



Home Office

Reducing Mobile Phone Theft and Improving Security

Paper 2

March 2016

THE
BEHAVIOURAL
INSIGHTS TEAM ◆

Contents

Introduction	1
Executive Summary	2
Part I: Mobile Phone Ownership and Theft	3
Mobile phone ownership	3
The scale of mobile phone theft	4
How mobile phones are stolen	6
Location of mobile phone thefts	8
When mobile phones are stolen	8
Who is most at risk?	9
Part II: Brands and Handsets	12
Which types and brands of phones are targeted?	12
The Mobile Phone Theft Ratio	13
Part III: Theft prevention	16
Part IV: Conclusion	19
Technical Annex	20
The Crime Survey for England and Wales	20
The Metropolitan Police data	20
The Mobile Phone Theft Ratio	20

Introduction

In September 2014 the Home Office and the Behavioural Insights Team published the joint paper: *Reducing Mobile Phone Theft and Improving Security*¹. That paper used data from Crime Surveys (Crime Survey for England and Wales) conducted between 2005/06 and 2012/13, together with data from the Metropolitan Police about the theft of mobile phones in London between August 2012 and January 2014, to set out a detailed picture of how and when mobile phones are stolen and the types of phone most likely to be stolen. It also included the first Mobile Phone Theft Ratio.

When we published that material, we were conscious that the picture it presented might well have changed following the widespread introduction of device based solutions by manufacturers from September 2013 onwards. They were introduced to help reduce mobile phone theft.

This paper provides an updated picture of mobile phone theft, including an updated Mobile Phone Theft Ratio, to provide a more contemporary picture capturing the impact that the security features introduced by manufacturers have had on levels of theft.

Our findings show:

- there has been a fall in levels of mobile phone theft since the introduction of device based solutions such as Apple iOS7 and Samsung Reactivation Lock;
- there has been a fall in the proportion of mobile phone thefts across all age groups and genders, except for 22-24 year old males;
- 18-21 year old females remain the most vulnerable to mobile phone theft; and
- methods such as pick-pocketing and snatch theft, followed by theft of unattended items such as leaving a mobile phone on a bar or restaurant table, are the most common methods used by criminals.

¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/390901/HO_Mobile_theft_paper_Dec_14_WEB.PDF

Executive Summary

Police reform is working and crime has fallen by more than a quarter since 2010, according to the independent Crime Survey for England and Wales. People, communities and property across the country are safer as a result.

Despite the positive overall position, according to the 2014/15 Crime Survey there were 538,000 victims of mobile phone theft. While this represents a considerable fall compared to the previous Crime Survey, these statistics suggest that mobile phone theft remains an issue that we should all continue to take seriously.

In this paper, we present national data taken from the Crime Surveys conducted between 2005/06 and 2014/15 and analysis (based on Metropolitan Police data) by the Behavioural Insights Team about the theft of mobile phones during 2015. Part I provides an updated overview of mobile phone ownership and theft. Part II shows how particular brands and handsets were targeted by thieves during 2015 and includes the updated Mobile Phone Theft Ratio. Part III augments the messages set out in the September 2014 paper about the important role played by industry in providing technical solutions to prevent mobile phone theft.

Part I: Mobile Phone Ownership and Theft

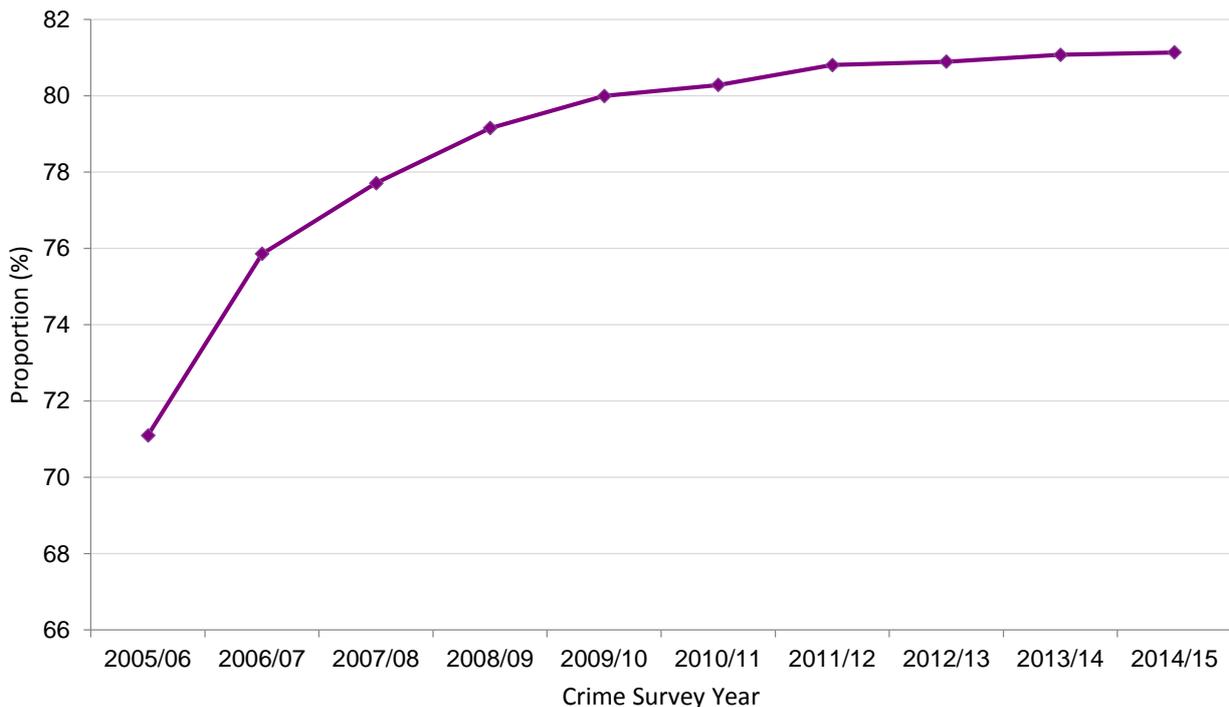
Summary: The largest fall in mobile phone thefts in recent years occurred between the 2013/14 and 2014/15 Crime Surveys. While it is not possible to say for certain, it seems likely that improvements to mobile phone security introduced by manufacturers during this period played a significant part in the reduction.

In this part of the paper, we update the picture of mobile phone ownership and theft that we provided in September 2014. It is based on national data from the Crime Surveys conducted between 2005/06 and 2014/15 and Metropolitan Police data about the theft of mobile phones during the 2015 calendar year. The Metropolitan Police data does not include the City of London Police area or crimes reported to the British Transport Police. Further information about these data sources is set out in the Technical Annex to this paper.

Mobile phone ownership

Mobile phone ownership has been rising steadily over the past decade. According to the 2005/06 Crime Survey, which was the first Crime Survey to include a question on mobile phone ownership, around 71 per cent of individuals across England and Wales owned a mobile phone. By the 2011/12 Crime Survey ownership had risen to 81 per cent (44.5 million owners) and has remained at this level since.

Figure 1.1: Proportion of individuals owning a mobile phone, 2005/06 to 2014/15 Crime Surveys for England and Wales

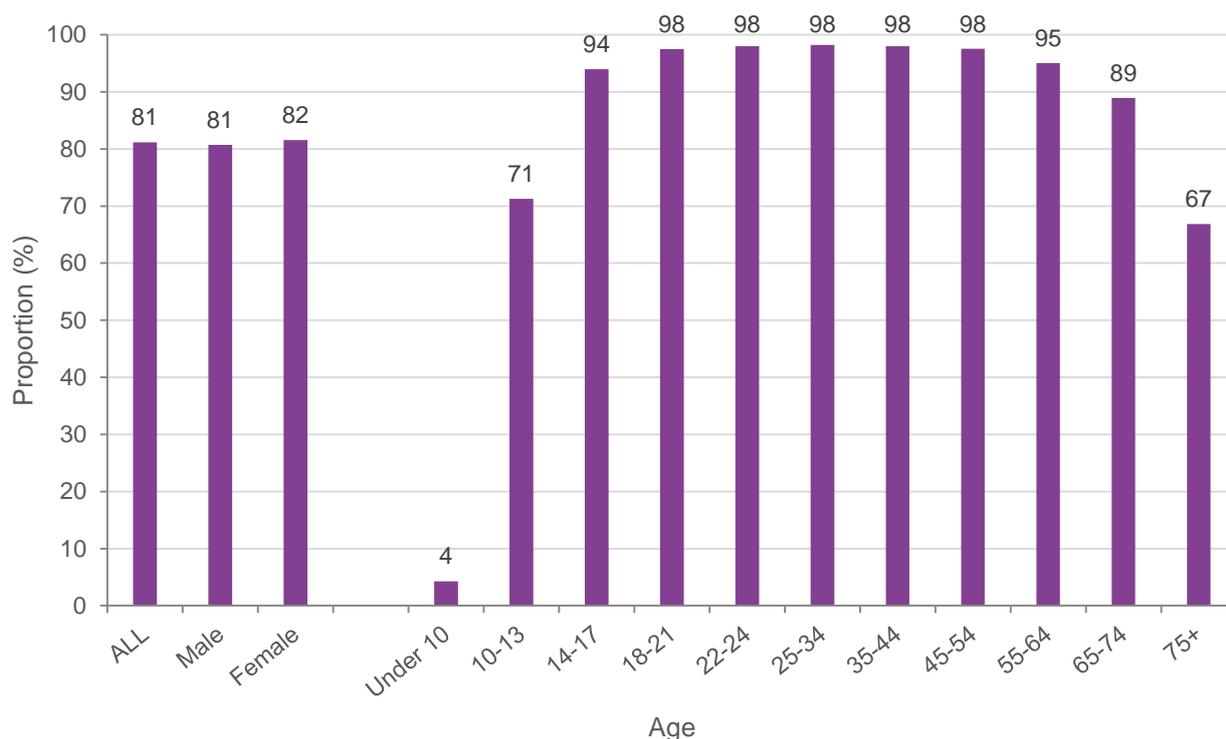


Reducing Mobile Phone Theft and Improving Security

There is only a small difference between the proportion of males and females owning mobile phones (81 per cent of males and 82 per cent of females), but ownership does vary by age: almost everyone (94 per cent or over) between the ages of 14 and 64 now owns a mobile phone, with the proportion of mobile phone owners dropping below 90 per cent amongst individuals aged 65 and over.

At the other end of the age range, the proportion of under 10s owning a mobile phone is now 4 per cent, down from the 6 per cent reported in the September 2014 paper. There has also been a fall in the proportion of 10-13 year olds owning a mobile phone, this figure is now 71 per cent, down from the 74 per cent reported in the September 2014 paper.

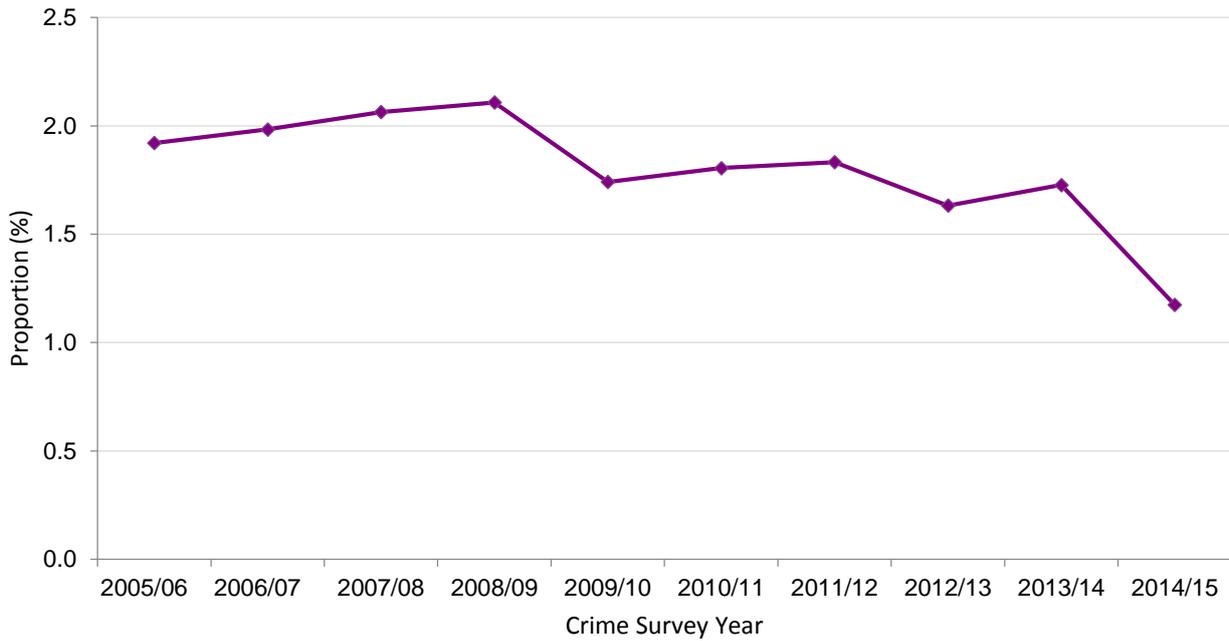
Figure 1.2: Proportion of individuals owning a mobile phone by gender and age, 2014/15 Crime Survey for England and Wales



The scale of mobile phone theft

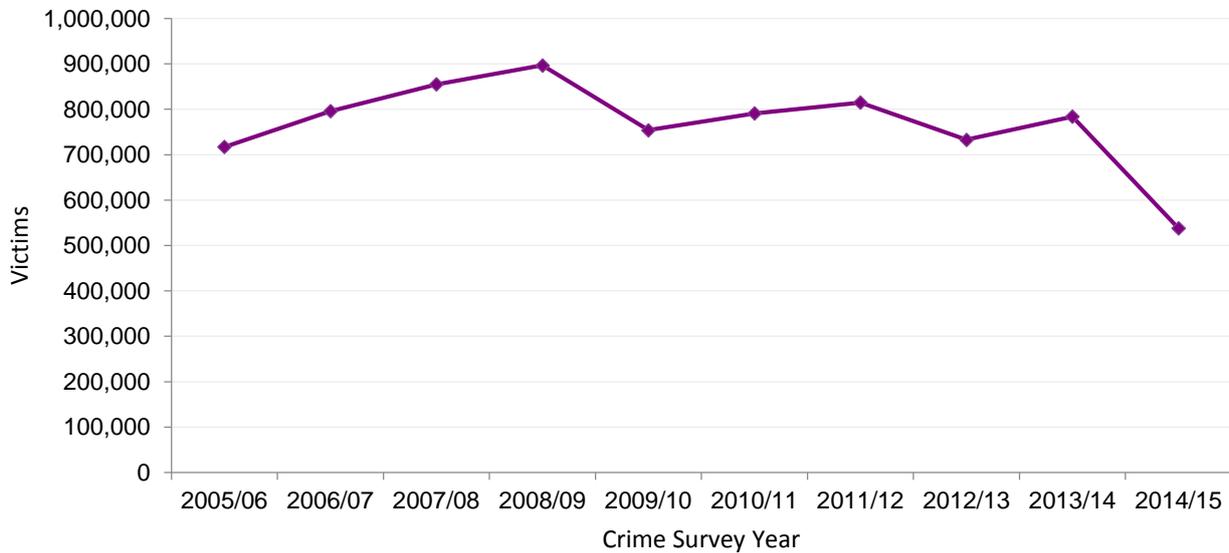
In England and Wales, the proportion of owners experiencing the theft of their mobile phone was relatively stable between the 2005/06 and 2008/09 Crime Surveys, at around 2 per cent. Since then the rate has remained consistently below 2 per cent. The largest fall in the proportion of people experiencing mobile phone theft occurred between the 2013/14 and 2014/15 Crime Surveys, when the rate fell from 1.7 per cent to 1.2 per cent.

Figure 1.3: Proportion of individual mobile phone owners experiencing theft, 2005/06 to 2014/15 Crime Surveys for England and Wales



The proportion of owners experiencing the theft of their mobile phone is low, although this does equate to 538,000 victims according to the most recent Crime Survey.

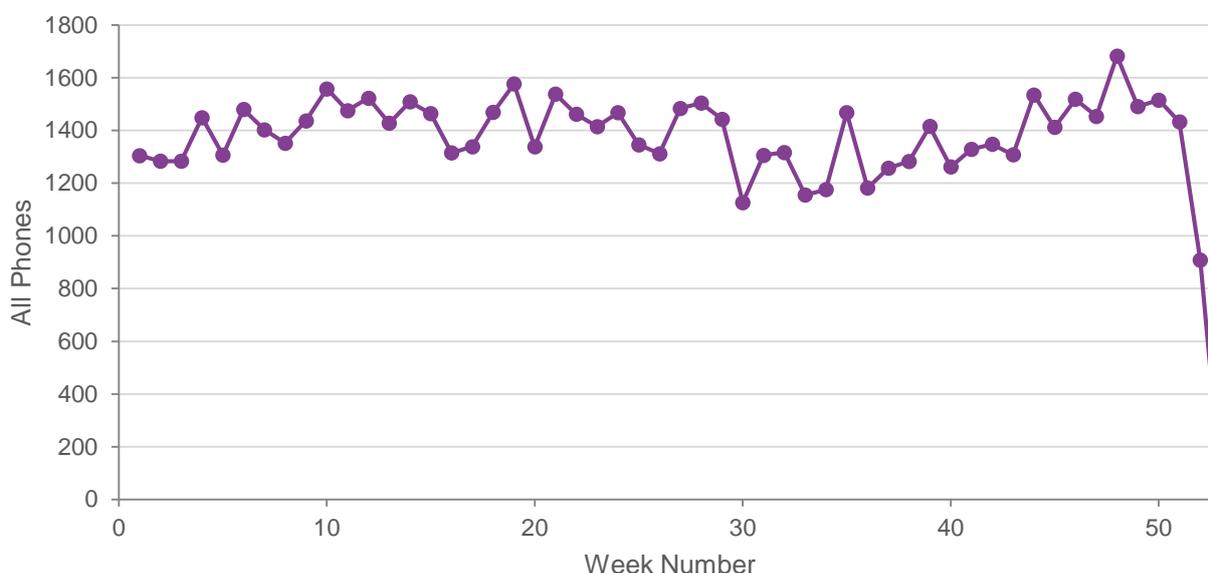
Figure 1.4: Estimated number of victims of mobile phone theft, 2005/06 to 2014/15 Crime Surveys for England and Wales



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The Behavioural Insight Team's analysis shows that the level of mobile phone theft per week varied during 2015.

Figure 1.5: Weekly theft of mobile phones during 2015, Behavioural Insights Team



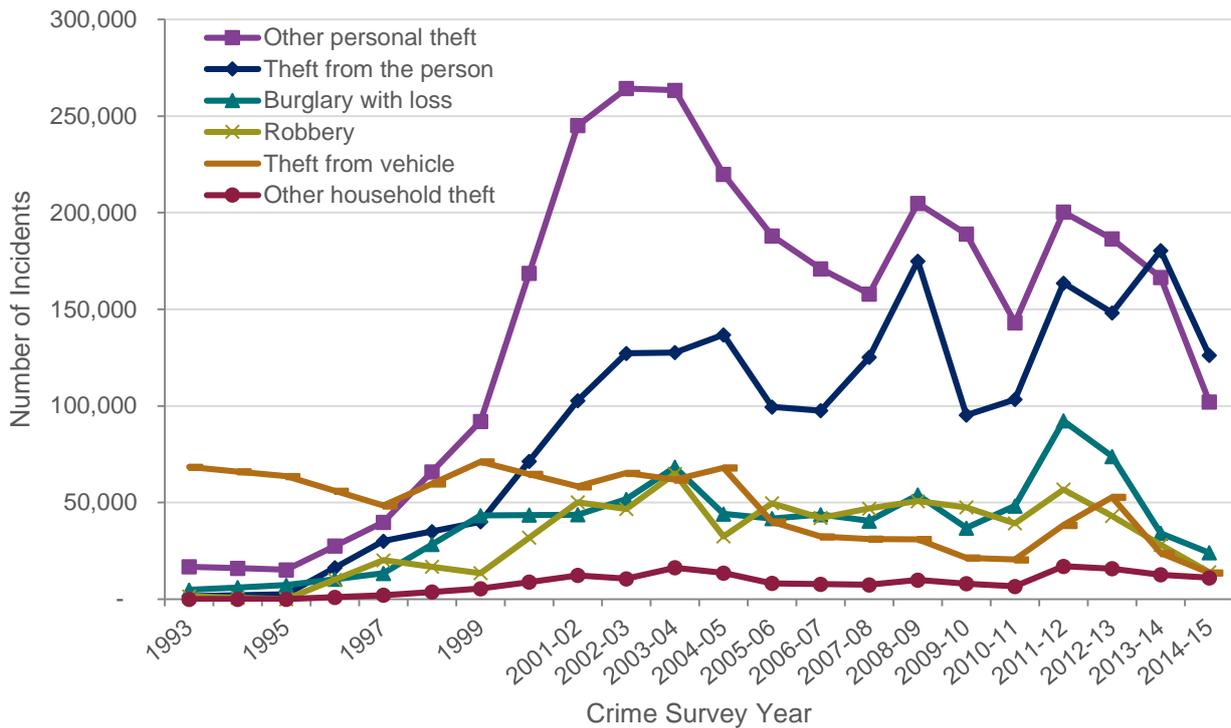
The last week of the year appears to have a large dip in thefts. This is partially as this week contains Christmas Day, which has a very low level of thefts, and because the data are incomplete at the time of being accessed because many thefts are reported after they occur, and we count a theft occurring at the time that the victim believes it was stolen.

How mobile phones are stolen

The Crime Survey shows that the most common methods for stealing mobile phones have been *Theft from the person*, usually pick-pocketing or snatch theft. This is followed by *Other personal theft*, which includes theft of unattended items, for example when a mobile phone is left unattended on a bar or restaurant table.

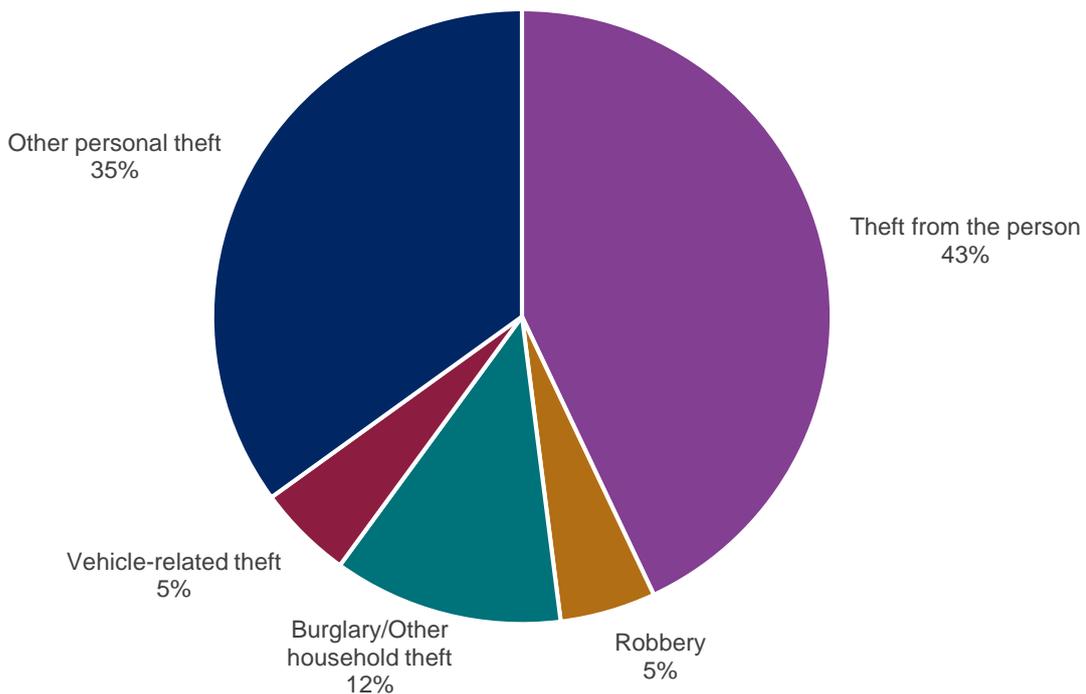
With the number of mobile phone thefts falling, it is not surprising that incidents involving *Theft from the person* and *Other personal theft* have decreased the most. There have, however, been reductions across all offence types which involve mobile phone theft.

Figure 1.6: Trend in the number of incidents involving mobile phone thefts by offence, 1993 to 2014/15 Crime Surveys for England and Wales



While three quarters of all mobile phone thefts involve *Theft from the person* or *Other personal theft*, Vehicle-related mobile phone thefts and Robbery nevertheless each account for around 14,000 incidents.

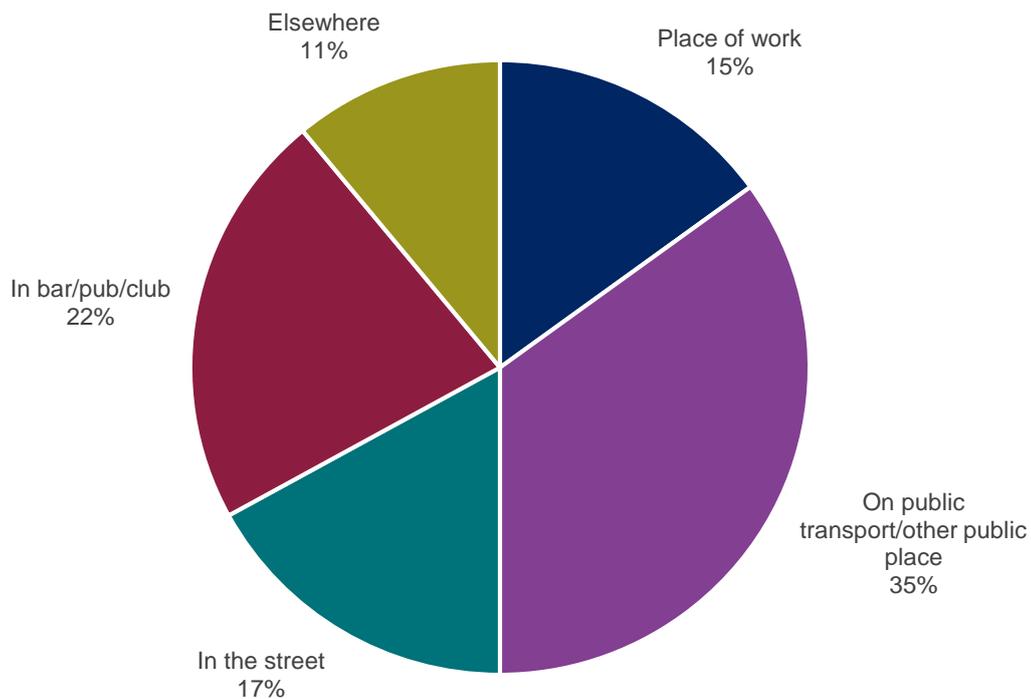
Figure 1.7: The relative contribution of acquisitive crime types to mobile phone theft incidents, 2014/15 Crime Survey for England and Wales



Location of mobile phone thefts

According to the 2014/15 Crime Survey, 35 per cent of the *Other personal theft* offences took place on public transport or in another public place, down from the 37 per cent reported in the September 2014 paper; 22 per cent took place in bars, pubs and clubs, down from 30 per cent; and, 17 per cent took place in the street, up from six per cent.

Figure 1.8: Proportion of Other Personal Theft incidents involving mobile phone theft by location of incident, 2014/15 Crime Survey for England and Wales



When mobile phones are stolen

According to the 2014/15 Crime Survey, 53 per cent of *Theft from the person* and *Robbery* incidents involving a mobile phone occurred during the week, and 47 per cent at the weekend. Incidents involving *Other personal theft* occurred during the week 62 per cent of the time, with the weekend accounting for 38 per cent.

Figure 1.9: Timing of when incidents of mobile phone theft occurred, 2014/15 Crime Survey for England and Wales

England and Wales	Percentages	
	Theft from the person/ Robbery	Other personal theft
During the week	53	62
At the weekend ¹	47	38
<i>unweighted base</i>	<i>80</i>	<i>59</i>
Morning/Afternoon²		
Morning	12	21
Afternoon	26	31
Morning/afternoon (unsure which)	0	9
Evening/Night³		
Evening	39	27
Night	17	11
Evening/night (unsure which)	6	0
<i>unweighted base</i>	<i>80</i>	<i>59</i>

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.

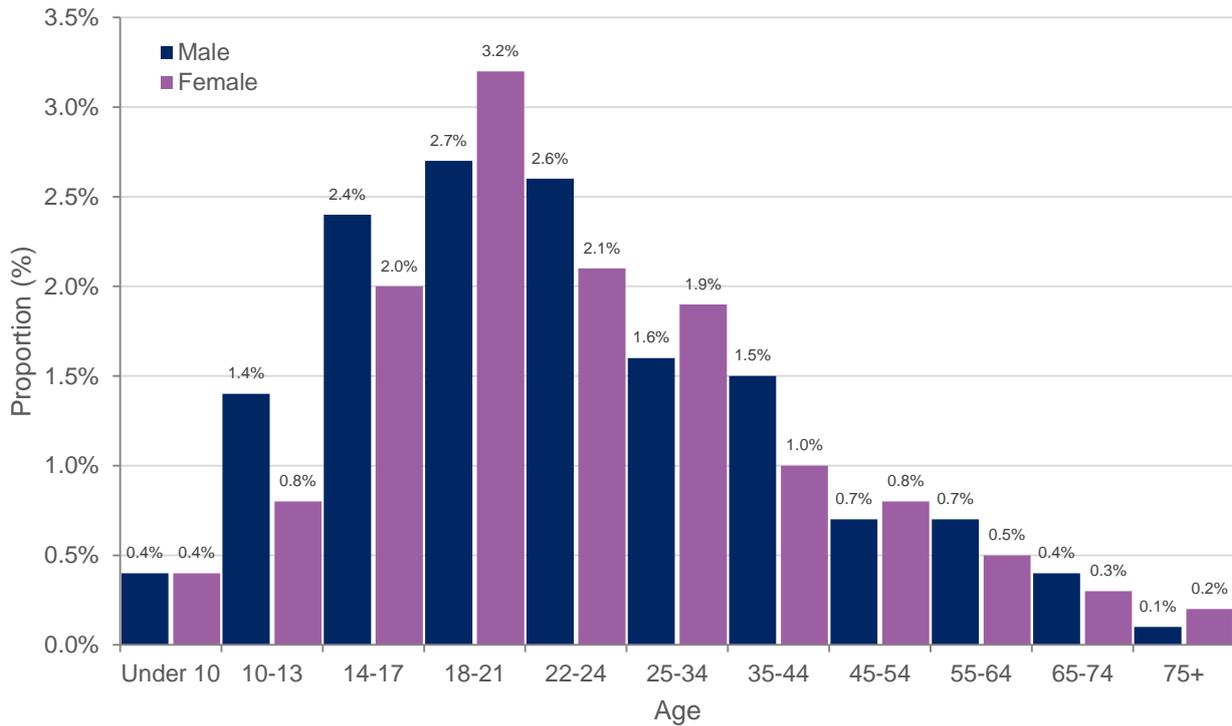
There is not a clear distinction between daytime and evening/night time when it comes to mobile phone thefts, with incidents happening throughout the 24 hour period. 62 per cent of *Theft from the person* and *Robbery* incidents involving a mobile phone took place in the evening or at night. This is the opposite of *Other personal theft* of which 61 per cent occurred in the morning or afternoon.

Who is most at risk?

We have set out the latest data related to age and gender of victims of mobile phone thefts. When compared to the data in the September 2014 paper, there has been a fall in the proportion of mobile phone theft in all age groups and genders, except for 22 to 24 year old males. In general terms, 14 to 24 year olds are most vulnerable to mobile phone theft, and in particular, 18 to 21 year old females.

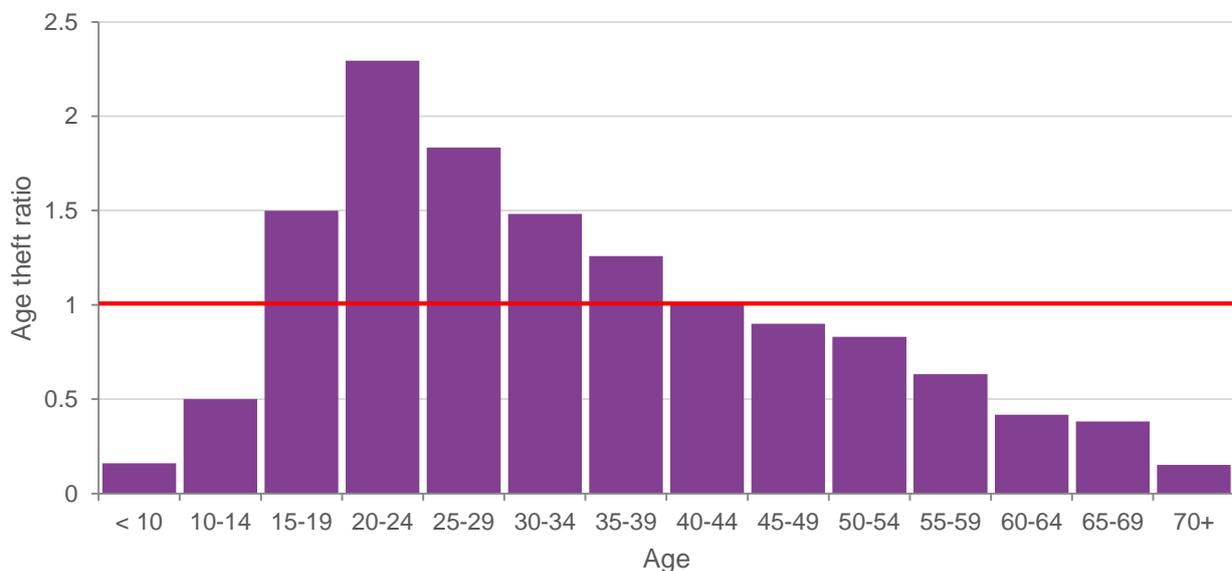
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Figure 1.10: Proportion of mobile phone owners who were victims of mobile phone theft by gender and age, 2014/15 Crime Survey for England and Wales



In the September 2014 paper we set out an ‘age to theft’ ratio to show whether particular age groups were disproportionately more likely to experience mobile phone theft, by dividing the proportion of thefts for each (victim) age group by the proportion of the population each age group made up in London. Repeating this now, the Behavioural Insights Team’s analysis shows that young people, and particularly those aged 20 to 30, continue to be much more likely to be a victim of theft than we would expect if thefts occurred randomly, while the very young, and older people, are less likely to be victims of mobile phone theft.

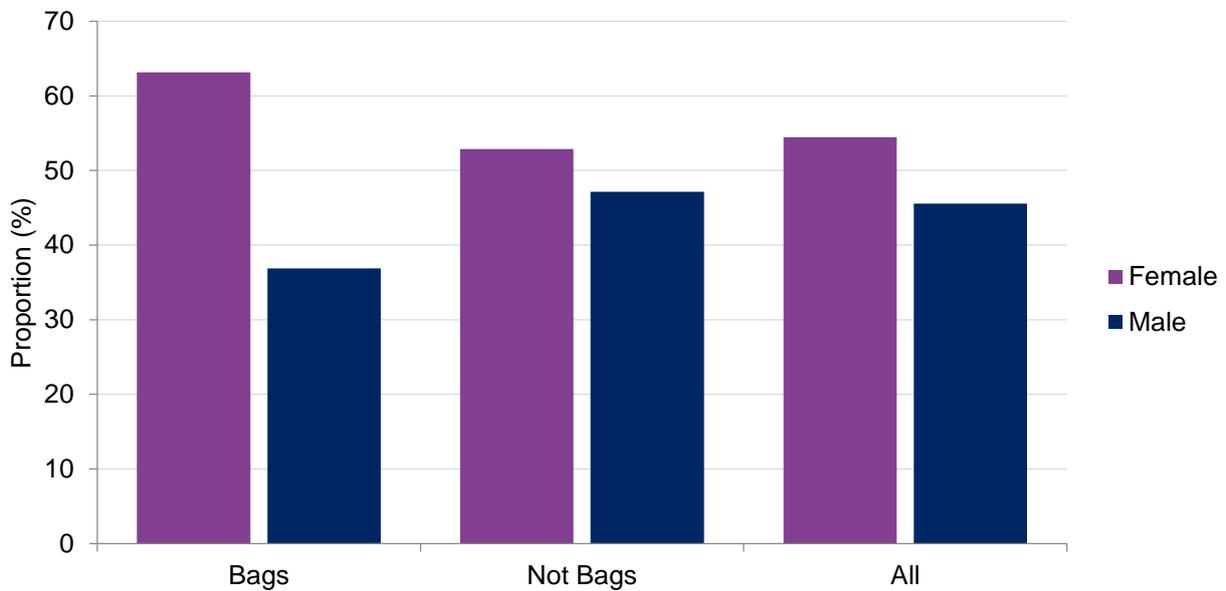
Figure 1.11: The Age Theft Ratio 2015, Behavioural Insights Team



One of the most striking findings in the analysis of the Metropolitan Police data in the 2014 paper was the gender disparity in mobile phones thefts in general, and particularly in theft from bags, with females more likely to be a victim of theft altogether, and much more likely to be a victim of a theft from a bag. This finding may not be altogether surprising, as more females than males tend to carry a bag.

This trend has continued, with females still substantially more likely to be the victim of a theft than males (36,659 compared to 31,925, although, for a small number of cases, no gender is recorded) and particularly more likely to be victim of a theft from a bag (6,871 compared to 3,985)². However, it should be noted that this represents a significant shift since the publication of the previous paper. At that time, 75 per cent of mobile phone thefts from bags were from females, while now this has fallen to 62 per cent. Because we do not think that thieves are likely to steal a bag because of the specific phone it contains, when calculating the Mobile Phone Theft Ratio (later in this paper), we count these as a “random” theft.

Figure 1.12: Proportion of mobile phone thefts by gender and whether they occur from a bag during 2015, Behavioural Insights Team



² Note that for 119 thefts gender is specified as unknown and for 1382 it is not recorded.

Part II: Brands and Handsets

Summary: The pattern of mobile phone thefts corresponds to the popularity of brands. The updated Mobile Phone Theft Ratio suggests that the most commonly stolen phones are not necessarily ‘over-stolen’ when set against their relative availability.

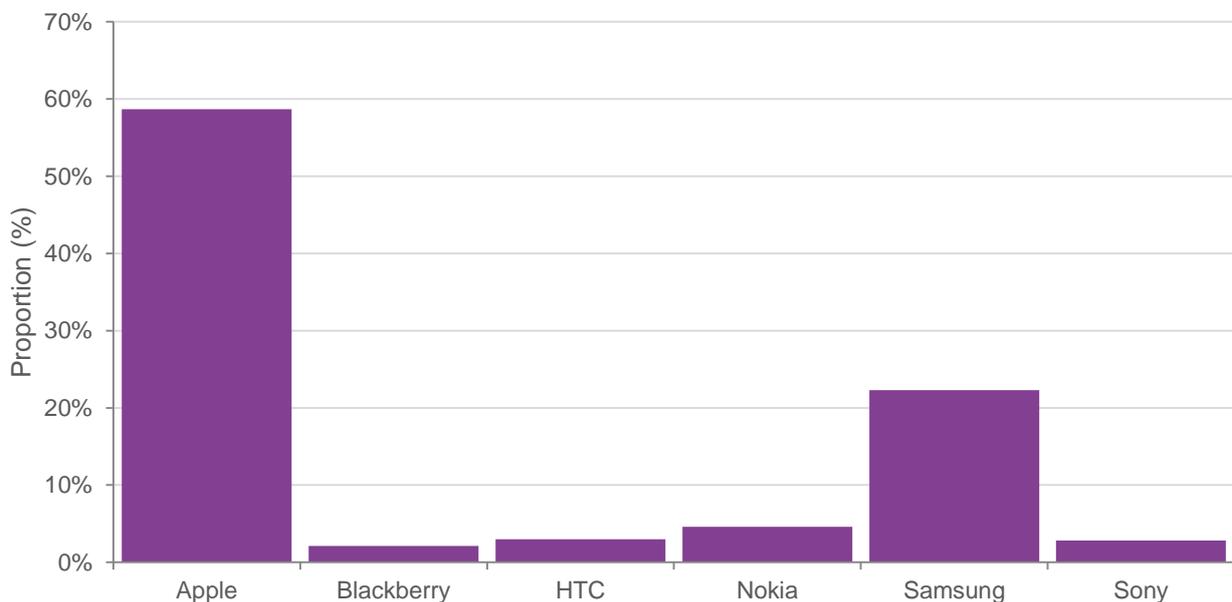
Which types and brands of phones are targeted?

One of the most prominent findings from the previous paper was the extent to which Apple dominated the thefts figures in the Behavioural Insights Team’s analysis, with 56 per cent of all phone thefts being of Apple handsets.

This trend continued in 2015, despite the drop in overall crime numbers, with Apple phones now constituting 58.8 per cent the proportion of thefts.

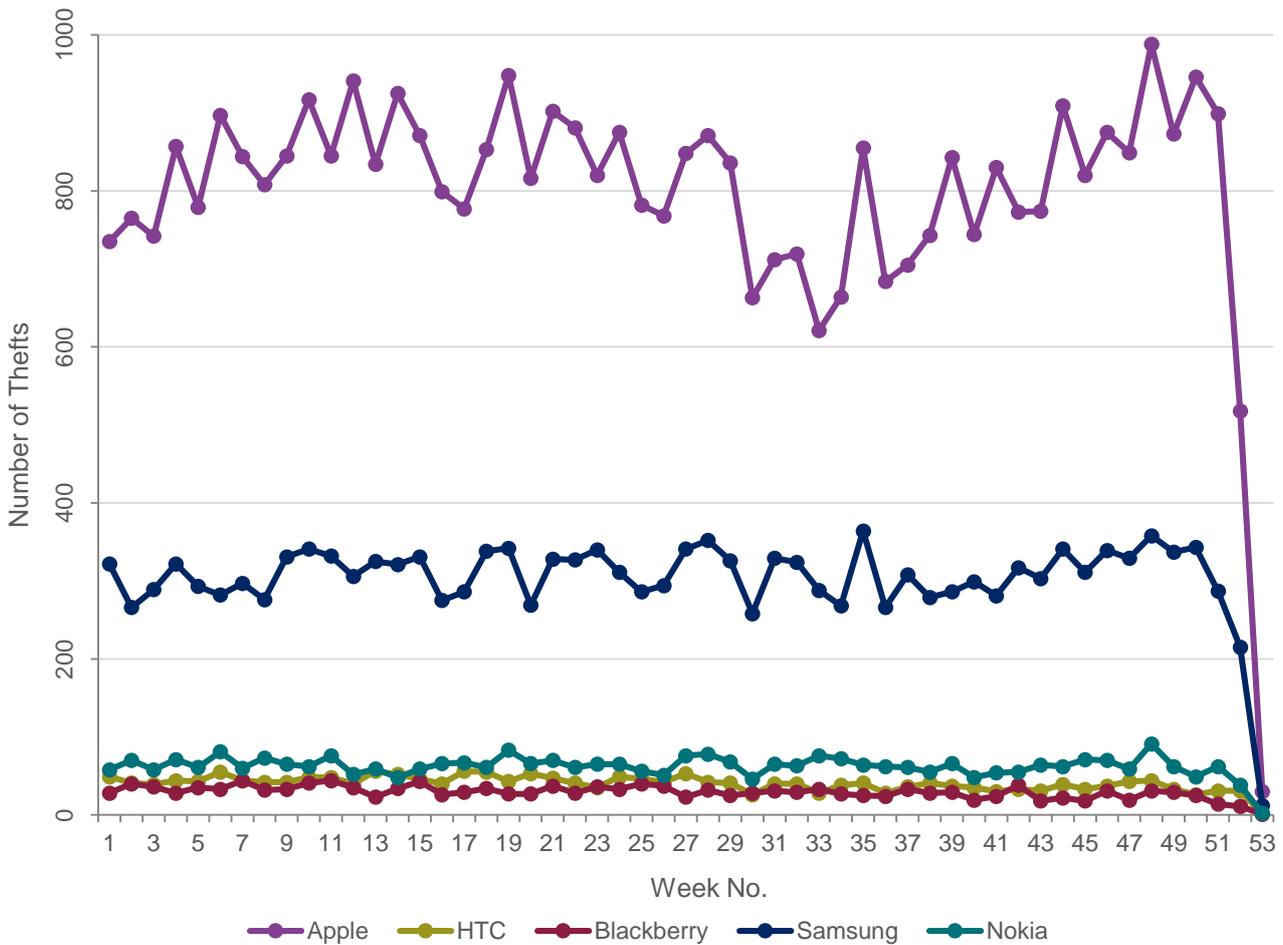
Perhaps not surprisingly, the pattern of mobile phone thefts seems to track the relative ownership of brands, with Samsung continuing to be the second most stolen type of phone, with Blackberry thefts declining and Nokia (now owned by Microsoft) becoming the third most commonly stolen mobile phone make.

Figure 2.1: Proportion of thefts by brand during 2015, Behavioural Insights Team



The Behavioural Insights Team’s analysis below shows thefts during 2015, by brand. Not surprisingly given their popularity, Apple and Samsung are consistently the most stolen phones by volume, although average thefts per week have fallen. Apple thefts have fallen by 20 per cent, from over 1,000 thefts per week in 2014 to 800 thefts per week in 2015. 304 Samsung phones were stolen per week in 2015, a modest fall from the 318 phones stolen in an average week in 2013.

Figure 2.2: Weekly theft of mobile phones by brand during 2015, Behavioural Insights Team



The Mobile Phone Theft Ratio

Finally, we present the updated Mobile Phone Theft Ratio. Due to the lack of availability of market share data, the Behavioural Insights Team based the ratio entirely on Metropolitan Police data about the theft of mobile phones during 2015. Whilst this means that the Ratio is necessarily an estimate, the Behavioural Insights Team was able to access such a large sample of over 70,000 thefts in the Metropolitan Police data set that it was able to conduct a sufficiently robust analysis for it to be confident in the results.

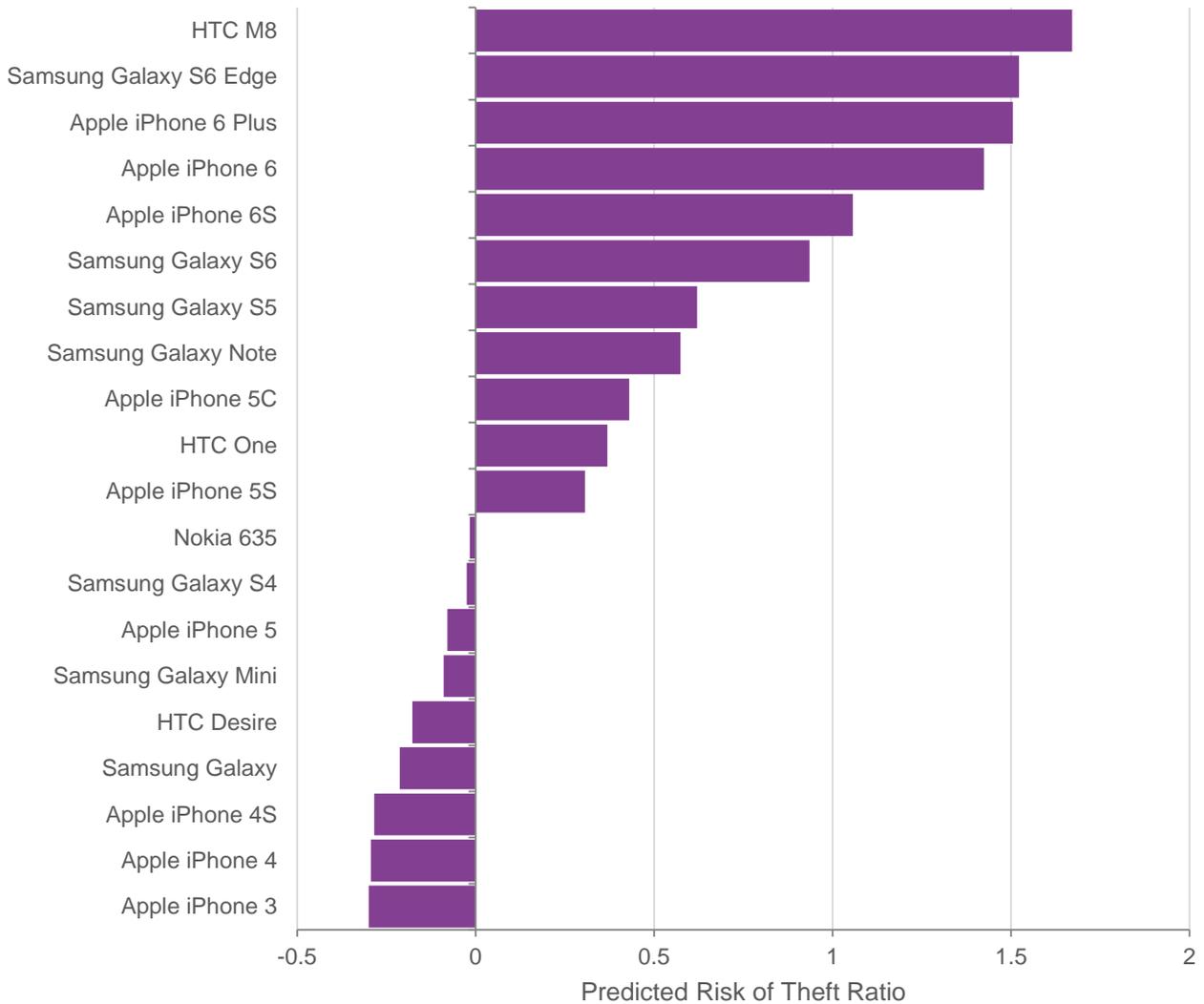
The Ratio is calculated by dividing the proportion of all plausibly targeted phone thefts of a given model (for example, when the phone was left unsecured on a pub table) by the proportion of all phone thefts that were unlikely to have been targeted of the same model (for example, when a phone was left inside a stolen car). The latter figure gives an impression of the availability of phones to be stolen. This ratio gives us a measure of “over-stolen”, in other words, the extent to which a particular make and model of phone was stolen more than we would have anticipated given its share of the random thefts.

The September 2014 paper showed dominance of the top few slots by Apple phones, with four of the top five phones most likely to be stolen made by Apple. However the most “over-stolen” mobile phone based on the 2015 Metropolitan Police data is the HTC M8, albeit a relatively uncommon phone, with only 328 total thefts occurring in 2015. It is

Reducing Mobile Phone Theft and Improving Security

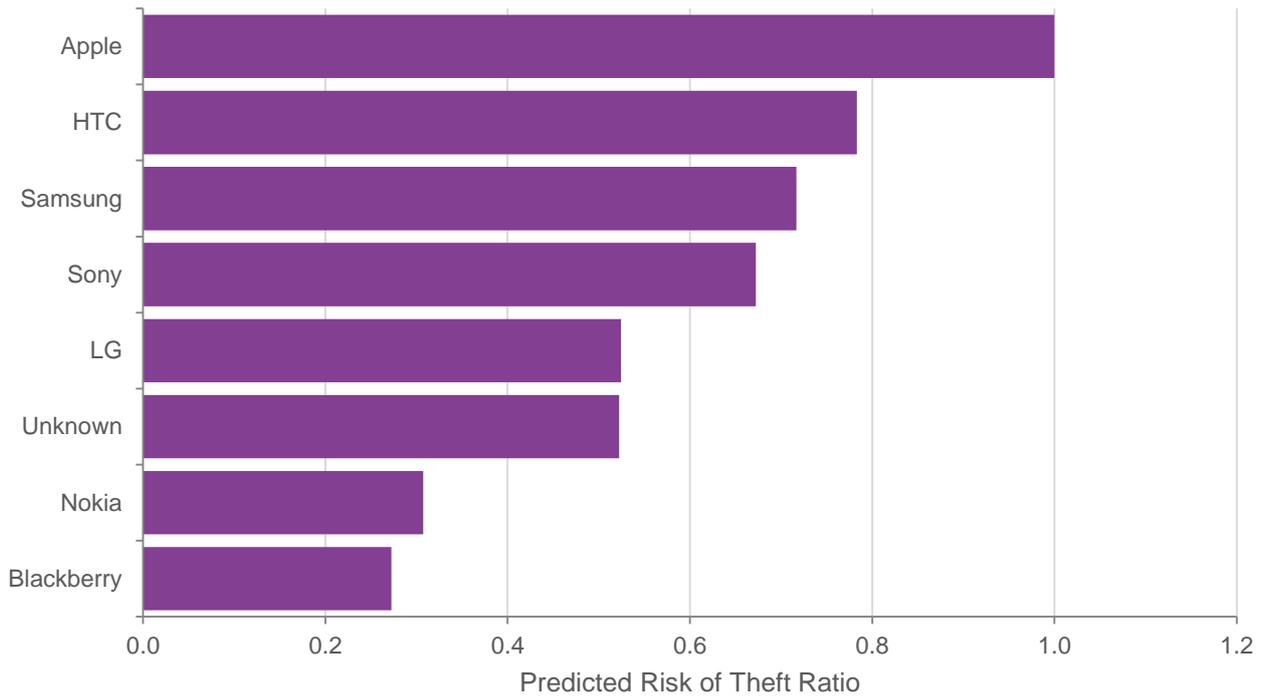
followed by the Samsung Galaxy S6 Edge, the Samsung Galaxy S6, S5 and Note models are also in the top ten phones most likely to be stolen.

Figure 2.3: The Mobile Phone Theft Ratio 2015: Top 20 most likely mobile phones to be targeted by thieves, Behavioural Insights Team



The same methodology has been used to produce a theft ratio by brand. This approach broadly replicates the findings above, but is less sensitive to individual models of phone that may be unrepresentative. HTC remains more over-stolen than Samsung, although less than Apple.

Figure 2.4: The Mobile Phone Theft Ratio 2015: Brands most likely mobile phones to be target by thieves, Behavioural Insights Team



Part III: Theft prevention

Summary: The mobile phone industry has introduced a range of features to improve the security of mobile phones. There are a number of simple steps that consumers can take to protect themselves, including activating the phone's security features.

There are some simple things that consumers should consider to protect their mobile phones from opportunist thieves, such as not leaving them unattended in public places. However, it remains the case that it is very difficult to make mobile phones physically harder to steal without compromising their basic design benefits. Mobiles phones are relatively small and portable, and can be simply picked up and taken away.

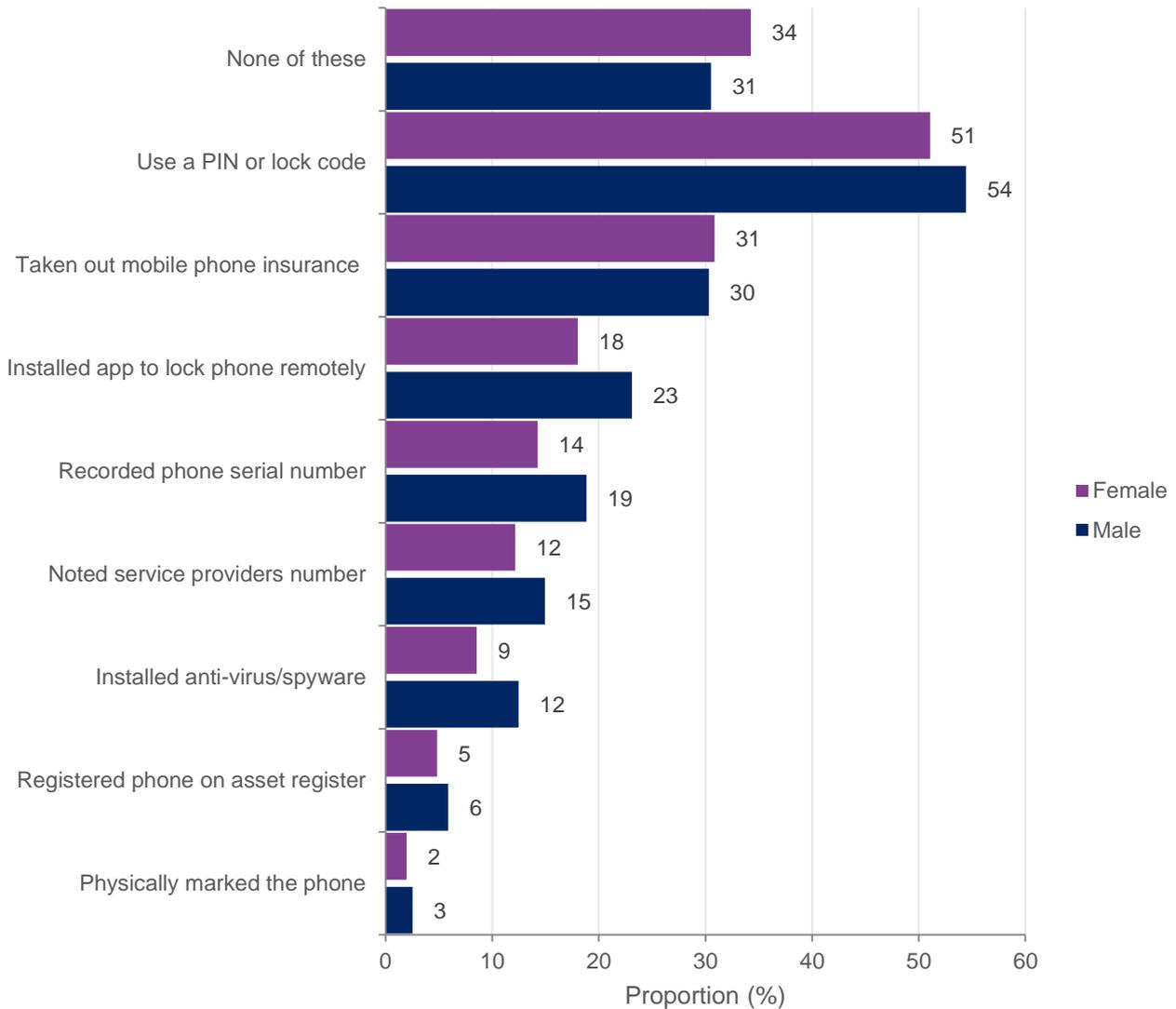
Making mobile phones less attractive to thieves is therefore primarily a matter of making them harder to use and reducing their value after they have been stolen. As the September 2014 paper noted, the mobile phone industry plays an important role in this respect, with mobile operators preventing stolen phones operating across their respective networks and manufacturers providing customers with a growing range of device-based security, including:

- requiring access control such as a **unique code** (a PIN, password or some form of pattern) or **biometric authentication** (such as fingerprint or facial recognition) to be entered onto the handset to unlock it;
- **tracing the location** of the handset using a remote service;
- **wiping data** from, or **locking** the handset **remotely** (for example, by using another internet enabled device);
- a function to display a **home/lock screen message** to someone who may find the handset to help recover it;
- preventing thieves from simply resetting the handset to its **factory setting** to bypass any unique codes or other security features being used to protect the handset.

These features will, however, only protect the mobile phone **if they are switched on**.

The 2014/15 Crime Survey tells us about some of the measures respondents have taken to protect themselves against mobile phone theft. This goes beyond making a stolen phone harder to use. For example, it includes owners protecting themselves against loss through insurance. Nevertheless, it is noticeable that the most common measure was "used a PIN or lock code", with just over half of mobile phone owners reportedly using that measure.

Figure 3.1: Proportion of owners, by gender, taking specific measures to protect themselves against mobile phone theft, 2014/15 Crime Survey for England and Wales



The 2014/15 Crime Survey also gives a breakdown of the use of security features by age. Here we can see that in the 16-24 age band, 76 per cent of mobile phone owners reported using the PIN/lock code feature, with this proportion declining as age goes up, with only 10 per cent in the 75+ age band.

Reducing Mobile Phone Theft and Improving Security

Figure 3.2: Proportion of owners, by gender and age group, taking specific measures to protect themselves against mobile phone theft, 2014/15 Crime Survey for England and Wales

	Register phone on asset register	Recorded phone serial number	Physically marked the phone	Used a PIN or lock code to prevent unauthorised use	Noted service providers number	Taken out mobile phone insurance cover	Installed app to lock phone remotely	Installed anti-virus / spyware	None of these	Unweighted base
ALL	5	17	2	53	14	31	21	10	32	30,766
Male	6	19	3	54	15	30	23	12	31	13,892
Female	5	14	2	51	12	31	18	9	34	16,874
Age										
16-24	4	15	3	76	10	35	33	12	14	2,366
25-34	6	22	2	68	14	42	29	14	18	4,695
35-44	7	21	2	66	16	37	27	15	19	5,293
45-54	7	19	2	54	17	32	19	11	29	5,483
55-64	6	15	2	39	16	25	13	9	43	5,055
65-74	4	9	2	22	11	17	5	4	60	4,775
75+	1	5	2	10	5	8	2	1	78	3,099

Part IV: Conclusion

We welcome the fall in mobile phone theft according to the 2014/15 Crime Survey. However, whilst mobile phone theft victimisation across England and Wales is at its lowest level since first measured by the 2005/06 Crime Survey, half a million mobile phone theft victims means that the issue is one we should all continue to take seriously.

The Government remains committed to working with the police, manufacturers and operators to do all that we can to help reduce the incidence of mobile phone theft. At the same time, we will continue to provide the public with transparent data that allows them to make more informed consumer choices and to help prevent crime.

That approach is demonstrated through this paper, which provides a further insight about the nature of mobile phone theft, including who and what has been targeted.

It is also demonstrated through the work we have done via police.uk³ to signpost consumers to the various security features provided by several manufacturers to make stolen mobile phones less attractive to thieves, letting consumers draw their own conclusions about the relative merits of what is on offer.

We will develop this work further by providing the public with the same opportunities for comparing the relative risks and security features of a phone as those provided for comparing other features, such as battery life and camera quality.

³ <http://www.police.uk/crime-prevention-advice/protecting-your-mobile-phone>

Technical Annex

The Crime Survey for England and Wales

The Crime Survey is a rolling survey of peoples' experiences of crime in the 12 months before they were interviewed. The 2014/15 Crime Survey refers to interviews carried out in 2014/15 and therefore the data will cover crimes that took place between April 2013 and February 2015. The middle of that period will be covered best (i.e. from October 2013 to September 2014) as this will fall in the 'year before interview' for most respondents.

In light of revised population estimates becoming available from the 2011 Census, the Office for National Statistics carried out a reweighting exercise of Crime Survey statistics going back to 2001/02. Using that more recent Census data produces a more accurate estimate of mobile phone theft ownership and victimisation. This paper therefore uses those reweighted historical statistics.

The Crime Survey provides estimates of the levels of crime experienced by respondents aged 16 and over. The details of these are captured in the main part of the Crime Survey (known as the '*victimisation module*') and from this we get incident level data about **how**, where (**location**) and **when** respondents' mobile phones are stolen.

In a separate module specifically on mobile phone crime, the Crime Survey asks respondents whether other members of their respective households (of any age) have owned or had regular use of a mobile phone, and whether any of them have had a mobile phone stolen. Whilst that additional information is not directly comparable with the incident data on how, where and when respondents' mobile phones are stolen (which is only captured for the respondent), it nevertheless provides a richer/fuller measure of mobile phone **ownership** and **victimisation**. Statistics from both Crime Survey modules are presented in this paper.

The Metropolitan Police data

Analysis of the Metropolitan Police data excludes 1,235 thefts coded by the police as occurring from shop displays or warehouses, as we are primarily concerned with thefts from individuals. A further 893 thefts are removed from the analysis where the address of the crime is reported as a shop and multiple thefts take place, but it is not coded as a theft from a shop by the police. This leaves a total of 70,085 thefts.

The Mobile Phone Theft Ratio

Derivation

For these calculations, we define 'thefts that were plausibly not targeted' as those where the thief was unlikely to have committed the crime specifically for the purpose of stealing a mobile phone. For example, when a thief steals a car (as opposed to breaking into a car), the fact that a mobile phone is stolen is a lower order concern for the thief. Similarly, when a bag is stolen, the thief may not have been targeting the phone inside directly.

For these thefts, we argue that it is unlikely that targeting of phones was occurring, and hence the model of the phone being stolen is unrelated (or, more precisely, less related), to the intentions of the thief. If this is true, then the proportion of these thefts attributable to a given model provides a proxy for that model's availability. By dividing the number of 'thefts that were plausibly not targeted' for a given model ('m') by the total number of such thefts for all models, we arrive at a proxy measure ('R_m') for the availability for this model.

We then consider 'thefts that were plausibly targeted' where it is plausible that the thief has targeted a mobile phone – for example, when it has been left unsecured on a pub table. By dividing the number of these thefts for a given model ('m') by the total number of such thefts for all models, we arrive at a measure ('T_m') for the share of plausibly targeted thefts for this model.

We then calculate the theft ratio for a given model ('m') by dividing the share of plausibly targeted thefts measure by the availability measure. This can be expressed as follows:

$$\frac{T_m}{R_m}$$

If this ratio is greater than 1 for a given model, then this model is being reported as having been stolen disproportionately more than it is estimated to be available. Likewise, if the ratio is less than 1, the model is being stolen disproportionately less.

This provides a useful scale for comparing models. It is this metric that we use in our model level theft index.

Limitations

One important limitation to this method of analysis is that our estimates of what constitute unrelated thefts may not be truly exogenous, and may be correlated with the desirability of the phone, of other theft behaviours. For example, people with more expensive phones may have nicer cars, or park their cars in more dangerous areas or live in houses that present themselves as more valuable prospects for targeted theft.

To the extent that the correlation described is positive (e.g. individuals with desirable cars have desirable phones), any lack of exogeneity will work against our estimator, tending to reduce the variance on the ratio bias our estimate of targeting towards zero. If the opposite is true (e.g. people with more desirable phones drive systematically less desirable cars), our estimate is likely to be inflated. We are content at this stage that the former hypothesis, that of positive correlation, is more likely.

