Home Office

Reducing Mobile Phone Theft and Improving Security

September 2014

THE BEHAVIOURAL INSIGHTS TEAM

Contents

Executive Summary

Crime in England and Wales has fallen by more than 10 percent under the Coalition Government, and the independent Crime Survey for England and Wales shows crime at its lowest level since the survey started in 1981. While the overall trend is encouraging, the level of mobile phone theft remains a concern. There were around three quarters of a million victims of mobile phone theft in England and Wales in the year 2012/13. Almost 100,000 of these thefts took place in London alone. Mobile phones are increasingly valuable, due not just to the growing sophistication of their technology, but also to the personal and financial data stored on them. Some estimates put the value of data held on typical smartphones at more than the value of the phone itself.[1]

Following analysis of results from the Crime Survey for England and Wales, and by examining hundreds of thousands of data points detailing mobile phone thefts in London (for the period of 1 August 2012 to 5 January 2014 – the latest data available to us), we have produced the most detailed evidence yet on how and when mobile phones are stolen, and who is most at risk. We recognise that the picture may well have changed following the widespread introduction of device-based solutions since September 2013, but the analysis here represents the most up to date picture available to us. We intend to produce a further analysis next year.

The data showed that victims of mobile phone theft are likely to have had their phones stolen directly from their person (e.g. through pickpocketing) or when the handset was momentarily left unattended (e.g. from a table in a bar). The data also showed that certain groups of people are especially vulnerable: 14-24 year olds, and particularly women, are more likely than any other group to be the victim of mobile phone theft.

The richness of the London dataset provided by the Metropolitan Police also enables us to see which types of phone were most likely to be stolen. In the period between 1 August 2012 and 5 January 2014, over 50% of all phones stolen in London were Apple iPhones. The next largest percentage of mobile phones stolen were made by BlackBerry, followed by Samsung. The likelihood of a phone being targeted by thieves is driven by a number of factors, from the overall desirability of the phone itself, to the ease of access to valuable personal data stored on it, to the perceived risk of being tracked once the phone has been stolen.

Many of these phones will not have been deliberately targeted. Some mobile phones are stolen, for example, from a home during the course of a burglary together with other valuables. We have constructed the first ever Mobile Phone Theft Ratio to control for this. This ratio is derived by dividing the share of thefts of a given model that were plausibly targeted (e.g. a phone that has been snatched) by the share of thefts of a given model that was unlikely to have been targeted (e.g. a phone stolen as part of a burglary). The Theft Ratio is based on the data for August 2012 to January 2014 and shows how likely the top makes of handsets were to be deliberately targeted.

[1] Research conducted by Lifestyle Group: http://www.lifestylegroup.co.uk/content/Data-stored-on-a-phone-more-precious-than-the-phone-itself.html

Both types of data – on which phones were more likely to be stolen and in which situations people are most likely to be vulnerable to phone theft – can help to inform the public, and so play a part in the wider programme of work being conducted by the police to tackle mobile phone theft.

It is important to recognise that mobile phone operators and manufacturers have already been taking steps to help reduce mobile phone theft. One way in which this is being done is through the development of increasingly sophisticated security features on phones (such as those that trace the location of a stolen handset and can remotely block its further use without authentication).

Recent examples of manufacturers embedding security as a major product feature include the introduction of Samsung's anti-theft features during 2013, Apple's latest operating system, iOS7 and BlackBerry offers BlackBerry Protect security features for its devices. Our analysis of the London data shows a reduction in thefts of iPhones following the introduction of iOS7, a finding corroborated by Metropolitan Police intelligence which indicates a corresponding reduction in the black market value of iPhones (likely to be a result of a rise in the perceived risk of stealing or handling a stolen phone). Any security features introduced by mobile phone manufacturers after January 2014 will not have been picked up in the data.

We hope that this paper will lead the mobile phone industry to continue to help consumers use their products even more safely, and to make the existing security features more obvious and simpler to use for consumers. "Designing out" theft in this way will make their products and services easy for consumers to keep secure and hard for thieves to reuse and resell.

We also hope that the information in this paper will help consumers know how to keep their phones safe, and to make informed decisions when purchasing phones. The simple steps that mobile phone owners, and particularly those in more vulnerable groups, should take to reduce their risk of becoming a victim of phone theft include:

- when choosing a new phone, ask about the security features of the models you are selecting, and make use of these features when you have them on your phone;
- register your mobile device for free on Immobilise.com. This helps the police to identify you as the owner if it is recovered and allows you to keep a record of your IMEI number, which you will need if your mobile is lost or stolen;
- never leave your mobile phone unattended in a public place (such as in an unattended handbag). Take particular care of your phone at bars, cafes, coffee-shops, restaurants and music venues - thieves target these settings;
- consider handsets / apps that allow you to wipe personal data if your device is stolen. If you are unsure which 'app' to install seek advice from the manufacturer of your smartphone; and
- if your phone is stolen, report it to your network immediately and report it to the police, telling them if you have a tracker app. installed. Ensure you have the IMEI number available for the police. Your network will provide this free of charge.

Dramatic crime reductions have been achieved in areas such as car theft through the combination of better informed consumers and the inventiveness of manufacturers responding to such consumers. We believe that a similar approach can now succeed for mobile phone theft. Mobile phones are an increasingly essential and valuable aspect of modern life, not just as phones but as wallets and repositories of personal information.

This report represents a first analysis from the available data, and we look forward to conducting further analyses over time, which will serve to strengthen the information available to consumers, to help them to make informed decisions.

Introduction

Crime is falling across England and Wales – the latest figures published[2] by the Office for National Statistics show that crime has fallen by 10 per cent under the Coalition Government and, according to the latest Crime Survey for England and Wales[3] (the "Crime Survey"), is down 62 per cent from its 1995 peak. The Coalition Government is committed to working with a wide range of partners, including the police, industry and the public to ensure this reduction continues.

Despite the positive overall position, there were 742,000 victims of mobile phone theft in England and Wales according to the 2012/13 Crime Survey for England and Wales[4], and in London alone, almost 100,000 mobile phones were reported stolen to the Metropolitan Police Service (MPS) during 2013.

This paper does not seek to provide a definitive view on mobile phone thefts in England and Wales. Rather, it sets out the available data on mobile phone theft, with Part I providing some context - chronicling the rise in mobile phone ownership, how mobile phones tend to be stolen, who is most at risk, and the impact of improved security.

Using more detailed data for the period from August 2012 to January 2014 from the MPS, Part II then shows how particular mobile phone brands are targeted by thieves across London, including the first use of a Mobile Phone Risk Ratio, which shows how some handsets were more likely to be targeted for theft during August 2012 to January 2014. Towards the end of this period, security improvements made by the mobile phone manufacturers to deter theft, for example the introduction of iOS7 by Apple and anti-theft features introduced by Samsung, started to have an impact. We will be able to do more to assess the impact of all such improvements in any future analysis.

Part III explores what action has already been taken by the police and the mobile phone industry to address mobile phone theft and what members of the public can do to protect their mobile phones from theft.

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[2] http://www.ons.gov.uk/ons/rel/crime-stats/crime-statistics/period-ending-december-2013/stb-crime-stats-dec-2013.html

[3] The Crime Survey is a face-to-face victimisation survey in which people resident in households in England and Wales are asked about their experiences of a range of crimes in the 12 months prior to the interview. Respondents to the survey are also asked about their attitudes towards different crime-related issues, such as the police and the criminal justice system and perceptions of crime and anti-social behaviour. The most recent report was for the year to March 2014. User Guide to Crime Statistics for England and Wales: http://www.ons.gov.uk/ons/guide-method/method-quality/specific/crime-statistics-methodology/index.html

[4] Updated figures, including those for 2013/14, will be made available by ONS in November in their 'Focus On Property Crime' publication.

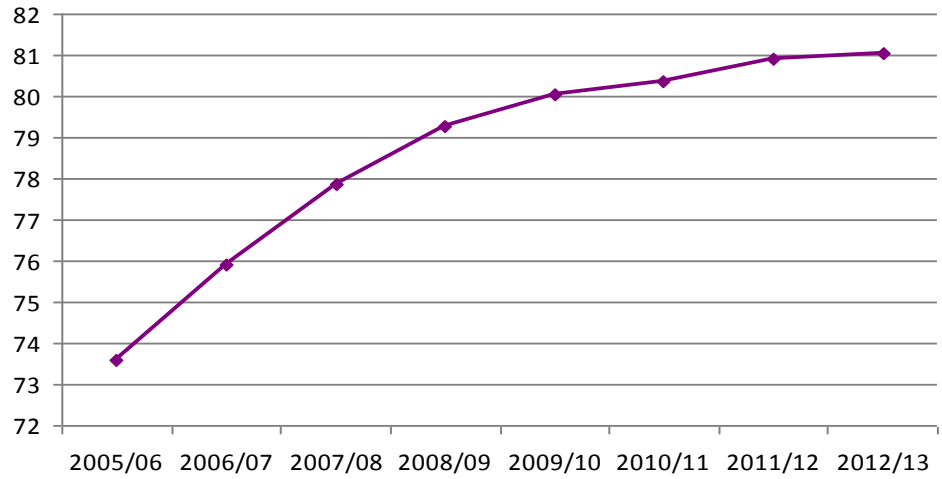
Part I: Mobile Phone Ownership and Theft

This section provides a high level overview of mobile phone ownership and thefts. We look at two levels of data to describe the problem: national information, taken from the Crime Survey; and London-specific data, taken from MPS crime reports between 1 August 2012 and 5 January 2014. Both data sets provide useful insight, and allow us to explore the nature of mobile phone theft in detail.

Mobile phone ownership

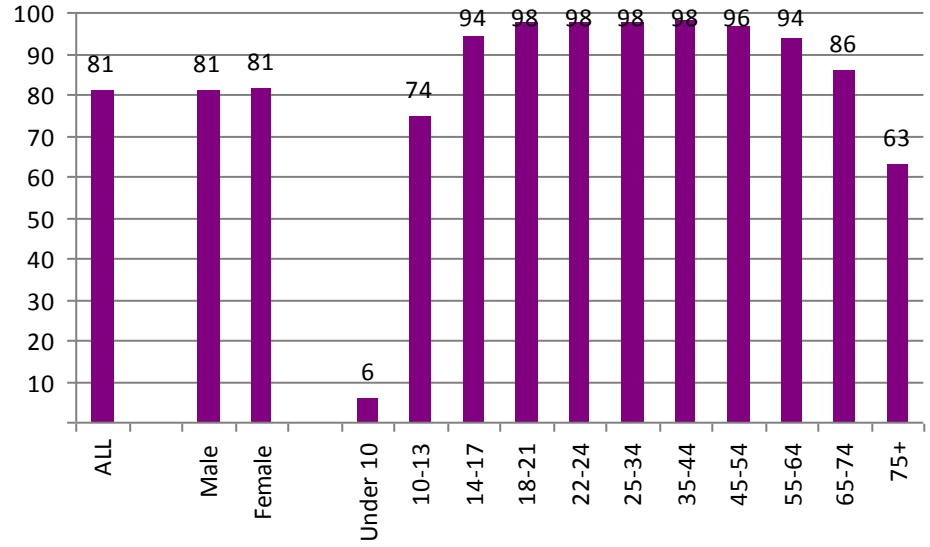
The Crime Survey tells us that mobile phone ownership has been rising steadily over the past decade. According to the 2005/06 Crime Survey, around 74 per cent of individuals across England and Wales owned a mobile phone - 39.3 million owners. By the time of the 2012/13 survey, ownership had risen to 81 per cent (45.5 million owners), as shown in Figure 1.1.

Figure 1.1: Proportion of individuals owning a mobile phone, 2005/06 to 2012/13 Crime Survey for England and Wales



As shown in Figure 1.2, there is no difference between the proportion of men and women owning mobile phones, but ownership does vary by age. Almost everyone between the ages of 14 and 64 now owns a mobile phone, with the proportion of mobile phone owners only dropping back below 90 per cent amongst individuals aged 65 and over.

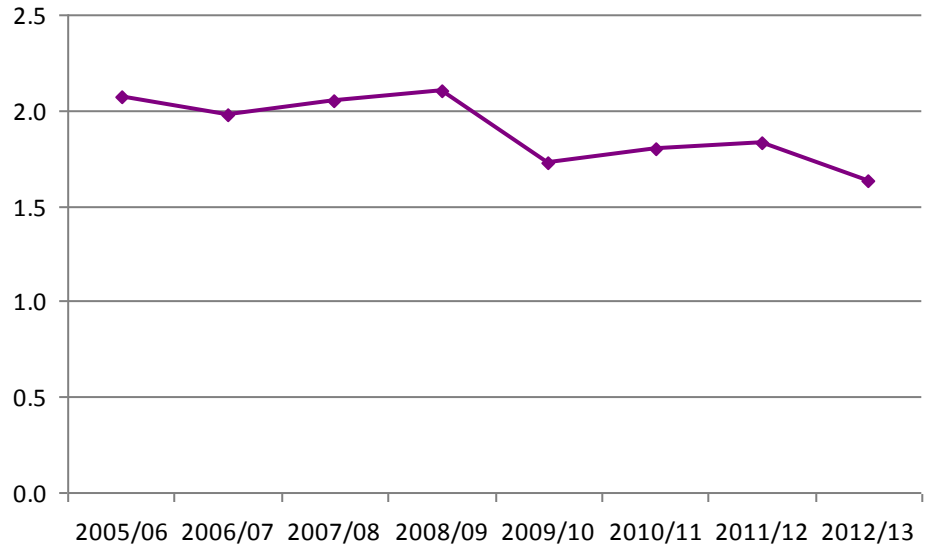
Figure 1.2: Proportion of individuals owning a mobile phone by gender and age, 2012/13 Crime Survey for England and Wales



Mobile phone theft

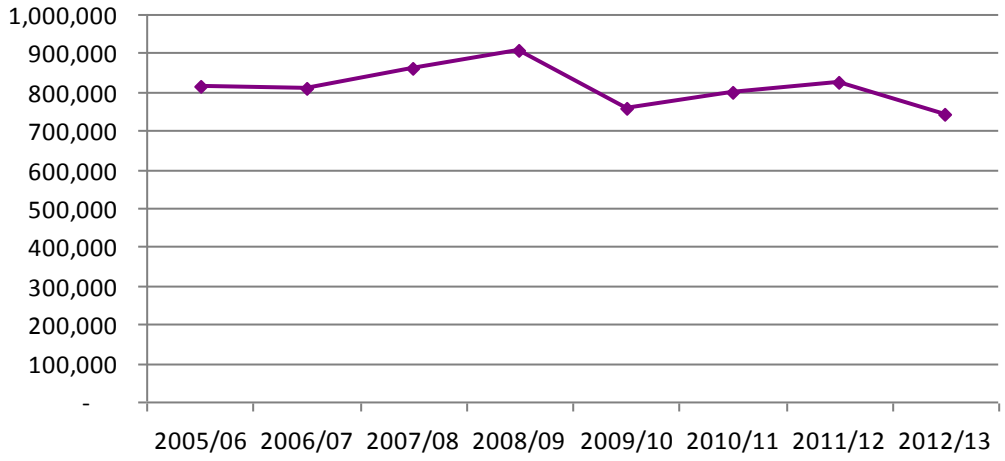
In England and Wales, the percentage of owners experiencing the theft of their mobile phone was relatively stable between 2005/06 and 2008/09, at around 2 per cent (Figure 1.3). Following a fall between 2008/09 and 2009/10, the rate has remained consistently below 2 per cent. This fall in the rate of theft is encouraging, although it is difficult to say definitively what has driven the reduction.

Figure 1.3: Percentage of individual mobile phone owners experiencing theft in the last year, 2005/06 to 2012/13 Crime Surveys



Although these percentages may seem low (less than 2 per cent of people experiencing theft), they amount to a large volume of crime committed, owing to the sheer number of mobile phones in the population. According to the 2012/13 Crime Survey, there were 742,000 victims of mobile phone theft in England and Wales (Figure 1.4).

Figure 1.4: Estimated number of victims of mobile phone theft, 2005/06 to 2012/13 Crime Survey for England and Wales



How mobile phones are stolen

The Crime Survey also enables us to understand how mobile phones are stolen as it captures the type of offences committed when mobile phones are stolen. As shown in Figure 1.5a, since 2001/02 the majority of mobile phone thefts have been in crimes against individuals (rather than in crimes against households, e.g. burglary). These offences include "theft from the person" (usually pick-pocketing or snatch theft) or "robbery" where the individual would have been present, or "other personal theft" which is usually where the handset was left unattended in a public place, such as on a pub table.

Figure 1.5a: Trend in the number of incidents involving mobile phone thefts by offence, 1993 to 2012/13 Crime Survey for England and Wales

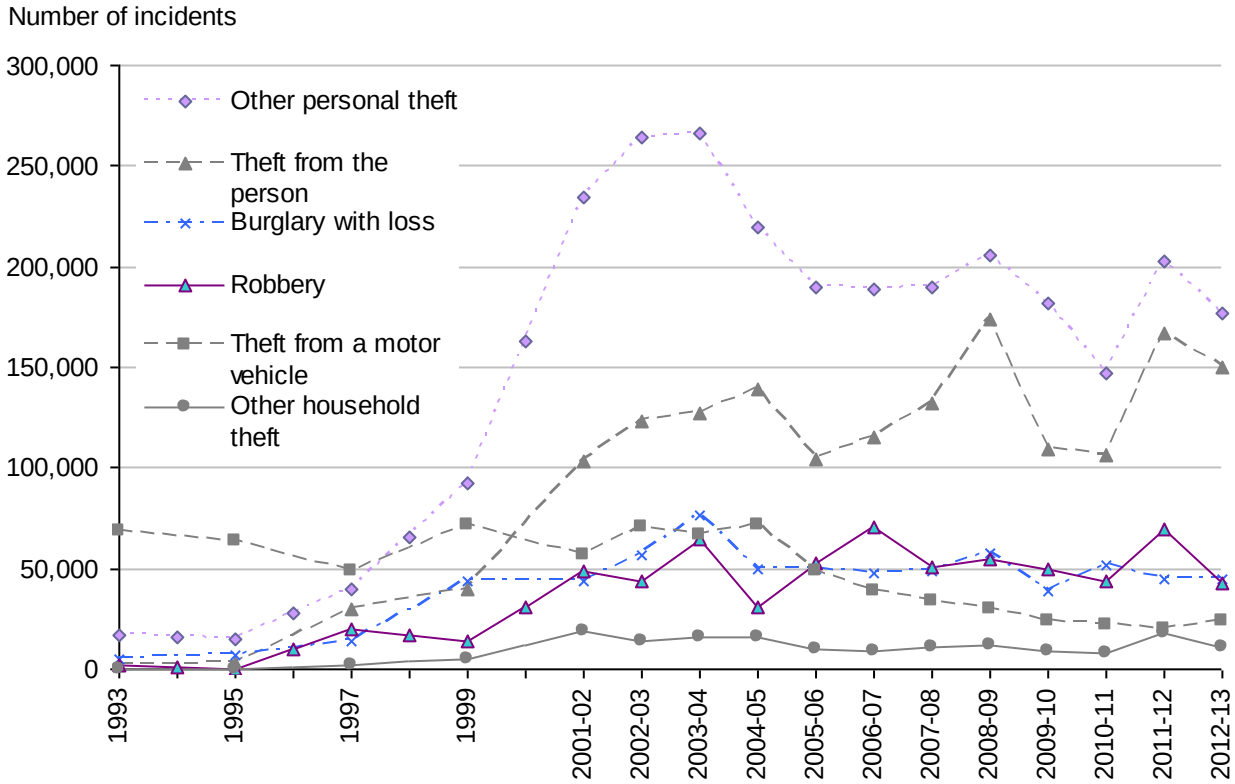
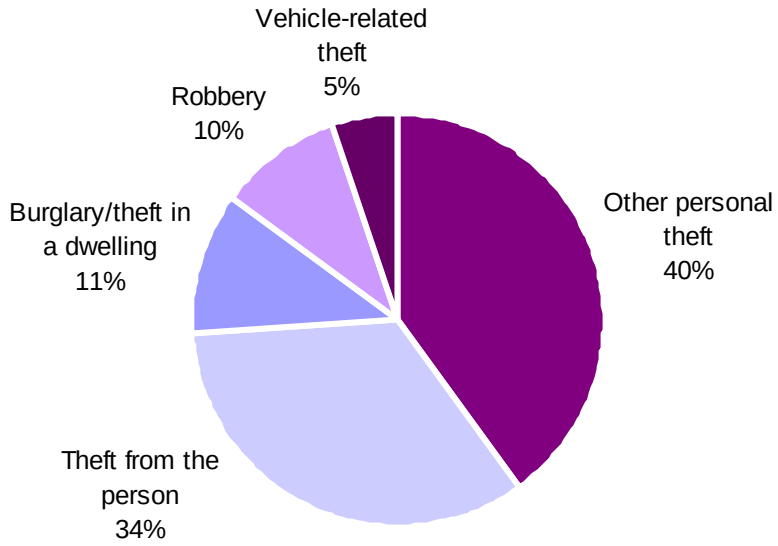


Figure 1.5b shows that, in 2012/13, around three quarters of all theft of mobile phones were classed as “theft from the person” or “other personal theft”.

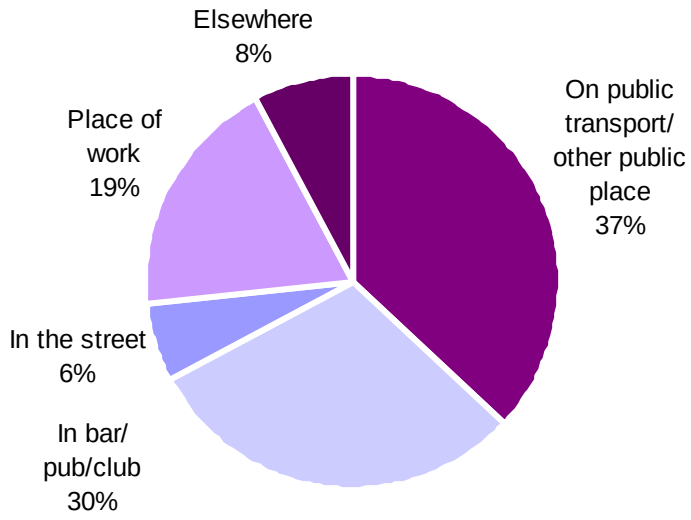
Figure 1.5b: The relative contribution of acquisitive crime types to mobile phone theft incidents, 2012/13 Crime Survey for England and Wales



Location of mobile phone thefts

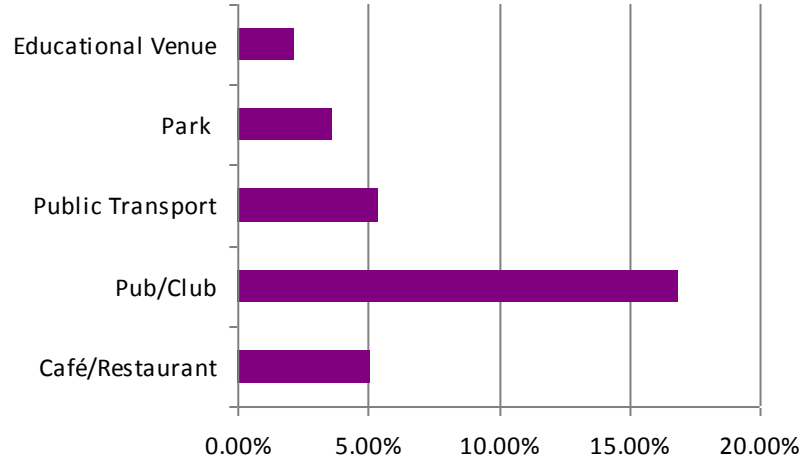
According to the 2012/13 Crime Survey, 37 per cent of “other personal theft” incidents involving theft of a mobile phone took place on public transport or in another public place, just under a third (30 per cent) took place in bars, pubs and clubs, while around a fifth (19 per cent) occurred in places of work (Figure 1.6).

Figure 1.6: Proportion of Other Personal Theft incidents involving mobile phone theft by location of incident, 2012/13 Crime Survey for England and Wales



The Crime Survey data enables us to understand the broad trends in mobile phone theft. The London-specific data is more detailed, and reflects differences between the capital and other parts of the country. As shown in Figure 1.7, the most commonly reported location for mobile phone thefts in London was pubs and nightclubs, followed by public transport and cafes/restaurants.

Figure 1.7: Percentage of London mobile phone thefts by location



When do mobile phones get stolen?

The Crime Survey data shows that there is not as great a distinction as we might suppose between day time and evening/night time when it comes to mobile phone thefts. Although 60 per cent of "theft from the person/robbery" incidents involving a mobile phone took place in the evening or at night, just under half of "other personal theft" incidents involving a mobile phone took place in the evening or at night (Figure 1.8).

Figure 1.8: Timing of when incidents of mobile phone theft occurred, 2012/13 Crime Survey for England and Wales

England and Wales	**Personal incidents, percentages**
	Theft from the person/robbery	**Other personal theft**
During the week	51	47
At the weekend[1]	49	53
Unweighted base	*96*	*116*
Morning/Afternoon[2]	**40**	**51**
Morning	10	17
Afternoon	28	31
Morning/afternoon (unsure which)	3	3
Evening/Night[3]	**60**	**49**
Evening	34	31
Night	26	17
Evening/night (unsure which)	0	1
Unweighted base	*97*	*117*

Source: Crime Survey for England and Wales, Office for National Statistics

1. Weekend is from Friday 6pm to Monday 6am.

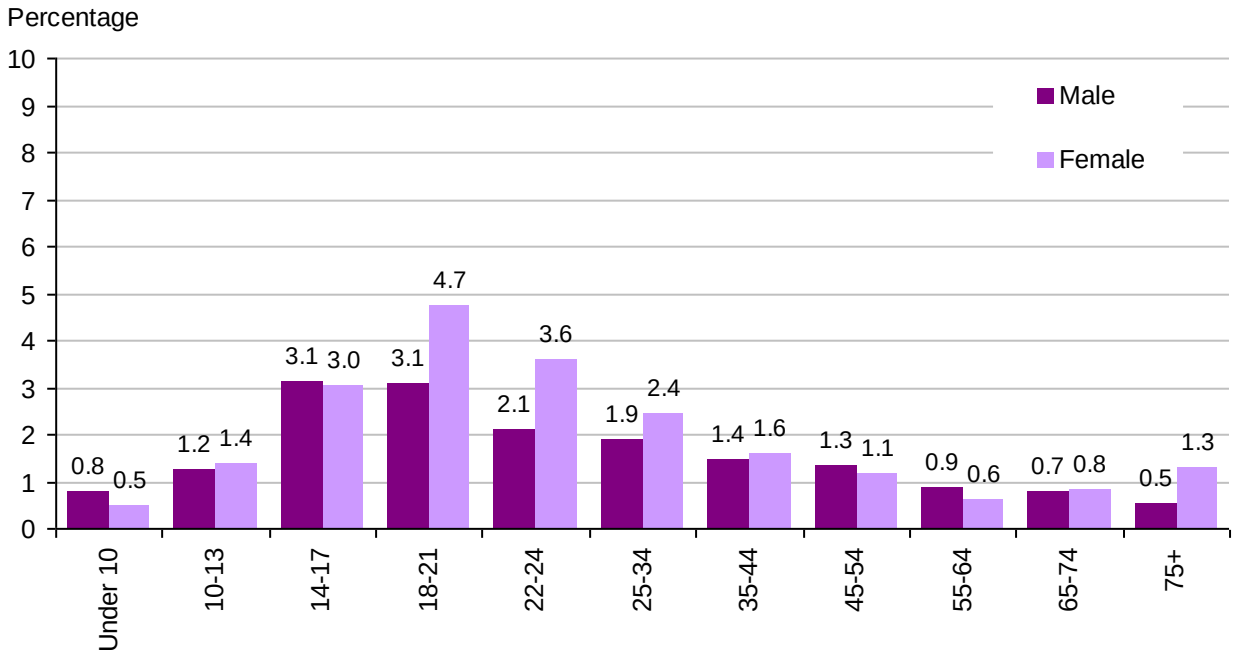
2. Morning is from 6am to noon; afternoon is from noon to 6pm.

3. Evening is from 6pm to midnight; night is midnight to 6am.

Who is most at risk?

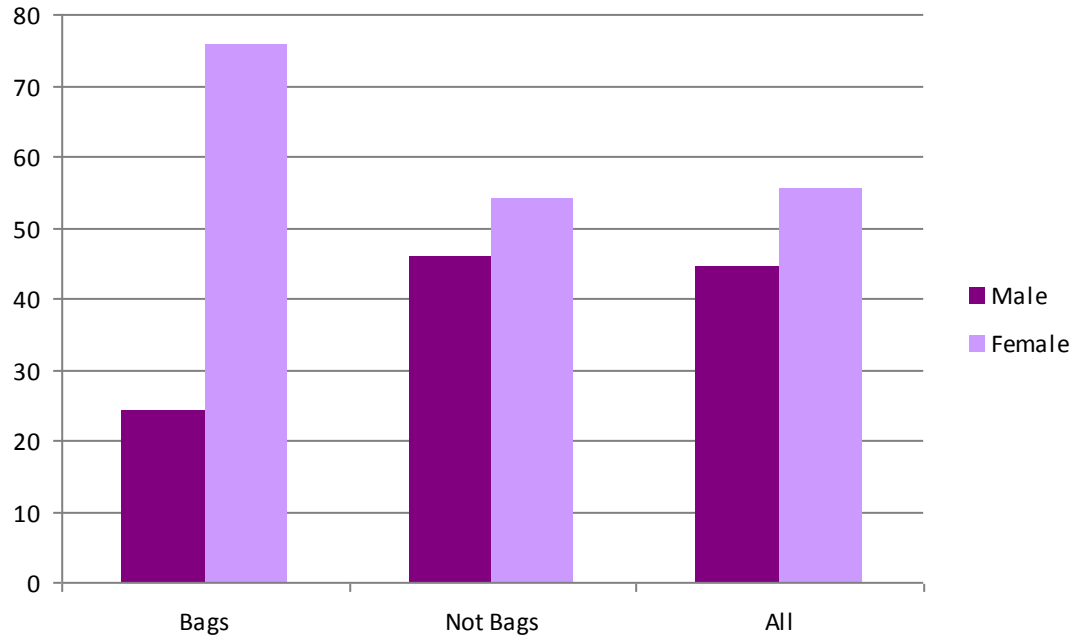
The Crime Survey data begins to give an insight into the variation in crime by demographic factors and suggests that 14-24 year olds, and particularly women, are most vulnerable to mobile phone theft (Figure 1.9).

Figure 1.9: Percentage of mobile phone owners who were victims of mobile phone theft in the last year by gender and age, 2012/13 Crime Survey for England and Wales



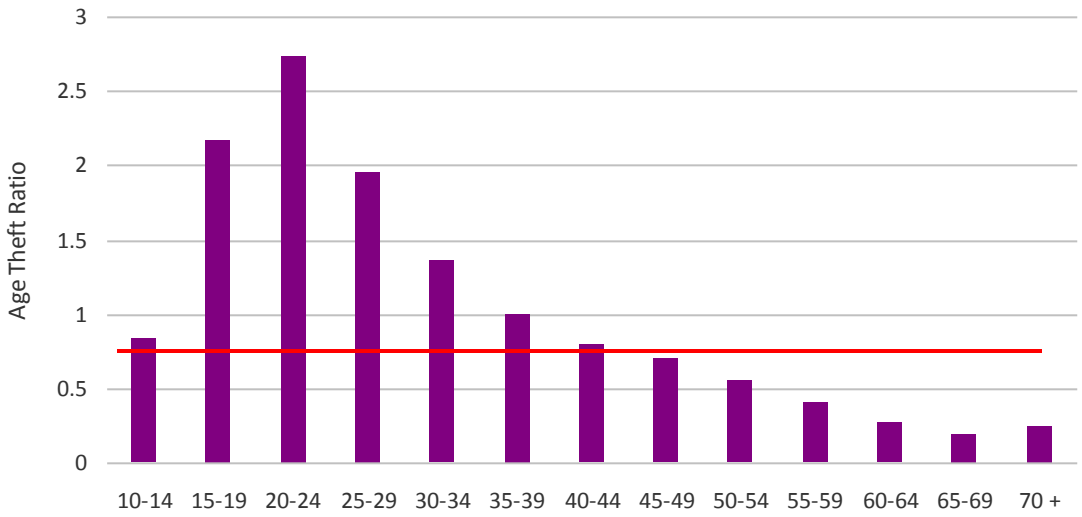
The London-specific data also show that women are more likely to be victims of mobile phone theft than men. In part, this is explained by the fact that a phone is more likely to go missing from a bag than a pocket, and women are more likely to carry their phones in a handbag. However, Figure 1.10 shows that women are still more likely to be victims of phone theft even when a phone is not stolen from a bag.

Figure 1.10: Proportion of mobile phone thefts by gender and whether they occur from a bag, London



The London-specific data also concur with national trends, showing that some age groups are disproportionately more likely to experience phone theft. Figure 1.11 sets out an 'age to theft' ratio, which shows the proportion of thefts for the age group relative to the number of residents in that age group in London. This shows that people in age groups with bars that extend above the orange line, which are those aged 15 to 39, are disproportionately more likely to be victims of phone theft than those below it (i.e. under 15s and those aged 40 and over).

Figure 1.11: The London Age Theft Ratio, MPS Crime Data, August 2012 – January 2014



Part II: Brands and Handsets

The data from the Crime Survey and London are revealing as they suggest that most phones were stolen in circumstances in which the offender could target a particular victim, and a particular phone. This picture has been confirmed through academic studies[5] that show – through interviews with mobile phone thieves – that certain mobile phones were targeted over others.[i]

This implies that it is important for consumers to understand not just the likely locations, timings, and types of mobile phone theft, but also the relative likelihood of particular types of mobile phones being targeted.

Which types and brands of phones are targeted?

Unsurprisingly, smartphones are at greater risk than older models. Not only are smartphones more desirable and valuable devices than mobile phones in the past have been, but they also provide access to more personal content, which can also be exploited or sold on. Research conducted in 2011 suggested that consumers valued the personal data on smart phones at an average of £760, not including apps and music which are largely recoverable. In the last three years, this value is likely to have increased greatly.[6]

The London-specific analysis[7] showed that some brands of phone were more likely to be stolen than others. There are several factors that are likely to affect this, from how desirable a phone is including its potential resale in second hand markets, to how easy it is to steal the personal data contained within it.

Analysis of hundreds of thousands of data points describing theft in London from 1 August 2012 to 5 January 2014 shows that over 50 per cent of all phones stolen were Apple iPhones (Figure 2.1). The brand with the next highest percentage of mobile phones stolen is BlackBerry, followed by Samsung.

Security improvements were introduced by manufacturers towards the end of the period of the data under consideration, such as iOS 7 for Apple iPhones in September 2013, and Samsung's introduction of Find My Mobile and the Reactivation Lock. Our analysis has, correspondingly, detected an improvement in the levels of theft of phones stolen, which we ascribe to the increased deterrent on criminal behaviour of the security improvements made. This is discussed in more detail below. Since the data period concludes in January 2014, the analysis does not take account of improvements in mobile phone security made since the start of 2014. These will be assessed in future analyses. Importantly, and for the first time, this approach enables us to determine empirically the effectiveness of security improvements by manufacturers.

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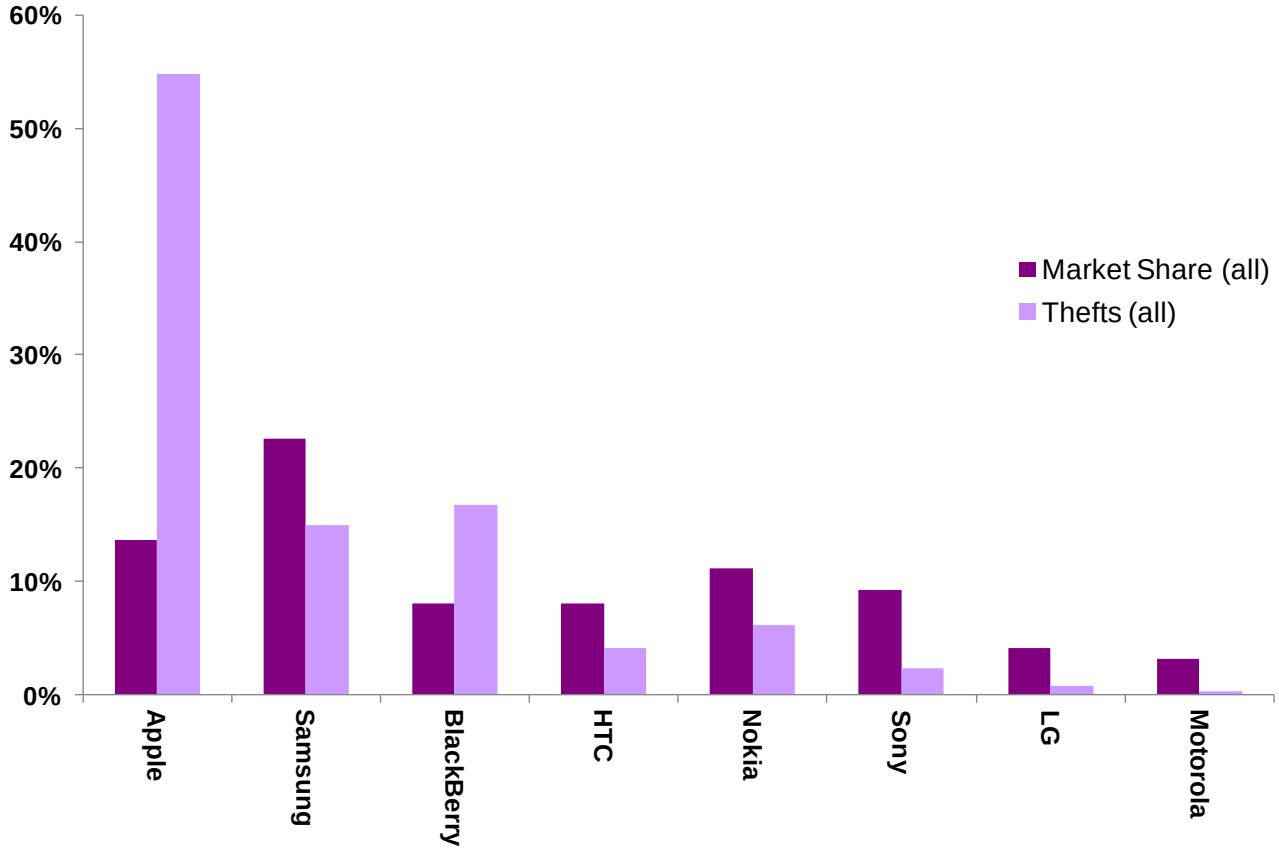
[5] Mailley, Jennifer. "The prevention of mobile phone theft: a case study of crime as pollution; rational choices and consumer demand." PhD diss., © JC Mailley, 2011

[6] Research conducted by Lifestyle Group: http://www.lifestylegroup.co.uk/content/Data-stored-on-a-phone-more-precious-than-the-phone-itself.html

[7] At this time, our research has been restricted to London. In future analyses we hope to include other parts of England and Wales.

Figure 2.1: Percentage of thefts by brand and relative market share, London



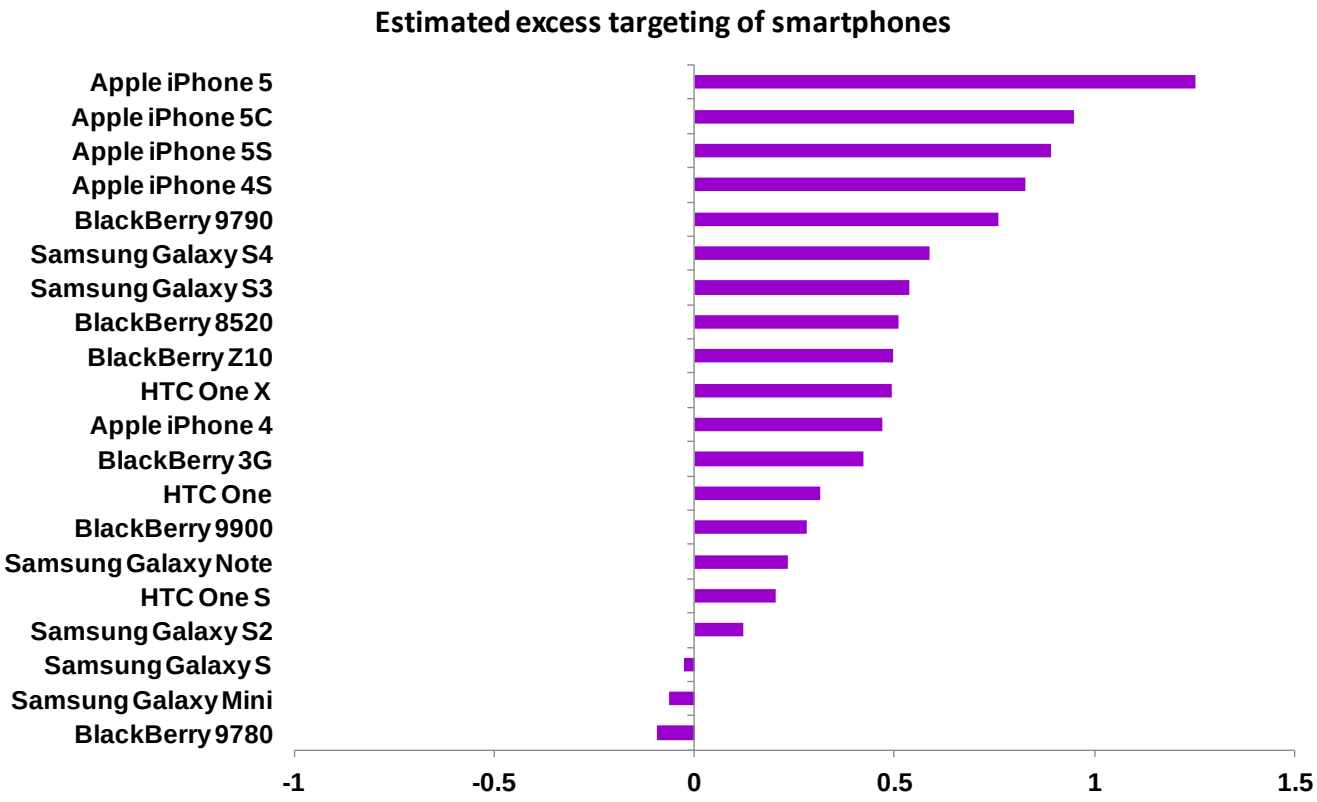
The Mobile phone theft ratio

As demonstrated by the data set out in Part I of this paper, not all stolen phones could plausibly have been targeted by the thief. Some mobile phones are stolen, for example, from a home during the course of a burglary together with other valuables.

In order to control for this, we have constructed the Mobile Phone Theft Ratio. This ratio is derived by dividing the share of thefts of a given model that were plausibly targeted (e.g. a phone that has been snatched) by the share of thefts of a given model that was unlikely to have been targeted (e.g. a phone stolen as part of a burglary).

Figure 2.2 sets out the Mobile Phone Theft Ratio. It shows how likely different phones are to be deliberately targeted, compared to the point '0' on the graph, which is the average likeliness for all phones. So a theft ratio of 1.2 means that a phone is 120% more likely to be stolen than if thefts were down to random chance. Here we can see that the Apple iPhone 5 is the most likely to be stolen by some distance based on the data from August 2012 to January 2014.

Figure 2.2: the Mobile Phone Theft Ratio: the Top 20 most likely phones to be targeted by thieves (August 2012 and January 2014)



There are potentially a wider range of factors than security changes that could make one model of mobile phone more targeted for theft than others e.g. its desirability, and whether groups more vulnerable to theft are more likely to own that model of phone. Further evidence would assist in drawing conclusions as to which factors play a part, to what extent, and why.

Improved mobile phone security features

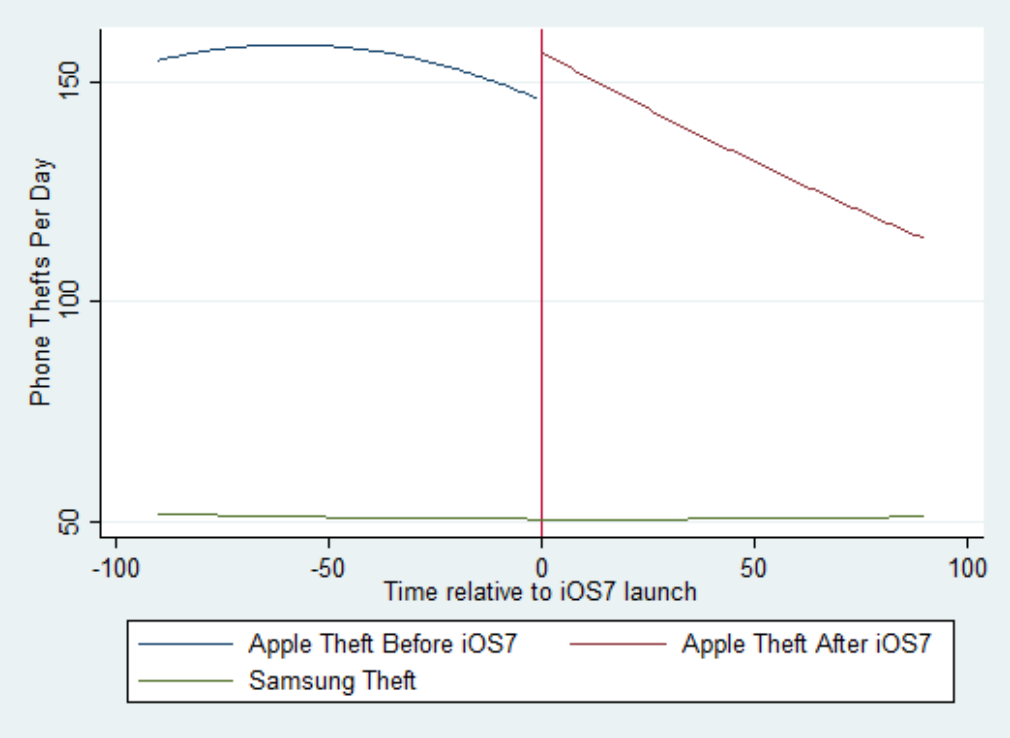
One of the most widely recognised recent examples of a manufacturer embedding security as a major product feature is Apple's latest operating system, iOS7. MPS intelligence indicates that iOS7 has affected the black market value of some stolen iPhones. Indeed, the London-specific analysis also detects some reduction in thefts which can be attributed to iOS7.

Figure 2.3 below shows the number of thefts per day of iPhones before and after the launch of iOS7, compared with the thefts of Samsung phones over the same period.

At the point of iOS7's launch (which coincided with the launch of the iPhone 5C and 5S), we see an increase in theft rates, which is consistent with the launch of most new handsets. However, we then see a beyond-trend fall in the rate of iPhone thefts of between 3 and 15 iPhones per day by the end of the data-collection period (a statistically significant difference at the 95 per cent confidence level). In any future analysis we would want to see whether this trend has continued since January 2014 as the full impact of the security improvements become common knowledge.

Other manufacturers have also introduced security features, such as Samsung's Find My Mobile and the Reactivation Lock. It would be interesting for a future analysis to see what impact this and other products introduced by other manufacturers has had on levels of theft.

Figure 2.3: Thefts per day of iPhones before and after the introduction of iOS7, London



At a national level, both targeted law enforcement action and more recent manufacturing innovation have coincided with the fall in the number of police-recorded 'theft from the person' incidents in the year ending December 2013 compared to the previous year[8]. This is in contrast to rises in theft for each of the two previous years. It is difficult to say definitively what has driven this recent fall, but we hope to see the downward trend continue as more mobile phone users make use of the enhanced security and protection available.

[8] http://www.ons.gov.uk/ons/rel/crime-stats/crime-statistics/period-ending-december-2013/stb-crime-stats-dec-2013.html

Part III: Theft Prevention

In general, thieves will be more likely to steal a mobile phone if they think they can then sell it on, or derive some other kind of benefit from it (e.g. using it themselves).

It is very difficult to make phones harder to steal without compromising their basic design benefits, i.e. being relatively small and portable. Therefore, making mobile phones less attractive to thieves is primarily a matter of making them harder to use or sell on after they have been stolen.

Action already undertaken by the police and industry

Much is already being done by the police, network operators, and mobile phone manufacturers to make phone theft less attractive to criminals.

In response to the growth of mobile phone crime in London, the MPS launched Operation Ringtone in February 2013 in partnership with the National Mobile Phone Crime Unit. Operation Ringtone involves targeting theft hotspots in London with increased patrols, sharing intelligence on mobile phone crime gangs with other forces across the UK and Europe, and working with recyclers and second hand sellers to identify stolen handsets.

Industry innovation has already played an important role in responding to this challenge. For example, a UK network operator will block a handset from operating across its network within 24 hours of the owner reporting the phone stolen. Furthermore, that operator will work with other UK network providers to ensure that the stolen handset is blocked from operating across all UK networks within 48 hours.

In addition, manufacturers are providing customers with a growing range of security features to protect their smartphones, including the ability to:

- protect the handset using secure login features;
- trace the location of a stolen handset;
- wipe data from a stolen handset remotely;
- lock the handset remotely using another internet enabled handset; and
- ensure that handset functionality remains completely locked until a separate password or account ID is used to unlock the handset, therefore preventing thieves from by-passing security features by simply resetting the handset to its factory setting.

Actions that consumers can take to protect their phones

In addition to the work of the police and the security functions introduced by industry, there are simple steps that mobile phone owners can take to reduce their risk of becoming a victim of mobile phone theft. We set out below the top actions to deter theft, as recommended by the Metropolitan Police.

- Register your mobile device for free at Immobilise.com. This helps the police to identify you as the owner if it is recovered and allows you to keep a record of your IMEI number, which you will need if your mobile is lost or stolen.
- Use PIN locks to protect your data and prevent the phone from being used if stolen. Try to ensure these are not easily guessed, such as 1234.
- When not in use, never leave your phone unattended in a public place (such as in an unattended handbag). Take particular care of your phone at bars, cafes, coffee-shops, restaurants and music venues - thieves tend to target these settings.
- Install a tracker/security app. It could help trace your device and allow you to wipe personal data if your device is stolen. If you are unsure which app to install, seek advice from the manufacturer of your smartphone.
- If your phone is stolen, report it to your network immediately and report it to the police, telling them if you have a tracker app installed. Ensure you have the IMEI number available for the police. Your network will provide this free of charge.

Part IV: Conclusion

The last twenty years have shown that crime can be dramatically reduced, and citizens protected, when products and services are designed to make crime harder to commit. For example, better vehicle security has contributed to the significant fall in vehicle crime since the mid-1990s[9]. Better informed consumers catalyse this process, sharpening the commercial incentives for improved security. Informing consumers about the relative theft risks associated with different mobile phones (and indeed other products), is a living example of the Coalition Government's commitment to 'support people to make better choices for themselves'. Of course, there are other mobile phone theft-related issues that consumers might also wish to be informed about, such as whether some networks are faster and better at shutting down stolen phones or protecting consumers from resulting costs, such as calls made from a stolen phone. We look forward to future analyses to incorporate such issues.

This paper shows that security improvements made by the mobile phone industry have had an impact, and we hope the industry continues to use its inventiveness and skill to make their products ever more secure. Mobiles are no longer just phones: they are becoming our wallets and gateways to many services. This is why it is ever more important that consumers are well-informed about the risks they face, and how best to keep themselves and their phones safe.

[9] http://www.ons.gov.uk/ons/rel/crime-stats/crime-statistics/focus-on-property-crime--2011-12/index.html

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