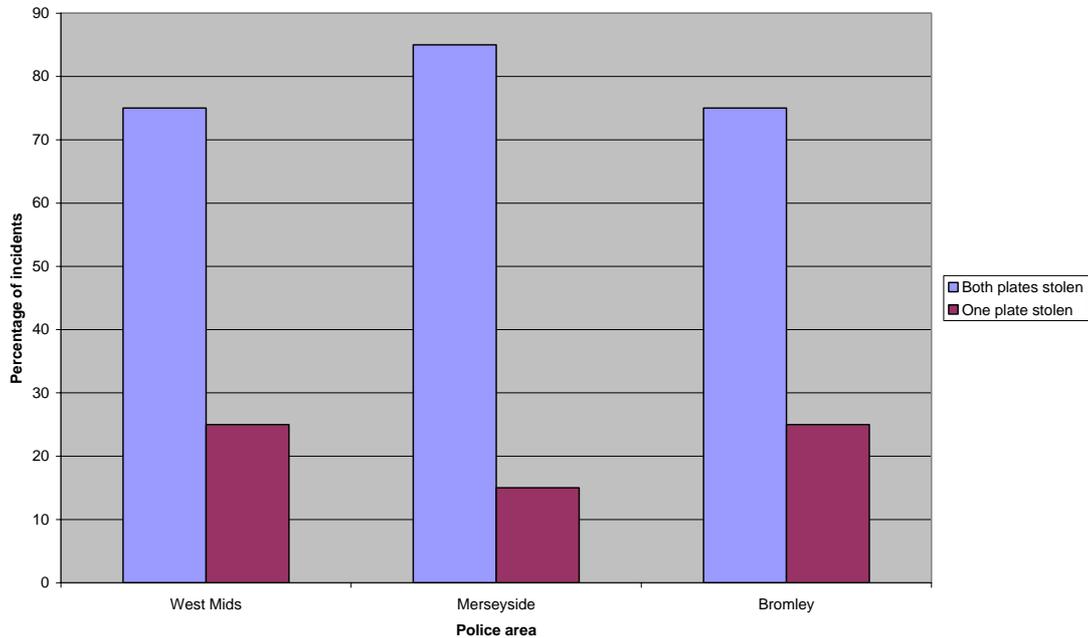
3.1 We have already begun to speculate on some of the motives for stealing car number plates. There are, however, potentially a number of reasons why number plates are stolen, creating different problems which may require different solutions. These different problems include:

- Stealing plates for trophy-hunting (where the number plate is particularly noteworthy, eg 2 FAT)
- Stealing plates to use on other vehicles (cloning), to hide their identity for:
 - selling, if stolen, as a legitimate vehicle
 - using in the commission of a crime
 - getting free petrol
 - avoiding fines for speeding and other traffic violations detected via automated number plate reading camera systems

3.2 Police records often indicate whether one or both front and rear plates were stolen. This can help distinguish the two main problems of 'trophy hunting' and 'cloning' as the latter requires both plates and the former does not. Between January 1999 and March 2005, West Midlands Police recorded 12,922 incidents of number plate theft. In 64% of these (8,277 incidents) it was recorded whether both front and rear plates were stolen, or just one. In 75% of cases both plates were taken. This pattern is replicated in two other high risk metropolitan forces:

- in Merseyside, 85% of 547 incidents recorded between March 2001 and May 2002 involved both plates being taken.
- in the London Borough of Bromley, both plates were stolen in 75% of 949 incidents recorded between January 2002 and September 2005

Figure 7. Proportion of incidents where one or both plates were taken, from three studies



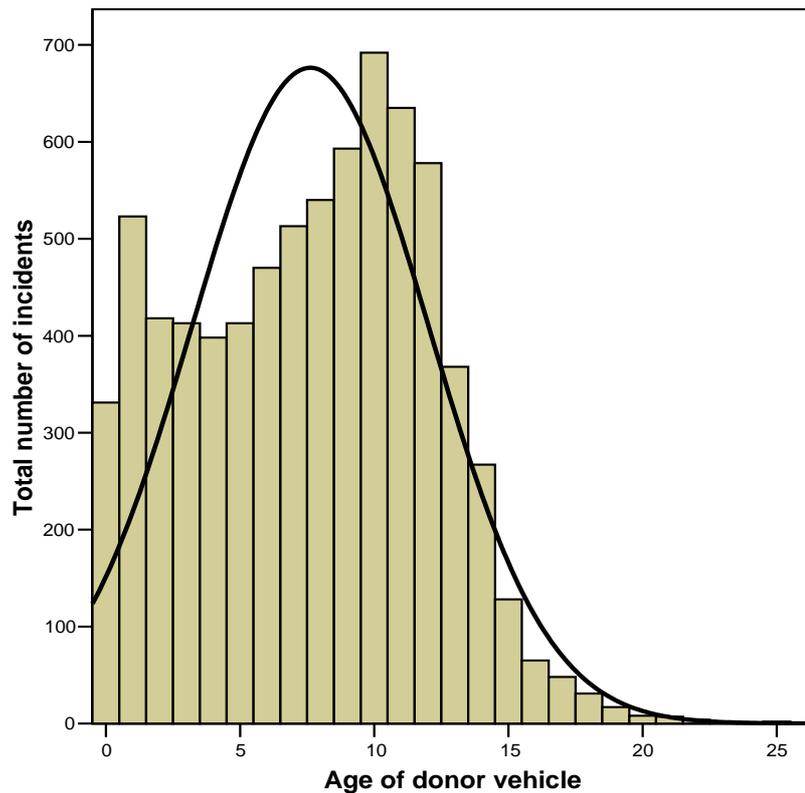
3.3 Clearly, Figure 7 shows that most number plate theft is committed for a purpose that requires both plates. This would likely exclude trophy hunting and other 'larking around', but include all the various cloning problems. It would, however, also likely include any false reporting, so that the extent of vehicle cloning might be exaggerated by these figures. Equally, the 25% of incidents where single plates are taken may exaggerate the extent of trophy hunting as some may be unsuccessful attempts to take both plates, thieves being defeated by the vehicle plate fixings or disrupted in other ways. In conclusion, all the evidence points to vehicle cloning being an important motive behind most number plate theft.

3.4 In relation to the more specific types of cloning problem, little research evidence is available. The following summarises what is known.

Cloning stolen vehicles

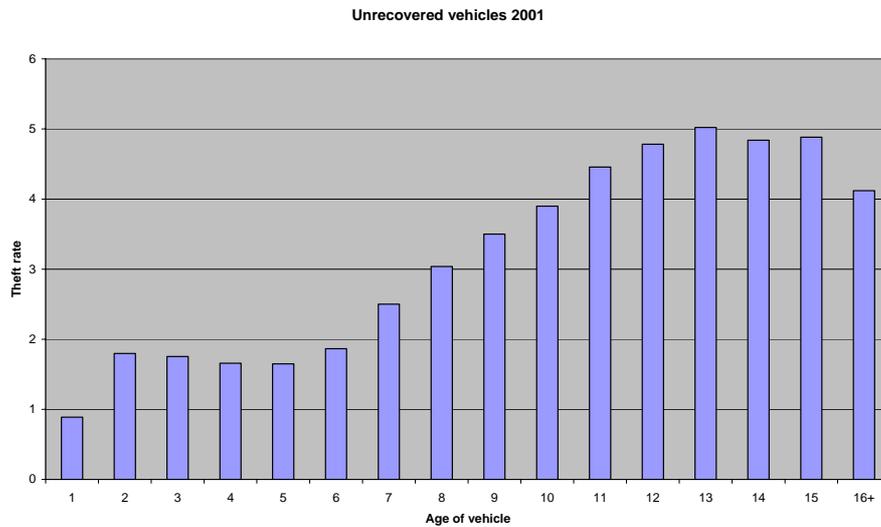
3.5 This problem involves a stolen vehicle being given a new identity that is sufficiently good to pass any checks that a buyer might make. Stealing the identity of a 'donor' vehicle, including its number plates, is one way in which this is done. Care would have to be taken that plates are stolen from a vehicle that matches the make, model, colour and age of the stolen vehicle, to create as near perfect a clone as possible.

3.6 If this is a significant driver of number plate theft, then one would expect to see a similar profile for both stolen vehicles and vehicles from which number plates have been stolen. The closest we can get to such an analysis is to compare the age of vehicles that are stolen and unrecovered (nationally from the Car Theft Index) with the age of number plate 'donor' vehicles (from West Midlands Police data). Figure 8 shows the age distribution of vehicles who reportedly had their plates stolen in the West Midlands for the period January 1999 – April 2005 (n=7,465).

Figure 8. Distribution by age of number plate 'donor' vehicles

3.7 Figure 8 shows that most stolen number plates are taken from older rather than younger vehicles, with the mean age of a 'donor' vehicle being 7.5 years and 11 year old cars being the most targeted. If stolen vehicle cloning is an important motivator, then we should expect to see a similar profile for the recipient vehicle as the donor vehicle. Figure 9 shows the age profile for vehicles stolen and unrecovered (from the Car Theft Index).

Figure 9. Distribution by age of vehicles stolen and not recovered, England & Wales, 2001



3.8 The similarity of both profiles does suggest that number plates are being taken from vehicles which have been selected to match the characteristics of stolen vehicles. The dominance of older vehicles is curious in that one would have expected newer vehicles to have been more lucrative targets for cloning, considering the effort required. Perhaps cloned cars are easier to disguise in the older car market where checks may not be carried out to the same degree as for newer more expensive vehicles sold through the trade. HPIs business, for example, is dominated by trade rather than the private sector.

3.9 There are, however, some problems in interpreting the close similarity in Figures 8 and 9 as evidence that cloning stolen vehicles is a major motivation for number plate theft.

- First, the pattern shown above in Figures 8 and 9 is also found in relation to recovered stolen vehicles, and for thefts where just one plate is stolen, ie it seems to be a common pattern for varied kinds of vehicle crime problem and may simply reflect availability. Older vehicles are more likely to be parked in more vulnerable and higher risk locations, have less sophisticated security and what they do have is more likely to have

deteriorated. This makes them more attractive targets for a range of different crime types. The similarity between Figures 8 and 9, therefore, does not necessarily mean they reflect the same problem.

- Secondly, the profile shown in Figure 9 will include a variety of problems which result in the vehicle being unrecovered – cars abandoned and burnt out so that their identity cannot be established, cars stolen and broken up for spare parts, and cars fraudulently reported stolen for insurance benefits. This means that Figure 9 contains a good deal of ‘noise’, and indeed police estimate that vehicle cloning represents a minority of the vehicles in this group (see below). This makes it hard to argue that Figure 9 reflects the profile of vehicles requiring number plates for cloning purposes.

3.10 Another way of testing this hypothesis is to compare the number of vehicles stolen for cloning purposes with the number of vehicles having their number plates stolen. We know that 47% of 317,184 vehicles stolen in 02/03 were unrecovered. The police estimate that 25% of these have their identity disguised with false number plates for selling on⁶. This amounts to some 37,000 stolen vehicles requiring false number plates per year.

3.11 This kind of figure is in excess of what could probably be supplied via theft. Police data suggests around 32,000 recorded number plate thefts per year, 75% of which will involve both plates and a proportion of these will be used for other purposes (see below). This suggests that many vehicles stolen for cloning must obtain false plates in ways other than theft, for example through a supplier or the use of scrapped vehicles to provide a false identity. Moreover, it is easy to see that these alternative methods might be preferred, as they avoid arousing the suspicions of a live ‘donor’ which could reduce the window available to the cloner for selling the vehicle.

3.12 In conclusion, while stealing plates to hide the identity of stolen vehicles for re-sale is a plausible motivation, it is unclear to what extent it is a

⁶ http://www.dvla.gov.uk/public/press_releases/2004/p_release_4504_4aug04.htm

major one. It seems likely, however, that a good deal of cloning makes use of number plates acquired in ways other than theft and that making it harder to remove plates from cars may have only limited impact on the cloning of stolen vehicles.

Cloning for use in committing a crime

3.13 In the Merseyside analysis, only five of the 547 incidents of number plate theft were subsequently mentioned in connection with crime reports other than petrol drive-offs. Similarly in London few stolen number plates were found to appear against other crimes (personal communication). There is thus little evidence that this motivates much number plate theft. It is likely, though, that many number plates recorded by witnesses during the commission of a crime will be incomplete or mis-read, leading to an underestimation of the scale of this problem.

Cloning for use during petrol drive-offs

3.14 In Merseyside, 10% of stolen number plates were used in subsequent petrol drive-offs. In Bromley this figure is 20% and anecdotally it is thought that many drive-offs in the West Midlands also involve false plates. Thus petrol theft appears to be one of the more important motivations for number plate theft.

3.15 In Bromley, in 36% of drive offs where the vehicle bore reported stolen plates it was possible to compare the make and model of vehicle involved with the 'donor' vehicle. In every case, the make/model of the vehicles did not match, showing that offenders are not trying to create a perfect clone but do just enough to escape detection for the drive-off. It is likely that a similar approach would also be taken in trying to avoid other camera-based detection systems, discussed below.

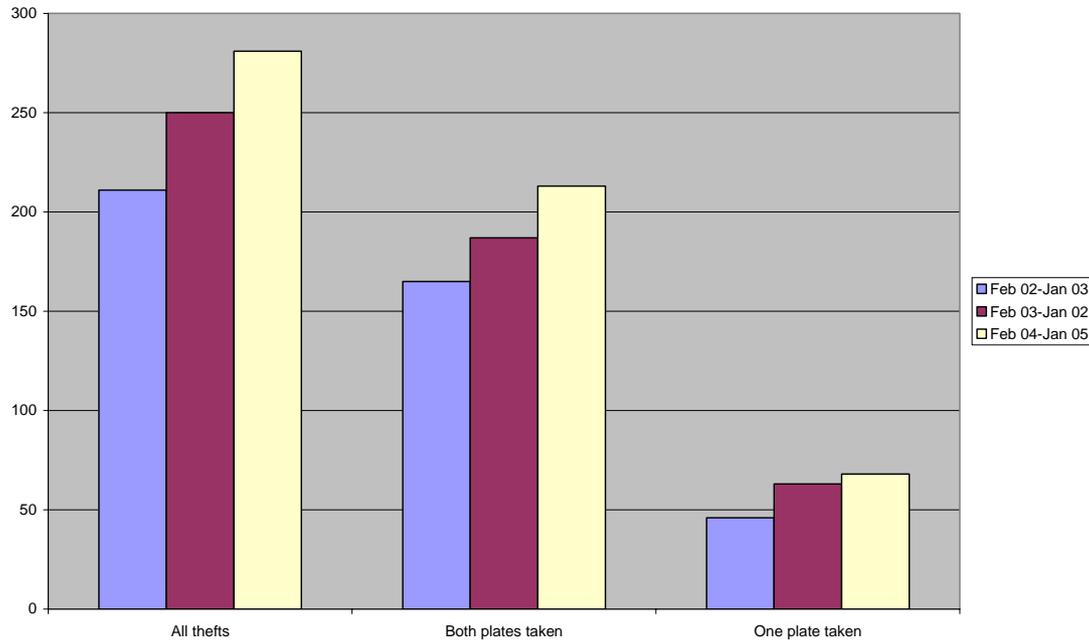
Cloning for immunity from fixed penalty notices and their consequences

3.16 The widespread introduction of ANPR systems for enforcing speed and other traffic regulations in recent years is thought to have prompted much number plate theft. This hypothesis has yet to be properly tested, but it is plausible given the findings in relation to petrol station drive-offs and is supported by the increase in number plate theft revealed by the BCS discussed earlier.

3.17 London is perhaps the best place to test this hypothesis, the congestion charge being a robust example of an anpr-led enforcement initiative and where we would therefore expect to see the biggest effect. The high rate of number plate theft in both London and in Essex, shown earlier, suggests a congestion charge effect. Moreover, local analysis of thefts in the London Borough of Bromley shows an upward trend over the period 2002-2005 when the congestion charge was introduced.

3.18 Figure 10 below compares the numbers of thefts in Bromley in the year prior to the introduction of the congestion charge in February 2003, with the two subsequent years. It shows an increase in both the first and the second year of charging, with total thefts in the second year of charging higher than the year prior to charging by 30%. Moreover, this has taken place in the context of falling rates of thefts from vehicles generally. Together, these trends mean that number plates now account for a much greater proportion of thefts from vehicles in Bromley – up from 6% to 11%. While this data on its own is insufficient to conclude that the congestion charge has stimulated number plate theft, it does add to the weight of evidence pointing in this direction.

Figure 10. Number of thefts of number plates in Bromley before and after the introduction of the congestion charge



3.19 Less consistent with the notion that the congestion charge is responsible for this increase in thefts of number plates in Bromley is the similar rise in thefts of single plates shown in Figure 10. This perhaps lends support to the idea, floated earlier, that at least some single plate thefts involve less skilled offenders intending but failing to take both plates. The analysis of West Midlands data below lends further support to this conclusion.

False reporting

3.20 It was suggested earlier that at least one of the plausible explanations for the gap between police and BCS recorded thefts is false reporting. The motive for false reporting would be to avoid recently incurred, or likely to be incurred, speeding fines or congestion charges detected via ANPR cameras. Cover for such false reporting is provided by the following conditions which are present in relation to number plate theft:

- (a) it is a plausible claim – such thefts happen and are generally thought to be increasing
- (b) the allegation is unlikely to be investigated or prompt a visit to the scene by police and
- (c) plates are usually replaced with the same registration number so having the same plate on the car would not arouse suspicion.

3.21 The extent and circumstances of false reporting is not known. It is thought to be substantial, particularly in London. A study of false reporting might therefore usefully be mounted in London, making use of MPS and TfL congestion charge data to determine the scale of the problem and what might be done about it. Changing any one of the conditions listed above could be sufficient to stop this fraud.

4. Has the RNPS increased theft?

4.1 All businesses that sell number plates have been required, since January 2003, to ensure that anyone seeking to buy a number plate is entitled to that registration number. This means suppliers must check documents that identify the vehicle and the buyer and their relationship, typically the vehicle's registration document and the buyer's photocard driving licence. Suppliers must register with DVLA and keep records of all sales and make them available for inspection by police or trading standards. The Register of Number Plate Suppliers (RNPS) initiative therefore introduces for the first time some control over the supply of number plates with the intention of making it harder to obtain false number plates.

4.2 The question to be considered here is to what extent this initiative may have pushed people into theft. That this is likely assumes two things:

1) first, that the regulations have had their intended effect and blocked the supply of false plates. There are some doubts about this:

- there are 32,000 registered suppliers. Such a large number creates challenges for any strategy designed to increase the risk of being caught supplying false plates. If each supplier provided just one number plate without checking the necessary documents, that would be sufficient to satisfy the demand from vehicle cloners, but would be extremely difficult to detect.
- show plates are not subject to the same restrictions (it is intended to close this), allowing plates to be obtained without all the necessary identification procedures on the grounds that they are used only for showing the vehicle off-road
- number plates are easily obtained over the internet where there appears less compliance with the regulations

- conventional sign makers, many of whom won't consider themselves number plate suppliers for registration purposes, have the necessary raw materials and skills to make up number plates easily.

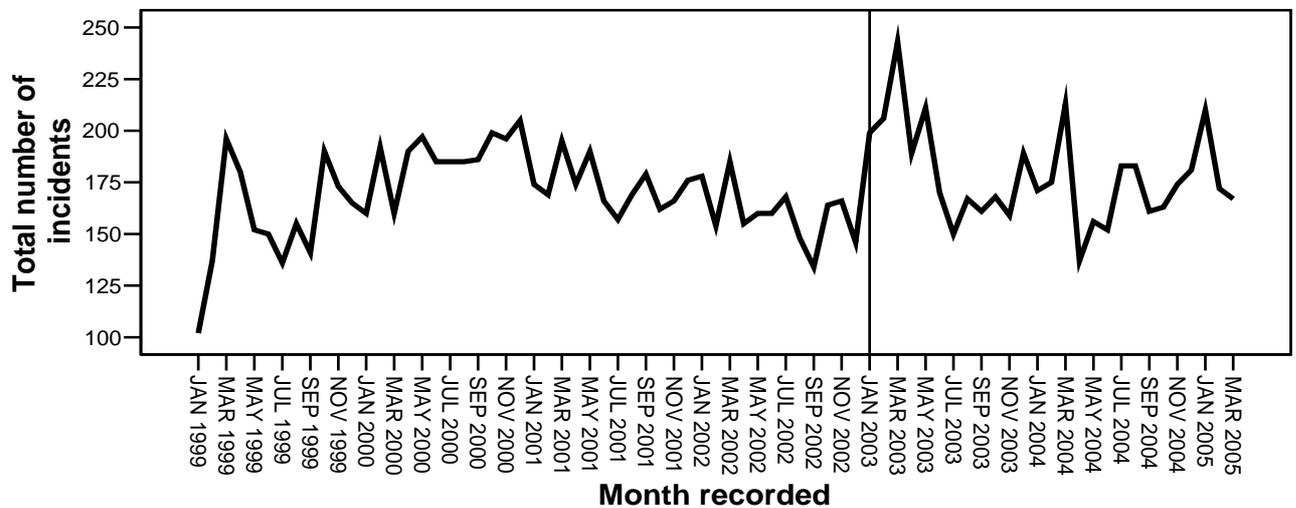
2) secondly, that those wanting false plates have the skills and motivation to seek out and successfully adopt alternative means of obtaining them. The criminological literature on displacement of crime casts some doubt on this assumption, showing that displacement is not a straight-forward phenomenon and is by no means a certain consequence of crime reduction initiatives.

4.3 *If* the RNPS initiative has been effective and *if* this has displaced to theft, we would expect to see an increase in number plate theft following January 2003, when the initiative was introduced. Certainly, the BCS shows a higher incidence of theft in 2004/05 than 02/03. More detailed analysis of data from the West Midlands Police, however, enables us to test this hypothesis more precisely.

4.4 Data from the West Midlands Police shows that, in the 48-month period before January 2003 (January 1999 - December 2002), there were a total of 8,112 incidents of number plate theft. The mean number of thefts per month was 169 in this period. In the 27-month period from January 2003 to March 2005, after the RNPS was introduced, there were a total of 4,810 incidents producing a slightly higher monthly mean of 178.

4.5 While this suggests that the RNPS has stimulated more theft, a more detailed analysis doesn't show the kind of pattern that would be expected from a straight-forward displacement argument. Figure 11 shows the pattern of number plate thefts in the West Midlands over the six year period, by month.

Figure 11. Monthly incidence of theft of number plates in West Midlands, January 1999 to March 2005.



4.6 There are two aspects of Figure 11 that are striking:

- the increase in the monthly average after January 2003 arises not from a regular increase in the trend but from three distinct 'spikes' of activity, one in each of 2003, 2004 and 2005. The significance of these spikes is unknown. They appear around March, but taking new registrations issued in March is an unlikely explanation – why would such thefts have been increased by the RNPS scheme, and we also know that new vehicles are targeted rarely for their number plates.
- the height of these spikes diminishes each year, with the highest being straight after the RNPS was introduced.

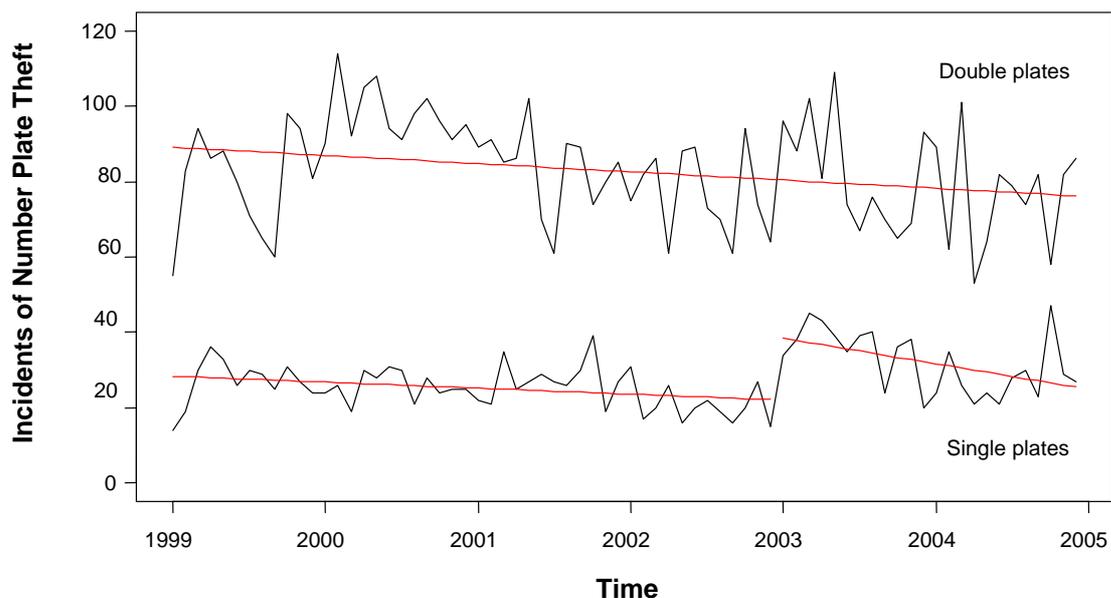
4.7 The pattern after January 2003 is clearly different from that beforehand, where the trend was downwards, and lends further support to the idea that the initiative has had an effect on theft. The nature of that effect, however, is at this stage unclear although it does not appear to have been sustained.

4.8 Comparing thefts where both plates are stolen with thefts where just one plate is stolen provides a little more insight into the impact of the RNPS.

The rationale for this is that the two kinds of theft reflect different problems, and that it is only double-plate thefts that the RNPS would be expected to impact. If single plate thefts reflect trophy hunting, we would not expect to see any change in this following the RNPS.

4.9 Figure 12 below shows the monthly numbers of theft of each kind over the six year period. Figure 12 also shows the trend lines arising from segmented regression, a statistical test that compares trends before and after an intervention.

Figure 12. Incidence of single and double plate theft in West Midlands and line of best fit yielded by segmented regression analysis.



4.10 Contrary to expectations, the segmented regression analysis found that a new line of fit was required after January 2003 only for thefts of single plates. What this means is that a statistically significant effect was found in relation to single plate thefts but not double plate thefts. As Figure 12 shows, single plate thefts almost immediately increased after January 2003, but have been reducing ever since. Thefts of double plates were unaffected and continue their downward trend. While this is not the pattern expected, there is a plausible theory that would explain it.

4.11 Previous studies of displacement show that offenders do not find it easy to find new ways of doing things, whether moving to new forms of crime or learning new ways of committing the same crime. They do not necessarily have the skills, experience, contacts or motivation to develop new patterns of behaviour quickly, and need time to learn. It is plausible, therefore, that the rise in single plate theft after the RNPS reflects increased *but failed* attempts to steal plates off cars. Finding it difficult to obtain false plates easily from a supplier, or having been deterred from doing so by the publicity, offenders resort to theft but not having the skills necessary to remove both plates quickly, give up either because they are disturbed, break one of the plates or fail to remove a screw. The notion that single plate thefts are failed double plate thefts is supported by the fact that the mean age of vehicles targeted in both double and single plate thefts is exactly the same.

4.12 Furthermore, the fact that the downwards trend in single plate theft is not associated with an upwards trend in double plate theft suggests that the new thieves are not learning how to do this successfully and either give up the effort to obtain false plates altogether or find an easier way to do it, possibly discovering the loop holes in the RNPS initiative described previously. A more thorough evaluation of the RNPS would be needed to establish the likelihood of the latter.

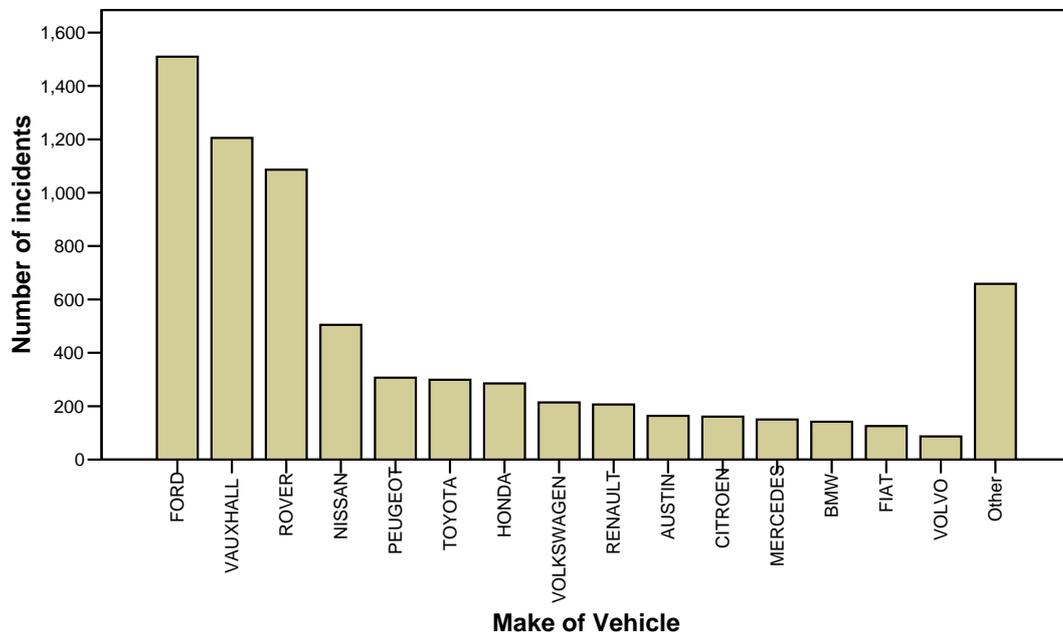
4.13 The conclusion seems to be that the RNPS did push some people, probably the less determined and motivated offenders, into theft, but that this proved unrewarding with the new thieves eventually giving this up as a *modus operandi*. Whether this has produced an overall reduction in the use of false plates on cars is not known – they could simply have found other ways of obtaining false plates. This theory would be in line with the experience from other crime reduction initiatives, showing that offenders are very sensitive to change. They will be more cautious following a new intervention, particularly if it is well publicised, until they have become familiar with the new environment, and the new risks involved. A weak intervention would allow them to adapt or even return to their previous behavioural ‘script’.

5. Should attention focus on any particular vehicles?

5.1 We have already established that number plates are more often taken from older cars. How far this reflects the deliberate targeting of older cars or simply their availability in more vulnerable locations is not known, although it does appear that those who take plates to steal petrol take what is easily available.

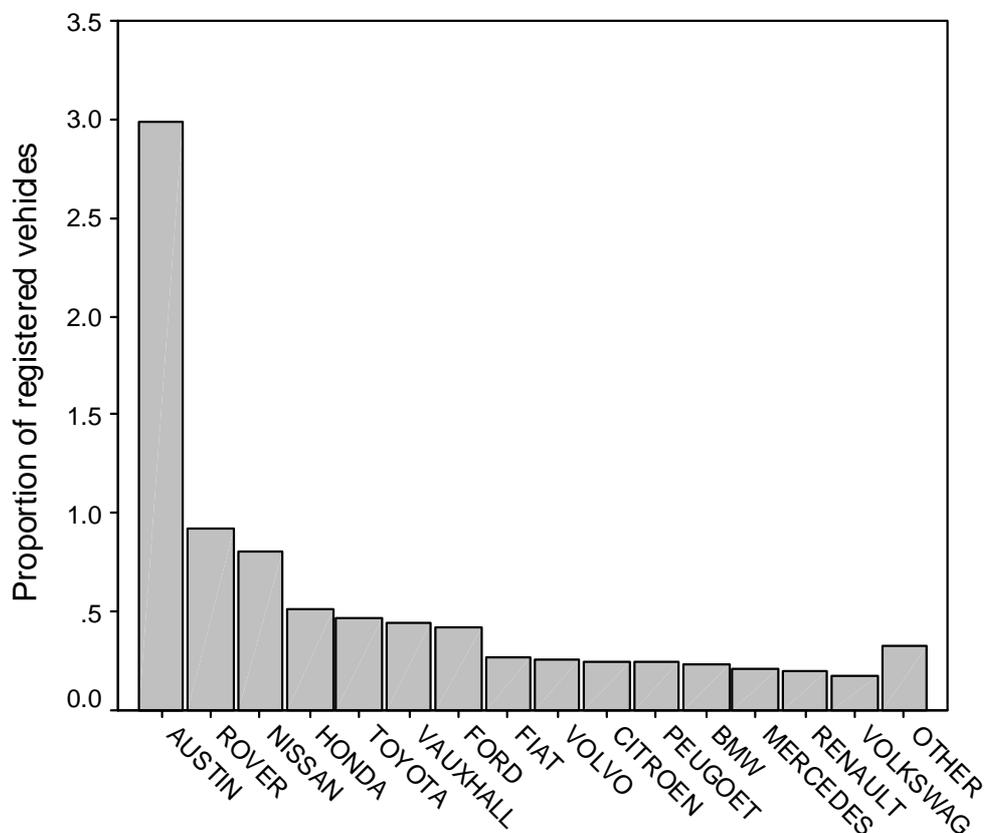
5.2 Details of the make and model of the donor vehicles were obtained for 6,447 incidents of number plate theft in the West Midlands Police six-year dataset. Figure 13 below shows the number of thefts by the make of vehicle. It shows that Fords, Vauxhalls and Rovers dominate the group, as might be expected given their prevalence in the vehicle market.

Figure 13. Numbers of thefts by make, West Midlands 1999-2005



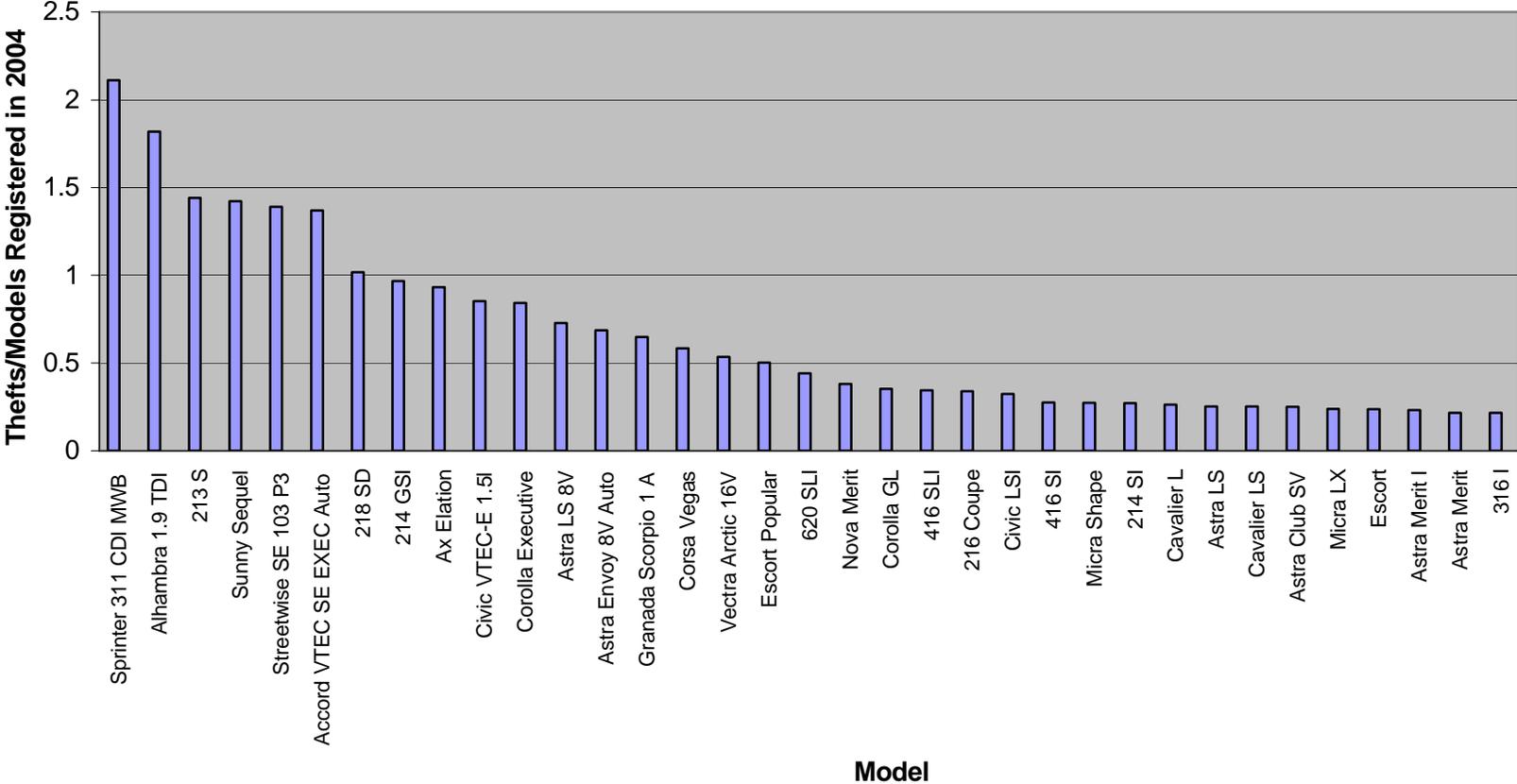
5.3 When the *risk* is calculated for each make of vehicle, however, a rather different picture emerges. In January 2005, a census was taken of the vehicle parc in the West Midlands, producing a count of the number of currently licensed vehicles of each model type in the region. Using the number of thefts from each model type in the six year period as the numerator, Figure 14 shows that 3% of Austins had their number plates stolen compared with less than 1% for Rover, the next highest risk make. The high risk to Austin probably reflects the greater risk of older vehicles to theft rather than any specific targeting of Austin vehicles. Austin no longer manufacture vehicles, so the average age for this make of vehicle will be older than other makes such as Rover and Ford. In addition, the count of Austins in 2005 will underestimate the number of Austins on the road in previous years as old Austin vehicles are scrapped each year and not replaced by new ones. Using a 2005 census and a dataset which goes back to 1999 is, therefore, likely to overestimate the size of risk against Austins relative to other manufacturers.

Figure 14. Rate of number plate theft by vehicle make



5.4 Figure 15 below shows the relative risk of different *models* of vehicle. The risk rates here are based on the number of thefts taking place in 2004 only, to control for the effect of attrition processes discussed earlier in relation to Austin vehicles. Such processes will be much more evident in relation to vehicle models which change more frequently than vehicle makes. It therefore is necessary to use data on theft incidents that are as close to the census date as possible. Figure 15 shows the top 40 models of car that were most at risk of number plate theft in 2004. It reveals large differences, ranging from 0.2% of Toyota Carina E GLIs having their plates stolen in 2004 to 2% of Mercedes Sprinter 311 CDI MWBs.

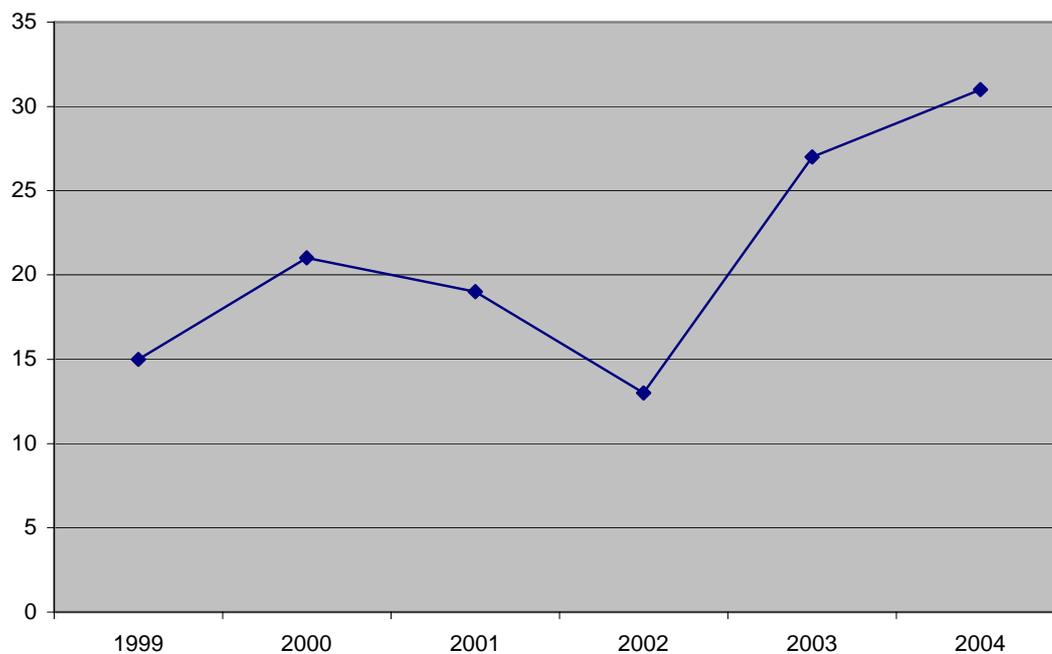
Figure 15. Rate of theft of number plates by vehicle model for 2004



5.5 Three hypotheses are worth exploring that might explain these differences in model risk:

- 1) *The vehicle cloning hypothesis.* Does the risk of number plate theft reflect risk of theft of the vehicle model? If so, this would suggest that the perfect cloning of stolen vehicles is what drives number plate theft risk. Initial examination of the Car Theft Index does not support this hypothesis. There is, however, a good case for examining local patterns of vehicle theft in relation to specific model types. For example, the model at highest risk in Figure 15 is a van, and Figure 16 below shows that number plate thefts from Ford Transits have doubled in the six year period. Anecdotal evidence is that white vans are targeted for theft and cloning. The Car Theft Index, however, does not include vans so local analysis is needed which might examine and compare not only risk of theft and theft of number plates from white vans but also patterns of theft in space and time for both.

Figure 16. Incidence of number plate theft from Ford Transits



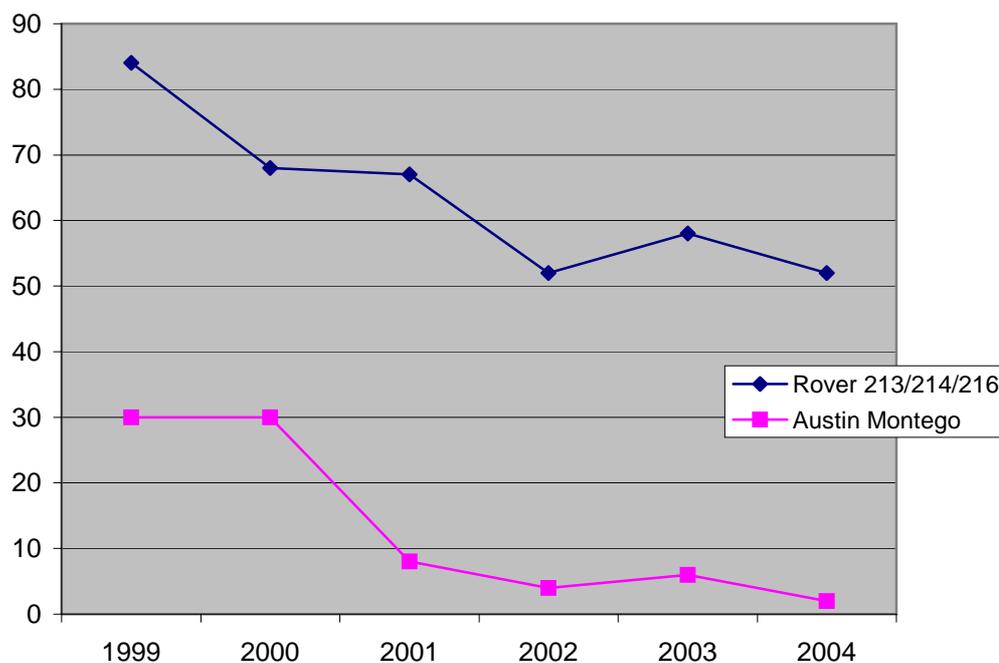
- 2) *The number plate security hypothesis.* Are number plates on higher risk models less securely fixed than models with lower rates of theft? Again, anecdotal evidence is that number plates on newer vehicles tend to be 'stick on' rather than fixed with screws. As number plates are taken more often from older vehicles, this is not what would be expected if the ease of removal drives risk. This question is clearly worth further exploration, again through local analysis.

- 3) *The vulnerable parking location hypothesis.* Some models might be at higher risk because they are parked in more vulnerable locations, such as communal parking areas on housing estates or commuter car parks. This is more likely to explain why older vehicles are targeted, but it may also explain why some models are more at risk than others. For example, discontinued models such as the Vauxhall Cavalier will also be older vehicles. Again, this is beyond the scope of the current study but is something to be explored through local analysis and research.

5.6 One note of caution in relation to Figure 15 is that the precision of the model groups means that many are associated with very small numbers. The count of vehicles can be small in many groups, and the number of thefts relating to each group can be small as well. For example, there are fewer than 400 registered vehicles in each of the top ten models in Figure 15, and each model group suffered just three thefts in 2004. This makes risk rates unreliable – small changes in either the theft incidence or size of model 'parc' can produce large differences in rates. Any testing of the above hypotheses, therefore, should consider the scope to combine some of these models into larger groups. We have already suggested that 'white van' might be a useful group to examine in relation to stolen vehicle cloning. Other groups might be created to test the number plate security hypothesis. For example, if it were discovered that number plates on all the Vauxhall Astra hatchback models were fixed in rather different ways to those on all Astra saloons, it would make sense to combine all Astra models into these two groups for this analysis.

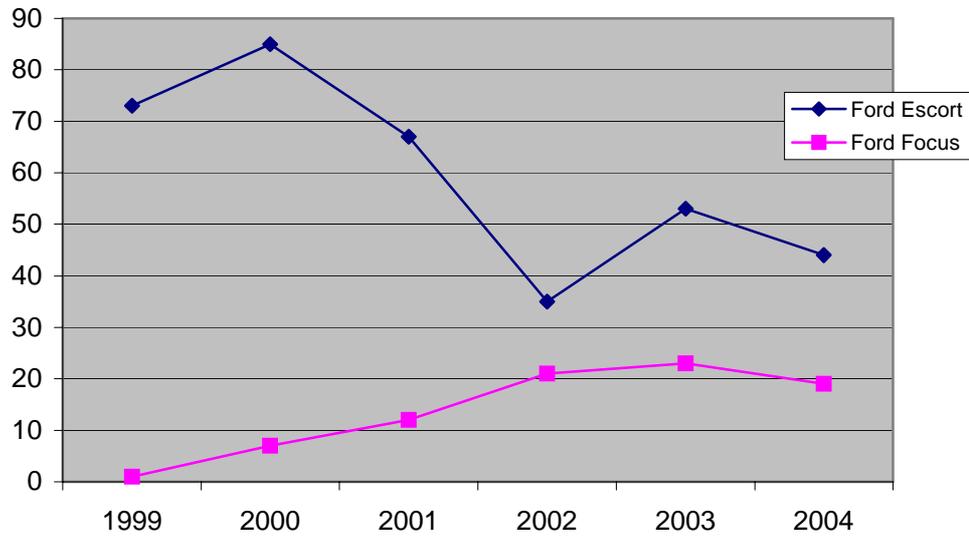
5.7 Figures 17, 18 and 19 show the effect on number plate theft of changes in the vehicle model 'parc'. Figure 17 shows number plate thefts for two model ranges that have been discontinued. The Rover 200 series was discontinued in 1999 and production of the Austin Montego ceased four years earlier in 1995. As Figure 17 shows, thefts to Montegos are now rare and thefts from Rover 200s have nearly halved since 1999. These trends undoubtedly reflect changes in the availability of these vehicles. The size of the 'parc' for each model is growing smaller each year as vehicles reach their end of life and are not replaced. By 2004, only the last Austin Montegos produced will still be on the road, and these will be close to the end of their life.

Figure 17. Incidence of number plate theft for two discontinued model ranges



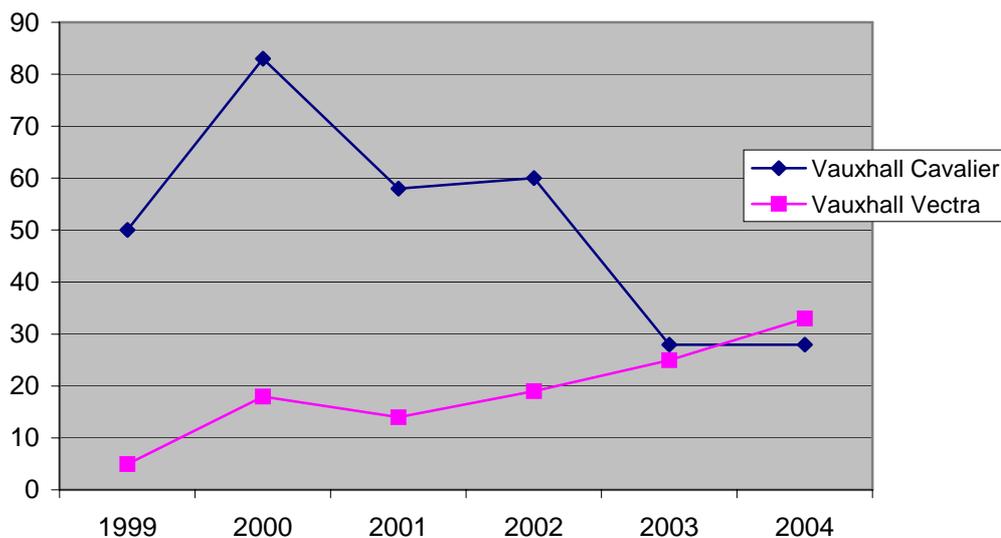
5.8 However, as old models fade away, new ones appear on the market. Figure 18 shows thefts from Ford Escorts, which ceased production in 2001, and thefts from Ford Focus which began production in 1998 and eventually replaced the Escort. It shows how the Focus is increasingly being targeted for number plate thefts in favour of the Escort as the latter begins to disappear from the road.

Figure 18. Thefts from Ford Escorts and Focus



5.9 Figure 19 shows a similar pattern for the Vauxhall Cavalier, which was discontinued in 1995 after 20 years of production, and its replacement in 1995 by the Vauxhall Vectra. As this change took place some six years earlier than the Escort/Focus, the pattern is more advanced to the point where thefts from Vectras are now more numerous than from Cavaliers.

Figure 19. Thefts from Vauxhall Cavaliers and Vectras



5.10 To sum up, generally speaking, the volume of number plate thefts seems focused on older, mass market cars which are at their peak of production. These cars are vulnerable for two reasons. First, their sheer number on the road makes them more available and second, their age means they are more likely parked in less secure locations. There is, however, some variation in the risk of theft to different vehicle models. Further analysis and research is needed to test the different hypotheses about what drives this variation in risk.

6. Conclusions

6.1 The picture emerging from this analysis is of a small but growing problem of number plate theft, with the increase likely driven by efforts to avoid detection for traffic and fuel-drive off offences by ANPR cameras. Older, mass market cars that are easily available and accessible appear to be targeted. These are usually imperfect clones, with little effort being made to match vehicle make and model to the number plate. Number plates may be stolen for more serious and precise cloning of stolen vehicles, although it is less clear how much this is used as a *modus operandi* compared with other sources of supply. The Register of Number Plate Suppliers appears to have had limited consequences for number plate theft. False reporting of theft is a problem worthy of closer attention.

Securing the number plate and number plate supply

6.2 The evidence from this study is that making it harder to steal number plates will remove a method used by offenders to evade detection for relatively minor offences such as fuel drive offs, speeding and the congestion charge. Introducing tamper proof plates that are impossible to remove quickly without breaking seems likely to both reduce thefts of number plates and these other associated problems.

6.3 Tamper proof plates seem less likely, however, to impact on vehicle theft where cars are stolen for perfect cloning and resale. This offence probably involves more motivated and committed offenders who know how to obtain false plates in other, probably less risky ways. This probably requires much tighter control of the supply of number plates. There has, though, been little if any research on vehicle cloning to identify the *modus operandi* used to provide a stolen car with a false identity, and this should be undertaken to work out how to close down all the ways in which false number plates and vehicle identities generally are acquired.

6.4 The RNPS seems to provide only rather weak controls over number plate supply. While some of the loop-holes are being attended to, the fundamental problem is the ability to supervise effectively such a large number of suppliers. Introducing electronic chips in number plates, which contain details of the vehicle entitled to that registration mark, would make it harder to supply number plates for 'perfect' cloning'. Another approach is to reduce to very small and enforceable numbers, the number of suppliers of vehicle number plates. In Sweden, there is just one supplier of number plates.

6.5 The original JDI report recognised that effective control of supply would be both expensive and disruptive. It also recognised that this was probably unnecessary as EVI appeared to provide a viable replacement to the identification function of number plates. The introduction of EVI, making the number plate redundant, still appears to be a very strong option for reducing both number plate theft and all vehicle cloning.

False reporting

6.6 False reporting is an issue which needs attention. This study indicates that it could be a large problem. Equally, it could probably be tackled relatively easily, through measures designed to change any of the three conditions outlined earlier that make false reporting possible. Voiding stolen number plates, for example, might be sufficient to deter false reports. In this way, some quick in-roads into the recorded theft figures could be made. The problem is probably driven by attempts to evade fixed penalty notices arising from anpr-detected offences such as speeding and the congestion charge. This suggests that we would expect to find most false reporting in and around London. A study should be mounted, based in London and making use of both police and TfL data, to examine both the extent of the problem, the role of the congestion charge as a driver and ways in which it could be reduced.

Implementation strategy

6.7 Any strategy focused only on new cars will take time to bite because:

- (a) cars less than one year old make up just 4% of number plate thefts
- (b) many offenders are not concerned with creating perfect clones, and will turn to older vehicles for their number plates, and
- (c) this 'slow-time' strategy allows a culture of number plate theft to continue and encourages offenders to look for ways to adapt to the new measures.

6.8 These were the lessons from the introduction of steering columns into new vehicles in the UK⁷. Thieves turned their attention to older cars and it was not until seven years later, when 80% of the vehicle parc comprised cars fitted with such locks, that any impact on theft nationally could be seen. Moreover, the impact was not as large or as sustained as in Germany where all cars were fitted with steering column locks within a very short space of time.

6.9 Thought should be given, therefore, to how maximum protection can be given to 80% of the vehicle parc quickly. Requiring all vehicles to display tamper proof plates as an MOT requirement would be expensive and probably require legislation, but there may be other ways in which the process can be speeded up. These include, for example

- (a) requiring all traders to use tamper proof plates. Many traders replace number plates on used vehicles with ones that include their logo.
- (b) only issuing tamper proof replacement plates over the counter
- (c) fitting tamper proof plates at first MOT

Monitoring

6.10 Monitoring the problem of number plate theft should focus on police records rather than the BCS. The BCS only captures small numbers, which

⁷ Webb, B. (1994), 'Steering column locks and motor vehicle theft: evaluations from three countries', in Clarke, R.V.G. (ed), *Crime Prevention Studies*, Vol 2, pp71-91. New York: Willow Tree Press.

makes it hard to detect any statistically significant change in trend. Also, the BCS doesn't capture number plate thefts involving commercial vehicles and provides therefore only a partial picture of the problem.

6.11 There are signs that some police forces are introducing changes to the way such thefts are recorded, making their retrieval for analysis easier and more reliable. A regular trawl through records in selected forces or introducing a data stream from PNC would provide a means of keeping a finger on the pulse of this particular problem. The PNC data would need to be downloaded frequently as stolen number plates are retained on it only for six weeks. Since the production of the Car Theft Index is based on downloads from the PNC, perhaps number plate theft could be included in that analysis to provide an annual assessment of the scale of the problem.