# The economic and social costs of crime against individuals and households 2003/04

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## Section 1

Estimates of the economic and social costs of crime in England and Wales: Costs of crime against individuals and households, 2003/04

June 2005

Richard Dubourg
Joe Hamed

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Developments in the estimates of the costs of crime in England and Wales

Richard Dubourg
Joe Hamed
Jamie Thorns

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Richard Dubourg
Joe Hamed
Jamie Thorns

## Section 1

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Richard Dubourg
Joe Hamed

Economics and Resource Analysis
Research, Development and Statistics
Home Office

# Key points

- The original estimates of the costs of crime against individuals and households, published in 2000 in Home Office Research Study 217, have been updated on the basis of methodological and data improvements.

- The revised estimates of the unit costs of crime against individuals and households exhibit a broadly a similar pattern to the costs estimated in 2000.

- The most costly crimes are those with a large estimated emotional and physical impact; homicide, wounding, robbery and sexual offences are estimated to be the most costly crimes.

- Serious wounding is seen to be less costly than previously estimated, while other wounding is more costly. The most costly violent crime is now estimated to be rape, which has increased significantly since 2000.

- Violent crime and emotional and physical impacts of crime account for a large fraction of the total cost of crime against individuals and households.

- The total current burden cost of crime against individuals and households in 2003/04 was around £36.2bn. This represents a decrease of around nine per cent from the estimated total cost in 2000 after accounting for inflation and methodological improvements. The fall in total crime has been partially offset by the change in the mix of crimes and increases in some unit cost estimates.

- Considerable uncertainty remains around any estimate of the total number of sexual offences, and the relationship between sexual offences and recorded sexual offences remains uncertain.

# 1. Introduction

This report contains updates to the estimates of the costs of crime published by Brand and Price (2000)[1]. For a detailed explanation of the original methodology and the suggested uses and limitations of this work please see HORS 217. Estimates have been made for crimes against individuals and households in 2003/04, and the new methodology has been applied to crimes committed in 2000 to produce revised estimates for 2000 that can be compared with the new estimates.

The updates covered here apply only to the estimates of the costs of crime against individuals and households. Updates to the costs of crimes against commercial and public sector victims are planned for a forthcoming publication.

In this report the following updates are presented:

- updates to the methodology for estimating the emotional and physical, lost output and health costs of violent crimes;

- improvements to the criminal justice system (CJS) costing methodology;

- general data updates; and

- updates to the multipliers that are used to estimate the numbers of total crime.

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[1] Brand, S and Price, R (2000a)The economic and social costs of crime' Home Office Research Study 217, London: Home Office (hereafter referred to as HORS 217).

For more detail on the nature of the updates see Dubourg *et al.* (2005a).[2]

The updated estimates are presented alongside discussion and interpretation of the results. There are three sections. The first presents and discusses the unit costs of crimes. The second presents and discusses the total estimated number of offences against individuals and households. The third presents and discusses the total cost of crimes against individuals and households.

# 2. Unit costs of crimes

The updated estimates of the unit costs of crime against individuals and households are presented in Table 2.1. All unit costs of crime are presented in 2003 prices. Where costs are based on data for earlier years the GDP deflator has been used to convert into 2003 prices.

These cost estimates are appropriate for use with actual crimes as measured by (for example) the British Crime Survey (BCS), rather than those as recorded by the police. The most notable difference pertains to the definition of wounding. The definition used here does not include common assault with minor injury, whereas the police definition (since 2002) counts common assaults with minor injury as less serious wounding.

The applicability to BCS crimes should also be borne in mind when interpreting the unit costs and their breakdown. This is because some of the cost components are effectively weighted by the probability that they will be incurred, which in turn depends on the probability that an offence is reported, recorded, investigated and so on. Thus, the estimated cost of, for example, victim services for sexual offences is not the cost of the services given to a victim who requests them, but the cost of those services weighted by the probability that they are requested, which can be very low. This can explain why some cost components might appear lower than expected for some crimes.

As in HORS 217 the highest unit costs of crime are for crimes of violence. Homicide, wounding and sexual offences remain the most costly offences to society. This is a reflection of the estimated cost of the physical and emotional impact of crimes. The implication is unsurprising; the prevention of one average homicide, wounding or sexual offence is estimated to be of significantly greater value to society than the prevention of one average burglary, theft or incident of vandalism. In contrast to HORS 217 the new methodology does not distinguish between the health-related impacts of serious wounding and other wounding. This is because the new methodology is based on dedicated information from victims of all wounding, whereas HORS 217, in the absence of any such evidence, made an arbitrary assumption about relative severity. The criminal justice system costs for serious woundings are much higher than for other woundings since they receive more intensive and/or severe treatment from the CJS and longer prison sentences.

The estimates in Table 2.1 are based upon a revised sentence cost methodology, which is designed to estimate the discounted net present value of the cost of enforcing sentences in the years following conviction. Table 2.2 contains the breakdown of the CJS unit costs.

The largest component of the CJS cost is the cost of the police response to crime, followed by costs of custody and enforcing community sentences.

Table 2.3 presents the revised estimates of the unit costs of crimes against individuals and households in 2000. These enable comparison with the costs of crime in 2000 as they are consistent with the revised methodologies. The estimates presented here have been uprated with inflation so that comparisons are in real terms.

One caveat applies to these figures that did not apply to the HORS 217 figures. The methodology for estimating average costs of some crimes depends upon an estimate of the

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[2] Dubourg, R., Hamed, J. and Thorns, J. (2005) Developments in the estimates of the costs of crime in England and Wales (Section 2 of this report).

total resource cost apportioned across the relevant crime types and divided by the total number of crimes. The estimates here are not based on updated estimates of offences against the commercial and public sectors, when updated estimates of the numbers of offences against those victims are incorporated changes to many top-down calculations are expected.

**Table 2.1: Estimated average costs of crimes against individuals and households in 2003/04 by crime type and by cost category**

| Offence category | Costs in anticipation of crime (£) | | Costs as a consequence of crime (£) | | | | | | | Costs in response to crime (£) | 2003 prices |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Defensive Expenditure | Insurance Administration | Physical and Emotional Impact on Direct Victims | Value of Property Stolen | Property Damaged/ Destroyed | Property Recovered | Victim Services | Lost Output | Health Services | Criminal Justice System | Average Cost (£) |
| Violence against the person | 1 | 1 | 5,472 | - | - | - | 9 | 1,648 | 1,347 | 1,928 | 10,407 |
| Homicide | 145 | 229 | 860,380 | - | - | - | 2,102 | 451,110 | 770 | 144,239 | 1,458,975 |
| Wounding | 1 | 1 | 4,554 | - | - | - | 7 | 1,166 | 1,348 | 1,775 | 8,852 |
| Serious wounding | 1 | 1 | 4,554 | - | - | - | 7 | 1,166 | 1,348 | 14,345 | 21,422 |
| Other wounding | 1 | 1 | 4,554 | - | - | - | 7 | 1,166 | 1,348 | 978 | 8,056 |
| Sexual offences | 3 | 5 | 22,754 | - | - | - | 32 | 4,430 | 916 | 3,298 | 31,438 |
| Common assault | 0 | 0 | 788 | - | - | - | 6 | 269 | 123 | 255 | 1,440 |
| Robbery | 0 | 21 | 3,048 | 109 | 12 | - 19 | 16 | 1,011 | 483 | 2,601 | 7,282 |
| Burglary in a dwelling | 221 | 177 | 646 | 846 | 187 | - 22 | 11 | 64 | - | 1,137 | 3,268 |
| Theft | 59 | 52 | 192 | 281 | 69 | - 36 | 1 | 10 | - | 217 | 844 |
| Theft - not vehicle | - | 33 | 118 | 175 | 17 | - 13 | 1 | 3 | - | 301 | 634 |
| Theft of vehicle | 546 | 370 | 800 | 2,367 | 349 | - 542 | 1 | 47 | - | 199 | 4,138 |
| Theft from vehicle | 116 | 50 | 266 | 240 | 126 | - 11 | 1 | 20 | - | 50 | 858 |
| Attempted vehicle theft | 65 | 21 | 194 | - | 154 | - | 1 | 11 | - | 65 | 510 |
| Criminal damage | 13 | 36 | 472 | - | 212 | - | 2 | 6 | - | 126 | 866 |

**Table 2.2: Estimated average CJS costs of crimes against individuals and households in 2003/04 by crime type and by CJS cost category**

| Offence category | Costs in response to crime (£) | | | | | | | | | | | Criminal Injuries Comp. | 2003 prices Average total CJS cost |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Police Activity | Prosecution | Magistrates' court | Crown Court | Jury Service | Legal Aid | Non Legal-aid defence | Probation Service | Prison Service | Other CJS Costs | CJS Overhead | | |
| Violence against the person | 756 | 69 | 19 | 89 | 12 | 148 | 75 | 78 | 411 | 181 | 82 | 10 | 1,928 |
| Homicide | 14,910 | 1,357 | 362 | 1,747 | 233 | 2,919 | 1,478 | 1,396 | 114,457 | 3,572 | 1,612 | 194 | 144,239 |
| Wounding | 740 | 67 | 18 | 87 | 12 | 145 | 73 | 76 | 289 | 177 | 80 | 10 | 1,775 |
| Serious wounding | 5,917 | 539 | 144 | 693 | 93 | 1,158 | 586 | 349 | 2,731 | 1,418 | 640 | 77 | 14,345 |
| Other wounding | 412 | 38 | 10 | 48 | 6 | 81 | 41 | 59 | 134 | 99 | 45 | 5 | 978 |
| Sexual offences | 1,524 | 75 | 48 | 157 | 23 | 261 | 144 | 52 | 719 | 150 | 129 | 16 | 3,298 |
| Common assault | 119 | 11 | 3 | 14 | 2 | 23 | 12 | 16 | 13 | 28 | 13 | 2 | 255 |
| Robbery | 878 | 54 | 52 | 74 | 14 | 189 | 90 | 80 | 851 | 215 | 102 | - | 2,601 |
| Burglary in a dwelling | 576 | 14 | 14 | 19 | 4 | 34 | 24 | 68 | 309 | 31 | 44 | - | 1,137 |
| Theft | 134 | 5 | 4 | 3 | 1 | 14 | 5 | 22 | 18 | 2 | 10 | - | 217 |
| Theft - not vehicle | 191 | 7 | 5 | 4 | 1 | 20 | 7 | 28 | 20 | 3 | 14 | - | 301 |
| Theft of vehicle | 81 | 3 | 2 | 2 | 0 | 9 | 3 | 29 | 63 | 1 | 6 | - | 199 |
| Theft from vehicle | 31 | 1 | 1 | 1 | 0 | 3 | 1 | 6 | 4 | 0 | 2 | - | 50 |
| Attempted vehicle theft | 17 | 1 | 0 | 0 | 0 | 2 | 1 | 12 | 29 | 0 | 1 | - | 65 |
| Criminal damage | 76 | 1 | 3 | 2 | 0 | 6 | 3 | 3 | 6 | 20 | 5 | - | 126 |

**Table 2.3: Estimated average costs of crimes against individuals and households in 2000 by crime type and cost category**

2003 prices

| Offence category | Costs in anticipation of crime (£) | | Costs as a consequence of crime (£) | | | | | | | Costs in response to crime (£) | Average Cost (£) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Defensive Expenditure | Insurance Administration | Physical and Emotional Impact on Direct Victims | Value of Property Stolen | Property Damaged/ Destroyed | Property Recovered | Victim Services | Lost Output | Health Services | Criminal Justice System | |
| Violence against the person | 1 | 1 | 4,854 | - | - | - | 11 | 1,420 | 1,245 | 1,722 | 9,254 |
| Homicide | 111 | 178 | 790,046 | - | - | - | 6,972 | 414,241 | 708 | 152,373 | 1,364,628 |
| Wounding | 1 | 1 | 4,202 | - | - | - | 6 | 1,077 | 1,245 | 1,597 | 8,128 |
| Serious wounding | 1 | 1 | 4,202 | - | - | - | 4 | 1,077 | 1,245 | 10,769 | 17,299 |
| Other wounding | 1 | 1 | 4,202 | - | - | - | 6 | 1,077 | 1,245 | 843 | 7,374 |
| Sexual offences | 2 | 4 | 20,992 | - | - | - | 33 | 4,092 | 846 | 1,684 | 27,654 |
| Common assault | 0 | 0 | 727 | - | - | - | 0 | 199 | 114 | 358 | 1,398 |
| Robbery | 0 | 48 | 2,812 | 394 | 34 | - 61 | 6 | 747 | 446 | 1,575 | 6,002 |
| Burglary in a dwelling | 151 | 111 | 652 | 687 | 315 | - 25 | 5 | 31 | - | 700 | 2,626 |
| Theft | 42 | 33 | 204 | 434 | 92 | - 106 | 1 | 12 | - | 145 | 857 |
| Theft - not vehicle | - | 21 | 118 | 177 | 8 | - 35 | 1 | 5 | - | 216 | 510 |
| Theft of vehicle | 406 | 262 | 1,045 | 4,474 | 541 | - 1,387 | 9 | 62 | - | 144 | 5,556 |
| Theft from vehicle | 49 | 19 | 207 | 230 | 130 | - 15 | 0 | 16 | - | 58 | 694 |
| Attempted vehicle theft | 24 | 7 | 135 | - | 139 | - | 1 | 7 | - | 55 | 369 |
| Criminal damage | 13 | 25 | 240 | - | 223 | - | 0 | 34 | - | 88 | 623 |

# 3. The estimated total volume of offences against individuals and households

The figures in Table 3.1 present the updates to the estimated total volume of offences against individuals and households. The revised estimates for 2000 are also presented for comparative purposes.

**Table 3.1: Multipliers and estimated total number of offences against individuals and households 1999/00 and 2003/04**

| | | | | | | Thousands of offences |
|---|---|---|---|---|---|---|
| | **2000 revised** | | | **2003/04** | | |
| | Recorded | Multiplier Estimate | Estimated total | Recorded | Multiplier Estimate | Estimated total |
| **Violence against the person** | | | | | | |
| Homicide | *1* | *1.0* | *1* | *1* | *1.0* | *1* |
| Wounding | | | | | | |
| *Serious wounding* | *29* | *3.5* | *102* | *42* | *1.8* | *76* |
| *Other wounding* | *357* | *3.5* | *1,246* | *670* | *1.8* | *1,199* |
| Violence total | **387** | | **1,350** | **714** | | **1,277** |
| **Sexual offences** | **38** | **10.1** | **382** | **52** | **5.2** | **269** |
| **Common assault** | **194** | **13.1** | **2,546** | **242** | **7.7** | **1,851** |
| **Robbery** | **72** | **6.3** | **458** | **91** | **3.7** | **335** |
| **Burglary in a dwelling** | **443** | **2.9** | **1,263** | **402** | **2.2** | **880** |
| **Theft** | | | | | | |
| Theft from the person | *76* | *8.6* | *655* | *125* | *4.6* | *576* |
| Theft of a pedal cycle | *131* | *2.9* | *386* | *103* | *3.6* | *365* |
| Theft of vehicle | *320* | *1.2* | *384* | *198* | *1.2* | *230* |
| Theft from vehicle | *566* | *3.7* | *2,072* | *450* | *2.8* | *1,249* |
| Attempted vehicle theft | *157* | *3.9* | *621* | *152* | *2.2* | *332* |
| Other theft and handling | *639* | *3.6* | *2,320* | *815* | *2.7* | *2,216* |
| Theft total | **1,890** | | **6,440** | **1,843** | | **4,968** |
| **Criminal damage** | **473** | **5.9** | **2,772** | **603** | **4.3** | **2,589** |
| Total number of crimes against individuals and households | | | **15,210** | | | **12,168** |

The estimated number of crimes in Table 3.1 cannot be considered as reliable as the estimates produced from specific surveys[1]. The estimates produced here use information about some crimes (BCS crimes) to make estimates about the actual level of other crimes about which we are less informed (e.g. crimes against the under-16s). For these purposes lower overall reliability of the estimate of total number of crimes is accepted in return for greater completeness of the cost of crime estimates.

The multiplier estimates can be used to estimate actual crime from recorded crime. However, care should be taken to distinguish recorded crimes against commercial and public sector victims as these recorded offences are likely have a different relationship with estimates of actual crime. The multiplier estimates have tended to change over time, so care should be taken not to use multiplier estimates that are based on crimes in a significantly different time period.

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[1] See for example, Dodd *et al*. (2004) Home Office Statistical Bulletin 10/04 "Crime in England and Wales 2003/04" London: Home Office
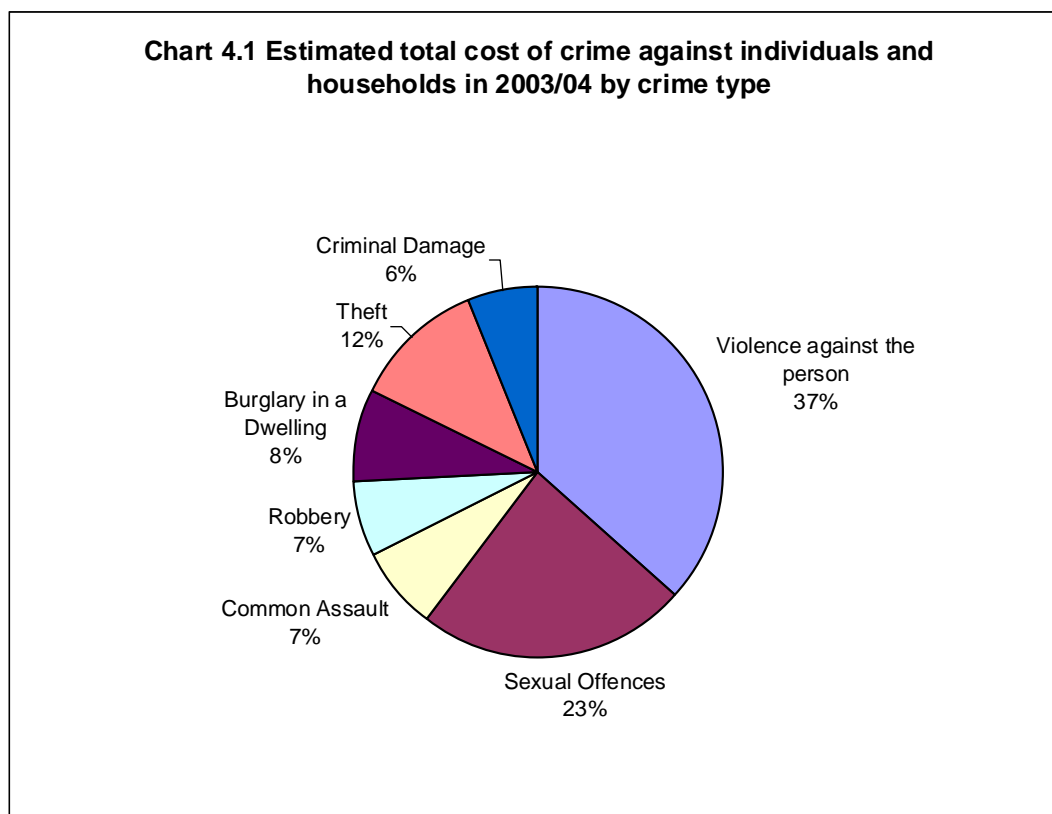
# 4. The total cost of crime against individuals and households

Estimates of the total costs of crime against individuals and households are presented in Tables 4.1 at the end of this section and 4.2. Table 4.2 presents a comparison between revised estimates for 2000 uprated to 2003 prices and the estimates for 2003/04.

Until the costs of crimes against the commercial and public sector are updated it is not possible to update the estimate of the total cost of all crime in England and Wales. However the total cost of crimes against individuals and households can be estimated.

As in HORS 217 estimates of the costs of violent crime make up a significant proportion of the total costs. The sum of violence against the person and sexual offences accounts for more than half of the total cost of crimes against individuals and households (Chart 4.1). Violence including robbery and common assault accounts for nearly three-quarters of the total cost of crime against individuals and households.

Chart 4.1 excludes all crimes against businesses and crimes such as fraud and forgery. Although these are not classified as crimes against individuals and households it is likely that these crimes do impose a burden on these groups, for example through higher prices charged by businesses that suffer higher costs as a result of victimisation.

**Chart 4.1 Estimated total cost of crime against individuals and households in 2003/04 by crime type**

Criminal Damage 6%
Theft 12%
Burglary in a Dwelling 8%
Robbery 7%
Common Assault 7%
Sexual Offences 23%
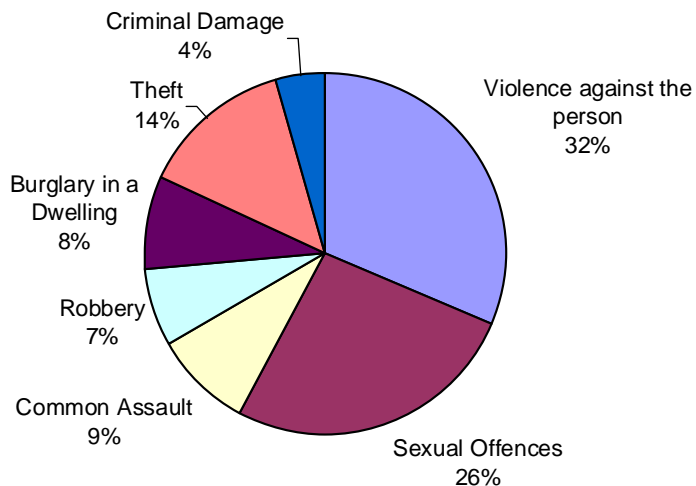Violence against the person 37%

Accordingly the biggest component of the cost of crime against individuals and households is the emotional and physical impact. Chart 4.2 illustrates the relatively high proportion of costs that are due to these impacts of crimes.

**Chart 4.2 Estimated total cost of crime against individuals and households in 2003/04 by cost category**

Defensive Expenditure 1%

Insurance Administration 1%

Criminal Justice System 20%

Health Services 6%

Lost Output 12%

Victim Services <1%

Net value of property lost 10%

Physical and Emotional Impact 50%
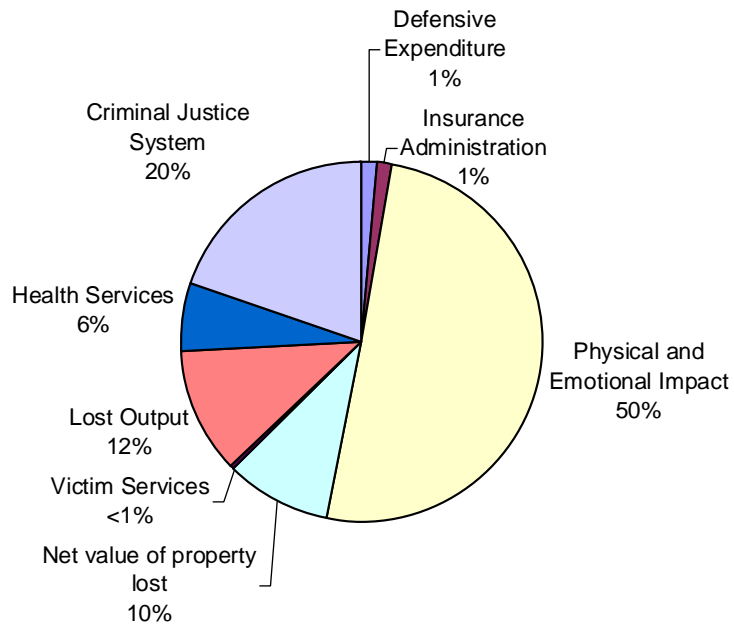
Charts 4.3 and 4.4 are based on the revised estimates for 2000. After methodological revisions have been taken into account the split of costs by category and by crime type has not undergone significant changes over the period.

**Chart 4.3 total cost of crime against individuals and households in 2000 by crime type**

Criminal Damage 4%

Theft 14%

Burglary in a Dwelling 8%

Robbery 7%

Common Assault 9%

Violence against the person 32%

Sexual Offences 26%

**Chart 4.4 Estimated total cost of crime against individuals and households in 2000 by cost category**

Defensive Expenditure 1%

Insurance Administration 1%

Criminal Justice System 17%

Health Services 6%

Lost Output 11%

Victim Services <1%

Net value of property lost 12%

Physical and Emotional Impact 52%
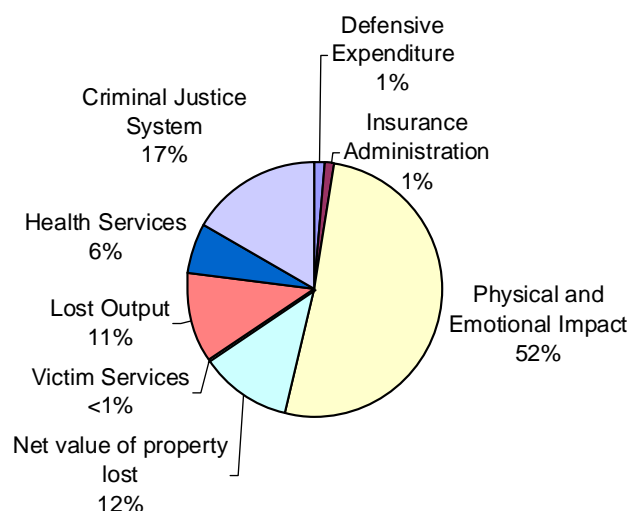
Table 4.2 presents a comparison of the 2003/04 update estimates of total costs of crime against individuals and households and estimates based on the revised estimates for 2000.

**Table 4.2: Comparison of changes in total cost estimates**

| | Total cost of crime (£ m) 2003 prices | |
|---|---|---|
| | 2000* | 2003/04 |
| Violence against the person | 12,489 | 13,288 |
| Homicide | 1,528 | 1,997 |
| Wounding | 10,961 | 11,291 |
| Serious wounding | 1,773 | 1,629 |
| Other wounding | 9,188 | 9,662 |
| Sexual offences | 10,552 | 8,464 |
| Common assault | 3,559 | 2,666 |
| Robbery | 2,747 | 2,436 |
| Burglary in a dwelling | 3,317 | 2,877 |
| Theft | 5,517 | 4,193 |
| Theft - not vehicle | 1,714 | 2,001 |
| Theft of vehicle | 2,135 | 951 |
| Theft from vehicle | 1,439 | 1,071 |
| Attempted vehicle theft | 229 | 169 |
| Criminal damage | 1,727 | 2,242 |
| All crimes against individuals and households | 39,908 | 36,166 |

* 2000 figures revised to incorporate improved data and methodology.

The total cost of crimes against individuals and households in 2003/04 is estimated to be around £36.2bn in 2003 prices. This is a fall of approximately nine per cent in real terms from the revised estimate for 2000.

The most significant change is the reduction in the total cost of theft of a vehicle. This stems from a fall in the estimated unit cost of theft of a vehicle and the significant fall in the number of vehicle thefts. Burglary, theft from vehicles, common assault and robbery also fall as a consequence of falls in the estimated total number of offences.

The estimate for the total costs of sexual offences has fallen although this is a consequence of changes in the estimated total number of sexual offences. This estimate is not very reliable as there are only small samples of information about such crimes available from sources such as the British Crime Survey.

Some of the reductions in estimated total number of crimes have been partially offset in the total cost calculations by increases in the estimated unit cost (for example, criminal damage, and non-vehicle-related theft).

In the case of criminal damage this is due to the estimate of the value of emotional and physical impacts derived from BCS responses. This is the least reliable of the components of the criminal damage unit cost as the answers of BCS respondents need not necessarily reflect a willingness to pay or receive compensation and may not lead respondents to clearly distinguish property losses from losses in emotional and physical well-being.

**Table 4.1: Estimated total cost of crimes committed in 2003/2004 against individuals and households.**

2003 Prices

| | Costs in anticipation of Crime (£ million) | | Costs as a consequence of crime (£ million) | | | | | | | Costs in response to crime (£ million) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Defensive Expenditure | Insurance Administration | Physical and Emotional Impact | Value of Property Stolen | Property damaged/ destroyed | Property Recovered | Victim Services | Lost Output | Health Services | Total CJS cost | Total Costs (£ million) | Percentage of Total Costs |
| Violence against the person | 1 | 2 | 6,987 | - | - | - | 12 | 2,105 | 1,720 | 2,461 | 13,288 | 37% |
| Homicide | 0 | 0 | 1,178 | - | - | - | 3 | 618 | 1 | 197 | 1,997 | 6% |
| Wounding | 1 | 2 | 5,809 | - | - | - | 9 | 1,487 | 1,719 | 2,264 | 11,291 | 31% |
| Serious wounding | 0 | 0 | 346 | - | - | - | 1 | 89 | 102 | 1,091 | 1,629 | 5% |
| Other wounding | 1 | 1 | 5,463 | - | - | - | 8 | 1,399 | 1,617 | 1,173 | 9,662 | 27% |
| Sexual offences | 1 | 1 | 6,126 | - | - | - | 9 | 1,193 | 247 | 888 | 8,464 | 23% |
| Common assault | 0 | 0 | 1,458 | - | - | - | 10 | 498 | 228 | 471 | 2,666 | 7% |
| Robbery | 0 | 7 | 1,020 | 37 | 4 | - 6 | 5 | 338 | 162 | 870 | 2,436 | 7% |
| Burglary in a dwelling | 195 | 156 | 569 | 745 | 165 | - 19 | 10 | 56 | - | 1,001 | 2,877 | 8% |
| Theft | 292 | 258 | 953 | 1,395 | 341 | - 179 | 6 | 48 | - | 1,079 | 4,193 | 12% |
| Theft - not vehicle | - | 103 | 372 | 551 | 53 | - 41 | 4 | 9 | - | 949 | 2,001 | 6% |
| Theft of vehicle | 125 | 85 | 184 | 544 | 80 | - 125 | 0 | 11 | - | 46 | 951 | 3% |
| Theft from vehicle | 145 | 62 | 332 | 299 | 157 | - 13 | 2 | 24 | - | 63 | 1,071 | 3% |
| Attempted vehicle theft | 22 | 7 | 64 | - | 51 | - | 0 | 4 | - | 21 | 169 | 0% |
| Criminal damage | 33 | 94 | 1,222 | - | 549 | - | 5 | 15 | - | 326 | 2,242 | 6% |
| All crimes against individuals and households | 522 | 518 | 18,335 | 2,176 | 1,059 | - 204 | 57 | 4,253 | 2,356 | 7,096 | 36,166 | 100% |
| Percentage of Total | 1% | 1% | 51% | 6% | 3% | -1% | 0% | 12% | 7% | 20% | 100% | |

# Developments in the estimates of the costs of crime in England and Wales

Richard Dubourg
Joe Hamed
Jamie Thorns


Economics and Resource Analysis
Research, Development and Statistics
Home Office

# Key points

- Home Office Research Study 217, published in 2000, presented the first estimates of the cost of crime in England and Wales. Since then, an ongoing programme of research has been established to improve these estimates. This report presents the results of the first set of updates to the original figures.

- The updates considered in this report relate to: The calculation of the costs of violent crime against individuals; The calculation of costs of the criminal justice system, especially relating to sentencing; Revised 'multipliers' for estimating the total volume of crime; and, Incorporation of more up-to-date data sources.

- The major effect of changes to the way the costs of violent crime against individuals is calculated is to reduce the cost of crimes classed as 'serious wounding', and to increase the cost of those classed as 'other wounding'. The health and lost output costs of sexual offences are also increased relative to previous estimates.

- Revisions to the calculation of criminal justice system costs provide more accurate estimates of the cost of police time, and more appropriate allocation of CJS costs for violence. They also produce estimates of unit costs which reflect the future cost liability of certain sentences of court orders when they are of more than one year's duration (e.g. custody). These unit costs are more appropriate for use in cost-benefit analysis than previous ones.

- Revised multipliers take into account recent changes to police recording practice, especially the National Crime Recording Standard introduced in 2000, which has in most cases greatly reduced the disparity between estimated total volumes of crime and numbers of crimes recorded.

# 1. Introduction

The Home Office published its first estimates of the costs of crime in 2000 (Brand and Price, 2000).[4] This represented the first serious and comprehensive attempt to place a monetary value on the costs of crime to victims, businesses, the taxpayer and society generally. The purpose of the exercise was to provide an overall measure of the cost of crime to society, and one which could be tracked over time. It also allowed an assessment to be made of the relative seriousness of different types of crime, on the basis of severity of impact rather than just numbers of offences. Finally, it provided estimates of the costs associated with individual crime incidents, which could be used to assess the cost-effectiveness of crime reduction policies and interventions.

Although a significant and important piece of work which largely represented the 'state of the art' at the time, the report recognised that the resulting value estimates had a number of weaknesses, and identified these as areas for future research and development. Since then, the Economics and Resource Analysis (ERA) Programme, of the Research, Development and Statistics Directorate of the Home Office, has undertaken and commissioned research, data collection and analysis to address these weaknesses and to develop and improve the value estimates in other ways. This is now an ongoing programme of research, which will generate regular and periodic updates of the estimates in future.

In this report the results of the first update of the cost of crime estimates are presented. These focus on a number of areas of improvement, including:

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[4] Brand, S and Price, R (2000) The economic and social costs of crime, Home Office Research Study 217, London: The Home Office (hereafter referred to as HORS 217)

- changes to the way the emotional and physical costs of violent crime against individuals are valued;
- an updated methodology for estimating the criminal justice system costs of responding to crime, especially relating to police and prison costs; and
- revised 'multipliers' for estimating the total number of offences from British Crime Survey (BCS) and recorded crime figures.

There are also a number of updates reflecting the availability of more recent data. This report summarises the nature of these changes, and compares the resulting cost estimates with the originals published in HORS 217. The discussion is generally presented in terms of an explanation of the issue to be addressed, the development adopted to address it, and the results of adopting that development. Further explanation of the changes made to the valuation of the impacts of violent crime is provided in Dubourg *et al.* (2005).[5] The current report also outlines improvements in the cost of crime which are planned for forthcoming updates.

# 2. Costs of violent crime

## *Issue and development*

The most significant of the current updates to the cost of crime methodology, relative to HORS 217, is in the approach adopted for the valuation of the emotional and physical costs of violent crime. HORS 217 used values estimated by the Department for Transport for the prevention of serious non-fatal injuries in road traffic accidents to value the intangible costs of violent crime.[6] However, this was due to a lack of alternative and dedicated evidence, and was recognised as an unsatisfactory long-term measure. The particular nature of physical injuries and the degrees of consequent psychological trauma entailed by criminal wounding, for example, could well be very different from those involved in road traffic accidents, which produces a potential for biased and misleading indicators of the cost of violent crime.

Consequently, the Home Office commissioned research to develop and apply methodologies for valuing the intangible victim costs of violent crime specifically. One of these approaches, developed by academics at the universities of Sheffield and East Anglia,[7] collated evidence from a range of sources, including the BCS, on the prevalence and severity of various health state outcomes associated with a range of violent crime incidents. These health outcomes were then translated into estimated losses of quality-adjusted life years (QALYs). This is a concept which has been developed and used extensively in the health service area, and subject to extensive theoretical and empirical validation.[8] Reductions in QALYs as a result of suffering a violent crime incident can then be translated into money terms by applying a monetary estimate of a QALY derived from research again undertaken for the DfT.[9]

The advantage of this approach is that it is based on established health state assessments, and can in principle be applied to any health state or outcome which can be characterised in terms of the same health and lifestyle dimensions as the QALY.[10] This means that it can produce valuation estimates which are closely tailored to the actual impacts of the particular crime incidents of interest.

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[5] Dubourg, R., Hamed, J. and Thorns, J. (2005) Estimating the cost of the impacts of violent crime on victims (Section 3 of this report).
[6] See Highways Economics Note 1 (1998) London: Department for Transport.
[7] Dolan, P., Loomes, G., Peasgood, T. and Tscuchiya, A. (2003) Estimating the intangible victim costs of crime, report for the Home Office, University of Sheffield and University of East Anglia.
[8] See, for example, The EuroQol Group (1990) EuroQol: A new facility for the measurement of health-related quality of life. Health Policy, 16(3):199-208.
[9] Carthy, T., Chilton, S., Covey, J., Hopkins, L., Jones-Lee, M., Loomes, G., Pidgeon, N. and Spencer, A. (1999), The Contingent Valuation of Safety and the Safety of Contingent Valuation, Part 2: The CV/SG 'Chained' Approach, Journal of Risk and Uncertainty, 17:187-213.
[10] The dimensions used in the ERA research are mobility, the ability to care for oneself, the ability to undertake one's usual activities, levels of pain and discomfort, and levels of anxiety and depression. These are the dimensions used in the EQ5D health classification scheme (see The EuroQol Group (1990) *op cit*).

HORS 217 made a distinction between serious and other woundings which, in the absence of any dedicated evidence, was based on largely arbitrary assumptions. The new methodology is now based on dedicated evidence on the impact of all woundings on average, but which does not indicate how much more serious serious wounding might be than other wounding. For the victim impacts of woundings, therefore, the distinction between the two is dropped in these updates. It is retained overall, however, since serious wounding (which generally involves the use of intent) does tend to receive greater punishment than other wounding, and hence higher CJS costs.

For both consistency and improved accuracy, the values of the costs of health services and lost output resulting from violent crime have also been updated, based on the same health outcome profiles that were generated from the BCS for the QALY research. To these were applied costs of lost output (measured in terms of GDP per head and estimated from the annual national accounts 'Blue Book') and unit costs of health service treatments (from Netten and Curtis (2004) and Department of Health (2003)) to generate total unit costs per health outcome.[11] For a more detailed explanation of this methodology, see Dubourg *et al.* (2005).[12]

**Table 2.1: Comparison of the consequential costs of violent crime, 2000 and 2003/04 (£, 2003 prices)**

|  | Physical and emotional impact | | Lost output | | Health services | |
|---|---|---|---|---|---|---|
|  | 2000 | 2003/04 | 2000 | 2003/04 | 2000 | 2003/04 |
| Homicide | 771,511 | 860,380 | 407,799 | 451,110 | 694 | 770 |
| Wounding | 13,219 | 4,554 | 2,204 | 1,166 | 1,323 | 1, 348 |
| Sexual Offences | 13,219 | 23,015 | 2,204 | 4,430 | 1,323 | 916 |
| Common Assault | 264 | 797 | 22 | 269 | - | 123 |
| Robbery | 2,644 | 3,083 | 463 | 1,011 | 209 | 483 |

## *Results*

Table 2.1 shows how the average costs for physical and emotional impact, lost output and health services differ between HORS 217 and the 2003/04 updated numbers.[13] (Homicide is included for completeness but has been updated for 2003/04 only in line with price inflation and real economic growth.[14]) The estimated physical and emotional cost of wounding has been revised downwards. The emotional and lost output costs of sexual offences have both been revised up significantly. The former results from the application of the new evidence- and QALY-based methodology, rather than the use of values for the prevention of road traffic casualties. The latter results largely from taking account of the longer-term impacts of mental illness following such offences. Values for other offences are largely unchanged. This improved methodology for valuing violent crimes, based on actual physical and psychological outcomes of offences, provides a more consistent and accurate set of results for the costs of violent crime.

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[11] United Kingdom National Accounts: The Blue Book 2004, London: The Stationery Office; Netten, A and Curtis, L (2004) Unit Costs of Health and Social Care 2004, Personal Social Services Research Unit, University of Kent; Department of Health (2003) NHS Reference costs 2003, London: Department of Health.
[12] *Op cit*
[13] HORS 217 estimates have been updated to 2003 prices to be comparable with the updated 2003/04 estimates. This accounts for the difference of approximately 10 per cent in the original HORS 217 estimates and the HORS 217 estimates presented in this report. The same is true for all comparisons between HORS 217 and revised estimates made in this report.
[14] See Highways Economics Note 1 (2004) London: Department for Transport. The justification for uprating in line with real economic growth is that economic growth increases personal and household incomes and hence the value of goods, including reductions in risk of being the victim of crime. Uprating on a one-to-one basis with economic growth assumes that the income elasticity of demand for reduced risk is unity.

# 3. Criminal justice system costs

## Police

For HORS 217, little information was available on the allocation of costs and expenditure within police forces. Police costs were split into crime-related and non-crime-related costs, using an adapted activity sampling exercise for Humberside Police, with the crime-related costs then split according to relative CJS costs per offence. However, police resource allocation is likely to differ from the way in which other CJS resources are used, suggesting that this approach might not produce accurate estimates of the true cost of police time associated with different crimes.

In 2003/04, an activity-based sampling exercise was undertaken for each of the 43 police forces in England and Wales. This allocates police time by staff grade to a range of crime- and non-crime-related activity, and to activities which cannot be linked with specific types of crime and non-crime events (e.g. identity parades, refreshments). These latter activities are treated as overheads, and are allocated to a specific police activity in proportion to that activity's share of total specific activity. This gives a total proportion of police time allocated to crime- and non-crime-related activity. To this is applied the overall police budget for England and Wales (estimated by CIPFA), to give total cost spent on each crime- and non-crime-related activity. Unit costs of police time for each crime type are then obtained by dividing these total amounts by the number of crimes of each type.

## Correctional services costs

### Issue

HORS 217 used the Home Office Flows and Costs model to estimate CJS costs in 2000.[15] This does not necessarily give the most accurate indication of the costs resulting from any individual crime's being committed. This is because the Flows and Costs model calibrates unit costs so that the model estimate of total CJS budget equals the actual budget in the same year. In other words, this approach constrains unit costs to be equal to the values which, when applied to the total numbers of crimes committed in the year in question, will produce the total CJS budget for that same year. However, this neglects the fact that some offences result in costs which can be incurred over more than one year's time period. For instance, the prison cost per homicide presented in HORS 217 seems low (£4,200), despite an average sentence length which can be expected to last several years. This is because, at any one time, less than ten per cent of the prison population is represented by offenders convicted of murder or manslaughter.[16] Estimating costs on the basis of the characteristics of the prison population at any one time will fail to account for the fact that crimes such as homicide can result in custody costs many years into the future.

The Flows and Costs model-based methodology used in HORS 217 might therefore provide a reasonably accurate 'snapshot' estimate of the amount 'spent' on crime in any given year. However, it will not provide an accurate estimate of the cost implications of any given offence being committed. This is what is most relevant for cost benefit analysis in evaluation and appraisal. Accordingly, what is required is a measure which recognises the future costs of dealing with crimes committed today, and for this purpose it is more appropriate to use a discounted net present value methodology.[17]

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[15] Harries, R (1999) The cost of criminal justice, Home Office Research Findings No. 103, London: Home Office.
[16] Home Office (2003) Prison statistics, England and Wales, 2002, Cm 5996, London: The Stationery Office.
[17] See HM Treasury (2003) The Green Book: Appraisal and Evaluation in Central Government, London: The Stationery Office, for a simple explanation of discounting.

## Development

The new methodology uses sentencing data that provide details of the average length of each disposal by crime type.[18] For custodial sentences this is scaled using percentage time served for discharges in 2003 to estimate actual time spent in custody.[19]

Assumptions about average unit costs of sentences are based on data from a variety of sources, including prison statistics and the Flows and Costs model, to calculate the average cost of each disposal type for each offence group. This involves discounting disposals that last a long period of time at a monthly discount rate of 0.287 per cent, equivalent to the Treasury annual discount rate of 3.5 per cent.

To estimate unit costs per crime, the total sentencing cost is calculated by multiplying the average cost by the numbers sentenced to each disposal for each crime type in 2003. These figures are then aggregated to calculate the total estimated cost of each disposal for each crime type and divided by the estimate of total number of crimes. This procedure effectively weights the cost by the probability that the offence is classified as the primary offence.

This methodology therefore suffers from one of the existing weaknesses of sentencing statistics, which is that sentences are categorised by primary offence at the relevant sentencing occasion. It is possible that offences categorised as one offence include longer sentences as a consequence of additional findings of guilt or other offences that are taken into consideration on any individual sentencing occasion. This is likely to be a source of bias in these results as more serious crimes are more likely to be recorded as the primary offence. This means that the costs of sentencing for less serious offences could be incorrectly assigned to more serious crimes. The cost of sentences for less serious offences will then be underestimated, and the cost of more serious offences overestimated. However, data do currently not allow this potential error to be corrected without significant additional work.

An additional issue relates to the HORS 217 treatment of sentences for homicide. Allocation of CJS costs across violence offence types was previously made on the basis of average sentence length. In the case of homicide, many convictions result in life sentences. The previous methodology treated these as of indeterminate length, and hence excluded them from the calculation of the average length of sentence for homicide. However, life sentences are far more prevalent for homicide than for other violent crimes, and are also generally much longer than other sentences. Clearly, therefore, excluding them from the calculation resulted in a far lower average sentence length than would have been the case if life sentences for homicide had been included. In turn, this resulted in a far lower CJS cost allocation to homicide relative to other crimes, giving a misleading indication of the true total costs of a homicide, and an underestimate of the benefits of a reduction in the number of homicides.

Thus, in updating the HORS 217 estimates based on the 'old' CJS methodology, life sentences have been incorporated into the calculations, with the assumption that they result in an average time served of 13.5 years.[20] Other sentences have also been scaled down to reflect the average time served (54 per cent of sentence ordered) for all offences.[21]

## Results

Table 3.1 presents three sets of CJS unit costs of crime. The first gives the original HORS 217 estimates updated to 2003 prices. The second set of costs reflects new police costs and CJS cost allocation for violence, but does not include the new methodology for calculating the costs of sentences. The third set uses revised police costs and CJS cost allocation, and the new CJS methodology based on the net present value of sentence costs.

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[18] Home Office (2003) *Op. cit.*
[19] *Ibid.*
[20] *Ibid.*
[21] *Ibid.*

**Table 3.1: Average CJS costs of crimes against individuals and households (£, 2003 prices)**

| | Average total CJS cost, old methodology | | Average total CJS cost, new methodology |
|---|---|---|---|
| | 2000 | 2003/04 | 2003/04 |
| Violence against the person | 2,976 | 1,793 | 1,928 |
|    Homicide | 24,248 | 35,383 | 144,239 |
|    Wounding | 2,976 | 1,757 | 1,775 |
|       Serious Wounding | 14,328 | 14,041 | 14,345 |
|       Other Wounding | 1,433 | 978 | 978 |
| Sexual Offences | 4,298 | 3,143 | 3,298 |
| Common Assault | 298 | 281 | 255 |
| Robbery | 1,543 | 2,447 | 2,601 |
| Burglary in a Dwelling | 540 | 1,044 | 1,137 |
| Theft | 66 | 237 | 217 |
|    Theft - Not Vehicle | 99 | 337 | 301 |
|    Theft of Vehicle | 77 | 144 | 199 |
|    Theft From Vehicle | 33 | 54 | 50 |
|    Attempted Vehicle Theft | 11 | 31 | 65 |
| Criminal Damage | 66 | 129 | 126 |

From the Table it can be seen that, compared with HORS 217, the 2003/04 estimates using the old CJS methodology are generally the same or lower, in real terms, for violent crimes (except homicide and robbery), and higher for non-violent crimes. There are a number of reasons for this.

The increase in the values for non-violent crimes is due to a general increase in CJS resources over the period combined with a general decline in the estimated total number of offences. Both of these factors apply to violent crimes as well. However, they are countered by the improved estimation of the costs of police activity, which is now more accurately allocated between violent and non-violent crimes, resulting in a reduced allocation to violence. In addition, the incorporation of life sentences for violence has the effect of increasing the weight attached to homicide in the allocation of non-police CJS costs, relative to other violent offences. This latter factor also explains why the estimate for homicide is the violent offence which has increased significantly in real value terms in 2003/04 compared with 2000.

With the new net present value methodology, the largest changes are for those offences that tend to attract longer custodial sentences. In this case the unit cost for homicide is far higher, and appears more realistic than the previous estimate given the high detection and conviction rates for that class of crimes. In the majority of cases, the new methodology results in higher CJS cost estimates than the previous one, for reasons previously explained. However, they are in some cases only slightly higher than those obtained from the old CJS methodology, despite the fact that average sentences are significantly greater than one year. This is largely due to the high rate of attrition for these offences, which can mean that the length of sentence expected when a BCS crime is committed is not significantly longer than one year.

The cost of some minor crime falls marginally with the new methodology – this is because these offences actually receive marginally shorter sentencing and probation than assumed previously, and/or that the cost of these sentences is now being marginally discounted. These new estimates can be regarded as more accurate representations of the true CJS costs of common assault.

These numbers have been estimated on the assumption that pre-sentence CJS activities are all completed in the course of one year. However, for some complex or serious offences, bail, remand and court time might occur over a total period longer than this. This could have two effects on the new methodology estimates. It could mean that some CJS costs (e.g. custody) are actually incurred further into the future than currently assumed, which would cause them to be discounted over a longer period. This would have the effect of reducing the new methodology CJS estimates. It could also mean that, for some crimes, the estimates do not currently fully recognise the costs of extending remand and trial periods. Correcting this would have the effect of increasing the CJS estimates with the new methodology. Therefore the net

effect could be positive or negative. Further investigation of this issue – perhaps through adaptation of the new CJS model – could be the subject of future updates (see below).

# 4. Revised multipliers for estimating total numbers of offences

Neither the BCS nor recorded crime statistics measure the total volume of offences. The BCS does not include individuals under 16 years of age in its sample, and does not cover all crime types; it excludes crimes such as murder, where the victim cannot, by definition, be interviewed, fraud, and so-called victimless crimes (e.g. drug dealing). Recorded crime statistics in theory cover all crimes no matter what the age of the victim, but miss crimes that go unreported. It is important, however, to estimate the numbers of crimes against individuals under 16 to ensure they are not overlooked in any appraisal of interventions to reduce crime.

There is a question, however, about how crimes against juveniles should be valued. In general, values are estimated on the basis of individual willingness to pay (WTP), which is constrained by income. The vast majority of juveniles will have low or even zero income, which in turn would imply zero or low WTP. When valuing welfare impacts upon children, therefore, economists have tended to base valuations on *household* WTP, on the assumption that the impacts are internal to the family unit, and hence that children's welfare will tend to be reflected in the WTP of their parents. Unfortunately, we do not have information on parents' WTP for risk reductions for their children.

We are therefore left with a number of options. We can leave crimes against juveniles valued at zero. We can value them the same as crimes against adults. Or we can value them at some (arbitrary) fraction of the value of crimes against adults. The first option is not attractive, since it is clearly not reflective of the actual situation – policies to reduce crime against juveniles are in place, implying some positive value – and therefore unhelpful. The third option is also unattractive for a number of reasons, chief amongst which is that it would set a precedent of tailoring values according to the characteristics of the individual concerned. If adopted generally, for instance, it would have the effect of valuing more highly the prevention of crimes against those on higher incomes, at the expense of those who are already often the most disadvantaged in society, for instance the elderly and the disabled. Although justified on theoretical grounds, this would have politically unacceptable distributional consequences, and would be generally counter to practice in other areas of government policy-making.[22]

The approach adopted therefore is to value crimes against juveniles in the same way as crimes against adults. As a result, a way is needed of estimating the total volume of offences of each type from existing information.

Previous estimates of the total volume of offences were based on the comparable subset of 1997 BCS and 1997 recorded crime data. This provided 'multipliers' which were used to estimate the total volume of offences from recorded crime levels. The approach assumes that the under-reporting of crime against under-16s is the same as for crime against adults. The 'multiplier' between BCS and recorded crime is then applied to recorded crime against all victims. This effectively scales the volume of recorded offences against adults back to the BCS level and scales the volume of recorded offences against under-16s up to a 'BCS-equivalent' estimate of total crime that includes an allowance for unrecorded crimes.

These crime numbers are used for two purposes. One is to estimate unit costs for cost categories where only estimates of the total aggregate cost are available – unit values can then be estimated by dividing the total aggregate cost by this estimated total volume of offences. The other is to estimate the total volume of offences that feeds into the aggregate cost of crime estimates.

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[22] For further discussion of this point in relation to the valuation of lost output, see Dubourg *et al.* (2005) *op. cit.*

There is an issue about whether it is better to use 'annual' multipliers which reflect reporting and recording practice in any given year, and which therefore might vary significantly from year to year. An alternative would be to select a single year's multiplier for use in all years. A third would be to use some sort of 'rolling average' or forecast multiplier.

There are advantages and disadvantages with each of these, as follows:

- 'Annual' multipliers have the advantage of ensuring that the calculations of the cost of crime and of crimes committed in any one year reflect the actual situation in that year. However, if multipliers vary significantly from year to year, this means that our unit values, for instance, are unlikely to be accurate estimates of the costs of crime over longer periods, and hence might be misleading when used in cost-benefit analysis of interventions with extended lifetimes.

- Rolling averages or forecast estimates of multipliers make unit values more accurate estimates of the costs of crime on average and in the medium term, but will create a situation when the true cost of crime and crimes committed in any one year differ from that estimated using our unit value estimates.

- Using a single year's estimates for all years is a combination of the two approaches above. Potentially it suffers from the disadvantages of both. However, whether this is true hinges ultimately on the extent to which multipliers do vary year by year, and whether they are expected to change in the future. If there is little variation, and/or none is expected in the future, then it is the simplest approach which will provide an accurate long-term predictor of unit costs, as well as unit values which are a true reflection of actual costs in any given year.

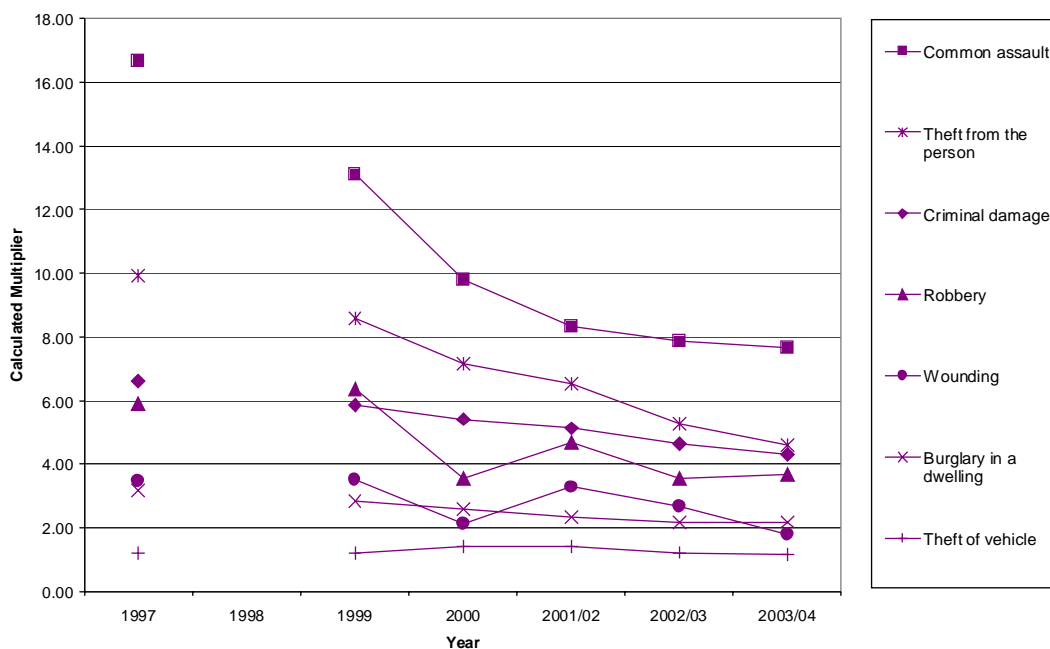**Figure 4.1: Trends in calculated multipliers, 1997-2003**



Figure 4.1 presents calculated multipliers for the seven principal types of crime against the individual, for the period 1997 to 2003. It can be seen that, in all cases, the multiplier calculated for 2003 is lower than the equivalent for 1997, in some cases significantly. This effect can largely be attributed to changes to the Home Office counting rules for recorded crime in 1998/99, and the introduction of the National Crime Recording Standard in 2002. With these developments, the police have been required to record more reported crimes. This has reduced the multipliers over the whole period, particularly those for violent crime. There remains some variability in most of the multipliers. Those for common assault, theft and burglary appear to be on a continuing downward trend, although perhaps at a declining rate. The multipliers for robbery and wounding also appear to be falling, but more erratically. This

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might reflect variations in reporting by victims rather than recording by police, in turn reflecting the varying nature and severity of these crimes.

Interestingly, the multiplier for vehicle theft shows little change over the period and is very close to unity, implying that almost all offences have generally been recorded by the police. This can be attributed to the fact that the conditions of vehicle theft insurance policies almost universally require a police crime record number in the event of an insurance claim. This provides a direct incentive for victims to report vehicle thefts and ensure that they are recorded by the police. The same can be said for burglary in a dwelling, although the higher multiplier for this crime is likely to reflect the reduced coverage of household insurance and the effect of insurance policy excess clauses which deter the reporting of low-severity crimes.

This discussion suggests that, although having fallen in recent years (in some cases significantly), and remaining somewhat variable from year to year, multipliers seem to be becoming more stable over time, and seem unlikely to move dramatically from their current levels. The latest set of multipliers is therefore adopted for the calculation of estimates of the cost of crime now and into the future. However, it should be noted that this is hardly a robust test of the stability of multipliers since 1997. Unfortunately, insufficient observations currently exist for a more formal statistical test.

Table 4.1 contains the HORS 217 multipliers, the multipliers used to calculate revised costs of crime for 2000 and the multipliers used to calculate the costs of crime for 2003/04. The revised 1999 multipliers supersede those used in HORS 217 as these are calculated on the basis of BCS and recorded crime data for the same year. This is an improvement over the estimates in HORS 217 which were based on BCS data from two years previously, which necessitated the projection of changes in recording practices.

**Table 4.1: Comparison of multiplier estimates for offences against individuals and households**

|  | HORS 217 multiplier estimates | Revised 1999 multiplier estimates | 2003/04 multiplier estimates |
| --- | --- | --- | --- |
| Homicide | 1.0 | 1.0 | 1.0 |
| Wounding | 2.3 | 3.5 | 1.8 |
| Common assault | 16.7 | 13.1 | 7.7 |
| Sexual offences | 3.5 | 10.1 | 5.2 |
| Robbery from individuals | 5.8 | 6.3 | 3.7 |
| Burglary in a dwelling | 3.2 | 2.9 | 2.2 |
| Theft from the person | 9.9 | 8.6 | 4.6 |
| Theft of a pedal cycle | 3.5 | 2.9 | 3.6 |
| Theft of vehicle | 1.2 | 1.2 | 1.2 |
| Theft from vehicle | 3.9 | 3.7 | 2.8 |
| Attempted vehicle theft | 6.1 | 3.9 | 2.2 |
| Other theft and handling | 4.0 | 3.6 | 2.7 |
| Criminal damage | 6.3 | 5.9 | 4.3 |

The most significant development to the estimated multipliers regards the multiplier for sexual offences. This is now based on research by Walby and Allen (2004) which used a larger sample of the BCS self-report section on interpersonal violence.[23] This is an improvement on the HORS 217 methodology, which used the 1998 BCS, the sample size for which was smaller than that for the more recent survey, at just over 5,000. The more recent BCS survey was based on a sample of over 12,000 women over 16 years of age. However, it still results in a sample of individuals reporting victimisation which is statistically too small (49) to use to estimate a national frequency of victimisation. This is because the mean number of offences is biased significantly by an even smaller number of respondents who report repeat victimisation.

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[23]Walby, S. and Allen, J. (2004) Domestic violence, sexual assault and stalking: Findings from the British Crime Survey. Home Office Research Study 276, London: The Home Office.

Therefore, the new approach adopted here uses the estimate of the proportion of respondents who have been victimised to calculate a total number of victims in England and Wales. It is then assumed that each victim experienced one sexual offence in the previous 12 months, which is a lower-bound estimate.[24] This then provides an estimate of the total number of sexual offences, which can be compared with the recorded number of offences to generate a multiplier. The approach adopted then scales this multiplier down in line with those for violence against the person, to reflect recent recording changes and other trends depicted in Figure 4.1. The multiplier which results is equal to 5.2 (compared with 3.5 in HORS 217). This should be seen as providing a lower-bound estimate on the total number of sexual offences.

**Table 4.2 Revisions to estimated total number of offences (000s)**

|  | HORS 217 | Revised 1999 | 2003/04 |
|---|---|---|---|
| Violence against the person | 880 | 1,350 | 1,277 |
| Homicide | 1 | 1 | 1 |
| Wounding | 880 | 1,348 | 1,275 |
| Serious wounding | 110 | 102 | 76 |
| Other wounding | 780 | 1,246 | 1,199 |
| Sexual offences | 130 | 382 | 269 |
| Common assault | 3,200 | 2,546 | 1,851 |
| Robbery | 420 | 458 | 335 |
| Burglary in a dwelling | 1,400 | 1,263 | 880 |
| Theft | 7,300 | 6,440 | 4,959 |
| Theft - Not vehicle | 3,800 | 3,362 | 3,157 |
| Theft of vehicle | 380 | 384 | 225 |
| Theft from vehicle | 2,200 | 2,072 | 1,249 |
| Attempted vehicle theft | 950 | 621 | 329 |
| Criminal damage | 3,000 | 2,772 | 2,589 |

A further change affects the calculation of the estimated multiplier for wounding. This follows a change in practice by the police in April 2002 which redefined common assaults which result in minor injury as other woundings. The approach used here accounts for this, but continues with the definitions used in the BCS and the pre-2002 definition of common assault. This means that the estimated total number of common assaults produced using these multipliers includes common assaults with minor injuries, even though the police would now define them as other wounding. This is so as to remain consistent with the injury profiles used by Dolan *et al.* (2003)[25] for estimating the emotional and physical costs of crime.

Table 4.2 demonstrates the effect of these revisions on the estimated total numbers of offences. Changes to these numbers are important as they have knock-on effects on many of the components of the unit cost estimates which are estimated using 'top down' apportionment of the total cost across the estimated total number of offences.

As would be anticipated from the above the most significant change is that for the estimated total number of sexual offences. This number continues to be based on a small sample of victims, so although it represents an improvement on the original estimates it should still be considered an uncertain estimate of the true number.

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[24] To report herself as a victim, an individual must have experienced at least one offence. Therefore, assuming she has experienced a single offence provides a minimum estimate of the total number of offences.
[25] *Op. cit.*

# 5. Data updates

A number of simple updates have been made to reflect the availability of more recent data. These include:

- expenditure on security equipment, for instance, burglar alarms;
- costs of insurance administration, including extension to the insurance of crime-related personal injury;
- the value of stolen and damaged property;
- the cost of victim support services, including the Criminal Injuries Compensation Scheme; and
- Criminal justice system expenditure.

# 6. Overall impact of the updates

Table 6.1 presents the original HORS 217 estimates, up-rated for inflation to 2003 prices, and compares them with the following: HORS 217 estimates revised according to the new methodologies; and, the 2003/04 estimates generated using both the old and the new CJS methodologies.

It can be seen that, in the majority of cases, the unit costs of crime have increased between 2000 and 2003/04. The most important exception to this is the estimate for serious wounding. The revised methodology uses injury profiles based primarily on survey responses from victims of crime. Since this is based on information from the BCS (2003/04), one injury profile is used as the best estimate of the average emotional and physical impact of all wounding. As was discussed above, the difference between serious and other wounding in HORS 217 was primarily driven by arbitrary assumptions about the injury profiles relating to casualties in road traffic accidents. For the revised estimates, due to the nature of the BCS evidence, the methodology for costing health consequences of crime cannot distinguish serious from other wounding. The remaining cost differences between the two crimes are primarily the result of the different costs of criminal justice system processes; these are driven as much by the actions and intent of the offender as by the health consequences to the victim.

**Table 6.1: Average total unit costs of crimes against individuals and households (£, 2003 prices)**

|  | Average total unit cost, old CJS methodology | | Average total unit cost, new CJS methodology | |
|---|---|---|---|---|
|  | 2000 | 2003/04 | 2000 | 2003/04 |
| Violence against the person | 21,520 | 10,272 | 9,254 | 10,100 |
| Homicide | 1,209,432 | 1,350,119 | 1,364,628 | 1,458,982 |
| Wounding | 20,009 | 8,834 | 8,128 | 8,852 |
| Serious Wounding | 146,054 | 21,118 | 17,299 | 21,422 |
| Other Wounding | 2,233 | 8,056 | 7,374 | 8,056 |
| Sexual Offences | 21,075 | 31,283 | 27,654 | 31,438 |
| Common Assault | 591 | 1,467 | 1,398 | 1,440 |
| Robbery | 5,710 | 7,128 | 6,002 | 7,282 |
| Burglary in a Dwelling | 2,583 | 3,175 | 2,626 | 3,268 |
| Theft | 701 | 864 | 857 | 844 |
| Theft - Not Vehicle | 376 | 671 | 510 | 634 |
| Theft of Vehicle | 5,257 | 4,083 | 5,556 | 4,138 |
| Theft from Vehicle | 639 | 862 | 694 | 858 |
| Attempted Vehicle Theft | 315 | 476 | 369 | 510 |
| Criminal Damage | 562 | 869 | 623 | 866 |

In contrast, the values for other wounding and all other crimes of violence increase with the 2003/04 update compared with the original HORS 217 estimates. Partly this is because (homicide excepted) the QALY-based methodology results in a judged increase in severity of these other crimes compared with the previous approach, and hence higher emotional and physical impacts. CJS costs of these crimes also rise from their 2000 levels, partly reflecting increased CJS expenditure over the period, but also the knock-on effects of recognising life sentences for homicide in the methodology for allocating CJS costs across different crimes. These two factors also largely explain why costs for non-violent offences also rise in 2003/04 compared with 2000.

These methodological improvements can be applied retrospectively to the HORS 217 estimates, using underlying data on (for example) sentences and spending for the appropriate year (1999) to provide revised estimates comparable with those generated for 2003/04. From this it can be seen that the unit costs of crime are generally increasing over time. This is due primarily to rising incomes over the period (which lead to higher emotional and lost output costs) and higher CJS expenditure. The highest increases are seen in serious wounding and sexual offence estimates. This is because of an increase in the average sentence length for those sentenced to custody at the crown courts. For wounding this is compounded by increases in the number sentenced to custody in the face of slight falls in the estimated number of offences. For sexual offences a fall in the number sent to custody is more than offset by a fall in the estimated total number of offences.

The only reduction in costs occurs with vehicle theft. This is due to a fall in the average loss reported by respondents to the BCS. This could reflect the fact that security has increased significantly in more modern cars, which might have led the average age of cars stolen to rise (and hence the average value to fall). However, it could also reflect the nature of estimates produced by a sample-based survey such as the BCS. Surveys are subject to sampling error, and for discrete crime types, particularly lower volume crime types, fluctuations caused by sampling error are likely to be larger. An alternative approach would be to base estimates on data obtained from insurance companies.

# 7. Future updates

This report presents the first set of improvements to the estimates of the costs of crime since the original estimates. There are other potential improvements which could be made in the future, such as:

- Confidence intervals. Much of the information used in estimating the total economic and social costs of crime comes from the BCS. Since this is a sample survey, results generated from it are subject to standard statistical confidence limits which provide upper and lower bounds for each output measure. Future updates may incorporate these confidence intervals into the estimates of the costs of crime. This will provide upper and lower confidence limits to the cost of crime estimates, which are preferable to simple point estimates where uncertainty is prevalent, especially for use in appraisal and evaluation.

- The costs of the CJS. As indicated above, the current estimates of the costs of the CJS are based on the Flows and Costs model. However, the Office for Criminal Justice Reform has recently developed a new model of CJS activity, based on micro-simulation rather than a 'top-down' view of the system. This provides much more detailed information on CJS activities, by type of activity and offence type, which could be used to provide much more accurate estimates of the costs of different activities.

- The costs of crime against business. HORS 217 included costs of crime against businesses based on responses from the 1994 Commercial Victimisation Survey. This survey was repeated in 2002, and preliminary results were published in 2004.[26] Further

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[26] Taylor, J. (2004) Crime against retail and manufacturing premises: Findings from the 2002 Commercial Victimisation Survey, Home Office Findings 259, London: The Home Office.

analysis is required to produce cost estimates consistent with the current cost of crime framework.

- The costs of the emotional and physical impacts of non-violent crime. Estimates of these costs are currently based on responses to questions included in the BCS. However, respondents will not necessarily answer these questions in a way that provides information solely on the 'intangible' costs as defined for these estimates. Relative to most violent crimes, these costs are small. However, as a proportion of the total cost of these crimes they can still be significant. This means that errors in estimating them could still have a significant impact on, for example, the results of any appraisal or evaluation of policies targeted at them. It would therefore be preferable if they were estimated using the same basic methodology as was used for the current update of the intangible costs of violent crime.

- The costs of the fear of crime. The Home Office has an objective 'to reduce crime and the fear of crime'. However, there are currently no estimates of the costs of the fear of crime which can be used to judge the worth and effectiveness of interventions to reduce the fear of crime. ERA has been involved in and commissioned exploratory work to measure the economic costs of fear.[27] However, further work is required to confirm the economic basis for this work, as well as to ensure its compatibility with practical measures of fear.

- The costs of vehicle crime. Victims' own recall of the costs of vehicle crime might not be the most reliable. The vast majority of cars are insured against theft. Therefore, insurance companies might be a source of more reliable data on the costs of vehicle theft, and this possibility could be explored in future updates.

Neither the BCS nor recorded crime statistics measure the total volume of offences. The BCS does not include individuals under 16 years of age in its sample, and does not cover all crime types; it excludes crimes such as murder, where the victim cannot, by definition, be interviewed, fraud, and so-called victimless crimes (e.g. drug dealing). Recorded crime statistics in theory cover all crimes no matter what the age of the victim, but miss crimes that go unreported. It is important, however, to estimate the numbers of crimes against individuals under 16 to ensure they are not overlooked in any appraisal of interventions to reduce crime.

There is a question, however, about how crimes against juveniles should be valued. In general, values are estimated on the basis of individual willingness to pay (WTP), which is constrained by income. The vast majority of juveniles will have low or even zero income, which in turn would imply zero or low WTP. When valuing welfare impacts upon children, therefore, economists have tended to base valuations on *household* WTP, on the assumption that the impacts are internal to the family unit, and hence that children's welfare will tend to be reflected in the WTP of their parents. Unfortunately, we do not have information on parents' WTP for risk reductions for their children.

We are therefore left with a number of options. We can leave crimes against juveniles valued at zero. We can value them the same as crimes against adults. Or we can value them at some (arbitrary) fraction of the value of crimes against adults. The first option is not attractive, since it is clearly not reflective of the actual situation – policies to reduce crime against juveniles are in place, implying some positive value – and therefore unhelpful. The third option is also unattractive for a number of reasons, chief amongst which is that it would set a precedent of tailoring values according to the characteristics of the individual concerned. If adopted generally, for instance, it would have the effect of valuing more highly the prevention of crimes against those on higher incomes, at the expense of those who are already often the most disadvantaged in society, for instance the elderly and the disabled. Although justified on theoretical grounds, this would have politically unacceptable distributional consequences, and would be generally counter to practice in other areas of government policy-making.[28]

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[27] Dolan, P., Loomes, G., Peasgood, T. and Tsuchiya, A. (2004) Estimating the economic and social costs of the fear of crime. Report for the Home Office. This will be available at a future date at http://www.homeoffice.gsi.gov.uk/rds/cost_of_crime.html.
[28] For further discussion of this point in relation to the valuation of lost output, see Dubourg *et al.* (2005) *op. cit.*

The approach adopted therefore is to value crimes against juveniles in the same way as crimes against adults. As a result, a way is needed of estimating the total volume of offences of each type from existing information.

Previous estimates of the total volume of offences were based on the comparable subset of 1997 BCS and 1997 recorded crime data. This provided 'multipliers' which were used to estimate the total volume of offences from recorded crime levels. The approach assumes that the under-reporting of crime against under-16s is the same as for crime against adults. The 'multiplier' between BCS and recorded crime is then applied to recorded crime against all victims. This effectively scales the volume of recorded offences against adults back to the BCS level and scales the volume of recorded offences against under-16s up to a 'BCS-equivalent' estimate of total crime that includes an allowance for unrecorded crimes.

These crime numbers are used for two purposes. One is to estimate unit costs for cost categories where only estimates of the total aggregate cost are available – unit values can then be estimated by dividing the total aggregate cost by this estimated total volume of offences. The other is to estimate the total volume of offences that feeds into the aggregate cost of crime estimates.

There is an issue about whether it is better to use 'annual' multipliers which reflect reporting and recording practice in any given year, and which therefore might vary significantly from year to year. An alternative would be to select a single year's multiplier for use in all years. A third would be to use some sort of 'rolling average' or forecast multiplier.

There are advantages and disadvantages with each of these, as follows:

- 'Annual' multipliers have the advantage of ensuring that the calculations of the cost of crime and of crimes committed in any one year reflect the actual situation in that year. However, if multipliers vary significantly from year to year, this means that our unit values, for instance, are unlikely to be accurate estimates of the costs of crime over longer periods, and hence might be misleading when used in cost-benefit analysis of interventions with extended lifetimes.

- Rolling averages or forecast estimates of multipliers make unit values more accurate estimates of the costs of crime on average and in the medium term, but will create a situation when the true cost of crime and crimes committed in any one year differ from that estimated using our unit value estimates.

- Using a single year's estimates for all years is a combination of the two approaches above. Potentially it suffers from the disadvantages of both. However, whether this is true hinges ultimately on the extent to which multipliers do vary year by year, and whether they are expected to change in the future. If there is little variation, and/or none is expected in the future, then it is the simplest approach which will provide an accurate long-term predictor of unit costs, as well as unit values which are a true reflection of actual costs in any given year.

# Section 3

# Estimating the cost of the impacts of violent crime on victims

Richard Dubourg
Joe Hamed
Jamie Thorns

Economics and Resource Analysis
Research, Development and Statistics
Home Office

# Key points

- Home Office Research Study 217, published in 2000, presented the first estimates of the cost of crime in England and Wales. Since then, an ongoing programme of research has been established to improve these estimates. This report presents the results of the research relating to the improved estimation of the victim costs of violent crime.

- The victim costs estimated in this report are: the emotional and physical ('intangible') costs to victims; the costs of lost output through a victim of violence being required to take time off work to convalesce; and, the health costs of treating injuries and other health impacts of violence.

- The crime types considered in this report are wounding, rape, sexual assault, common assault and robbery. This is the first time separate estimates for rape and sexual assault have been possible.

- The methodologies employed are based on application of the Quality-Adjusted Life-Year (QALY) concept developed in the health services literature, and information on the health impacts of violent crimes reported by respondents to the British Crime Survey. This compares with the previous approach, which generally involved transferring values estimated for the Department for Transport in the context of serious non-fatal road injuries.

- The revised estimates indicate that the costs of wounding are significantly lower than previously estimated. This reflects a more accurate treatment of the nature of injuries that result from wounding. The revised estimate for sexual assault is comparable with the previous estimate for all sexual offences, including rape. However, the new methodology demonstrates that rape is significantly more costly than other sexual assaults, highlighting the importance of using dedicated evidence when appraising or evaluating targeted interventions.

# 1. Introduction

The emotional and physical impacts for victims of crime can be considerable, particularly for violent crimes. Victims of violent crimes might have received physical injuries, they might feel shocked, insecure, wary and vulnerable for many weeks or months after the crime occurred. As a result, the costs of these physical and emotional impacts to the victim, especially for violent crimes, can be a significant proportion of the total costs of the crime, and need to be measured on similar terms as financial costs so that they can properly be included in cost-benefit analyses of crime reduction.

Home Office Research Study 217[29] used values estimated by the Department for Transport (DfT) for the prevention of serious non-fatal injuries in road traffic accidents[30] to value the intangible costs of a range of non-fatal violent crimes. These crimes were wounding, robbery and sexual offences. Values for common assault were generated from responses to the British Crime Survey (BCS). 'Intangible costs' here refer to the direct impacts of a crime upon the victim's wellbeing – pain and suffering, psychological effects, worry and so on. They do not refer to those costs which affect a victim indirectly, through, for instance, his ability to participate in the labour market, or costs which are borne by others (e.g. taxpayers' funding of health treatment).

The use predominantly of values estimated in the context of road safety was due to a lack of alternative and dedicated evidence, and was recognised as an unsatisfactory long-term measure. The particular nature of physical injuries and the degrees of consequent

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[29] Brand, S and Price, R (2000) The economic and social costs of crime in England and Wales, Home Office Research Study 217, London: Home Office, hereafter referred to as HORS 217.
[30] See Highways Economics Note 1 (1998) London: Department for Transport.

psychological trauma entailed by criminal wounding, for example, could well be very different from those involved in road traffic accidents. Particularly important was the assumption that some wounding would correspond to casualties of serious road traffic accidents (as defined by the DfT) and that other victims of wounding would receive injuries commensurate with slight road traffic accidents, as the resulting unit values differed by several orders of magnitude.

This report presents a new approach to valuing the intangible costs of violent crime, based on research conducted for the Home Office by academics at the universities of Sheffield and East Anglia.[31] This approach uses information reported in the BCS to derive health state outcomes associated with a range of violent crime incidents. These health outcomes are then translated into estimated losses of quality-adjusted life years (QALYs), and then into money terms. This provides monetary estimates of the 'intangible costs' to victims of violent crime. The same information on health outcomes is also used to estimate the costs of health services consumed in treating the negative health impacts of violence, and the costs of output lost through impaired performance in the labour market. Together, these three exercises provide a comprehensive and dedicated estimate of the victim costs of violent crime.

# 2. Intangible costs

## *Methodology*

The approach to valuing the intangible victim costs of violent crime proceeds by identifying the expected prevalence and duration of the physical and psychological outcomes of offences. Existing health state indices are then used to estimate the losses in terms of QALYs. The QALY estimates can be converted into monetary values through the application of an appropriate valuation of a QALY.

The offence categories addressed in this research are wounding, robbery, common assault, rape and sexual assault. They appear in the criminal code which forms the basis for police recorded crime and the BCS. The physical health outcomes are taken from categories used for reporting physical injuries in the BCS. However, the BCS includes no coverage of psychological trauma. Therefore, additional trauma categories were added for all crimes and in the case of rape, psychological health outcomes such as depression, anxiety and drug abuse were included. A list of all crime categories and health outcomes are presented in Table 2.1.

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[31] Dolan, P, Loomes, G, Peasgood, T and Tsuchiya, A (2003) *Estimating the intangible victim costs of crime*, report for the Home Office.

**Table 2.1: Health states by prevalence and QALY loss for violent crime types**

| Health states | QALY loss | Prevalence of health state by crime type | | | | |
|---|---|---|---|---|---|---|
| **Physical health states** | Equivalent years at full health | Wounding | Common assault | Rape | Sexual assault | Robbery |
| Broken bones | 0.0228 | 0.0801 | 0.0025 | 0.037 | 0.007 | 0.020 |
| Broken nose | 0.0066 | 0.0358 | 0.0025 | - | - | 0.010 |
| Minor bruise / black eye | 0.0014 | 0.2754 | 0.3400 | 0.192 | 0.036 | 0.180 |
| Severe bruising | 0.0057 | 0.5264 | 0.0400 | 0.111 | 0.021 | 0.210 |
| Scratches | 0.0002 | 0.2914 | 0.0900 | - | - | 0.070 |
| Cuts | 0.0026 | 0.5431 | 0.0300 | - | - | 0.130 |
| Broken or lost teeth | 0.0021 | 0.0250 | - | - | - | - |
| Chipped teeth | 0.0011 | 0.0276 | - | - | - | 0.010 |
| Concussion | 0.0060 | 0.1158 | 0.0025 | - | - | 0.050 |
| Other injury | 0.0019 | 0.0727 | 0.0100 | 0.033 | 0.006 | 0.030 |
| HIV diagnosis asymptomatic | 2.5260 | - | - | 0.000 | - | - |
| Gonorrhoea | 0.0002 | - | - | 0.040 | - | - |
| Chlamydial infection | 0.0002 | - | - | 0.020 | - | - |
| Trichomoniasis | 0.0002 | - | - | 0.120 | - | - |
| Bacterial vaginosis | 0.0002 | - | - | 0.190 | - | - |
| Abortion | 0.0122 | - | - | 0.025 | - | - |
| Miscarriage | 0.0122 | - | - | 0.006 | - | - |
| **Psychological health states** | | | | | | |
| Acute stress disorder | 0.0100 | 0.5500 | 0.1375 | 1.000 | 1.000 | 0.550 |
| Mild/moderate PTSD | 0.3670 | 0.0203 | 0.0051 | 0.343 | 0.157 | 0.020 |
| Severe PTSD | 1.4398 | 0.0087 | 0.0022 | 0.147 | 0.067 | 0.009 |
| Drug abuse | 1.1559 | - | - | 0.023 | - | - |
| Alcohol abuse | 0.8256 | - | - | 0.018 | - | - |
| Depression | 0.3439 | - | - | 0.200 | - | - |
| Suicide | 17.6411 | - | - | 0.001 | - | - |
| Obesity/eating disorder | 0.6422 | - | - | 0.050 | - | - |
| Anxiety | 0.4841 | - | - | 0.050 | - | - |
| Sexual dysfunction | 0.0324 | - | - | 0.780 | - | - |
| Expected QALY loss (years of full health) | | **0.033** | **0.007** | **0.561** | **0.16** | **0.028** |
| Unit cost of a QALY (£,1997) (Carthy *et al.* (1999) *op cit*) | **80,620** | | | | | |
| Cost of QALY loss (£, 1997) (based on Carthy *et al.* (1999) *op. cit.*) | | **3,393** | **587** | **45,256** | **12,872** | **2,271** |

NOTES:
1. Prevalences are probabilities that do not necessarily sum to 1 for each crime type, as one crime may result in multiple health states.
2. QALY loss figures are measured in terms of number of years in full health.
3. QALY losses listed per health outcome represent actual QALY losses (QALY weight multiplied by duration) given the health outcome, irrespective of prevalence. The first column gives QALY losses for wounding. For some crimes there are slight variations to the appropriate assumptions regarding duration, which means the actual QALY loss is not precisely the same as that for the health states resulting from wounding. The column totals are calculated using offence-specific QALY losses. For full details, see Dolan *et al.* (2003) *op. cit.*
4. All figures rounded to four decimal places where appropriate. This might result in some discrepancies between figures and calculated totals.
5. "-" Indicates nil or not considered.

In order to value the prevention of the intangible consequences of the 'average' or 'typical' case of a certain crime type, both the likelihood and duration of injury or trauma need to be identified. Table 2.1 presents the prevalence figures for various health states. The estimates for wounding are drawn directly from the 2003/04 BCS.[32] The estimates for the other crime types are drawn from Dolan *et al.* who compiled estimates from sources based on the

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[32] Home Office Statistical Bulletin 10/04 "Crime in England and Wales 2003/2004" London: Home Office.

2001/02 BCS, the 1998 BCS interpersonal violence module and various international sources. From the Table it can be seen that eight per cent of all woundings are reported to result in broken bones, whereas only a quarter of one per cent of common assaults entail the same injury.

The estimates here do not use the Dolan *et al*. assumptions that distinguished serious wounding from other wounding. This is because the BCS provides information on the nature of wounding as a whole and does not provide direct evidence on the differences in injuries resulting from serious and other wounding. The Dolan *et al*. report made speculative attempts to distinguish between these crime types in order to be able to make comparisons between their methodology and the HORS 217 results.

The HORS 217 methodology made the split between serious wounding and other wounding to permit the use of two values of injuries based on serious (non-fatal) and minor casualties in road traffic accidents. It was likely that the higher estimate of emotional and physical impact, £97,000, would overstate the severity of injuries sustained in most woundings. Conversely many victims of wounding would be likely to suffer more than the lower estimate, £120. The distinction was made on the basis of the recorded crime classifications of more serious and less serious violence rather than on specific evidence relating to the severity of the injuries sustained. In the recording of crime the classification of severity depends at least as much on the intentions of the offender as it does on the specific injuries sustained by the victim, although it seems likely that, on average, a wounding with intent is likely to result in more serious injuries than one without intent.

The estimates presented here retain consistency with the BCS estimates and therefore are based on victims' reported health states. The Dolan *et al*. methodology is used as this provides the mechanism to translate the health consequences into QALY losses and monetised estimates. It would be necessary to conduct further research into the health-related consequences of wounding to provide a more reliable picture of the differences between serious and other wounding.

The QALY is a concept widely used in health economics.[33] Briefly: any profile of health can be represented in terms of years of life weighted by some index of health-related quality of life. The quality of life measure assigns a score of 1 to full health and 0 to death, with states regarded as better than death but not as good as full health being assigned scores between 0 and 1.[34] Therefore a ten-year profile where six years are spent in a state weighted at 0.6 followed by four years weighted at 0.3 is assigned a QALY score of 6x0.6 + 4x0.3 = 4.8 QALYs. Given that the concern here is more with health *losses*, it is more appropriate to view this health profile as a loss of 5.2 QALYs compared with ten years in full health.[35]

The Global Burden of Disease (GBD) study[36] was used to derive figures for both the duration of and the QALY disability weights associated with most of the health impacts of relevance to this research. Weights for post-traumatic stress disorder were taken from a Dutch National Burden of Disease study,[37] and longer-term impacts of wounding were weighted according to the EQ5D health state index.[38]

The prevalence rates obtained from the BCS can then be applied to the QALY losses by actual health outcome derived from the various sources described. These are detailed in Table 2.1. Multiplying them together gives an expected QALY loss per health outcome. These QALY losses for each health outcome are then summed up, giving a total QALY loss per crime type, also presented in Table 2.1.

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[33] See, for example, The EuroQol Group (1990) EuroQol: A new facility for the measurement of health-related quality of life. Health Policy,16(3):199-208.
[34] Negative values – i.e. states worth than death – are also possible and have been reported in empirical research.
[35] This is slightly simplified, as standard practice would also discount costs and benefits that occur in the future.
[36] Murray, C J L and Lopez, A D (eds.) (1996). The global burden of disease: A comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020, Havard School of Public Health on behalf of the World Health Organization and the World Bank.
[37] Stouthard, M E A, Essink-Bot, M-L, Bonsel, G J, Barendregt, J J *et al*. (1997) Disability weights for diseases in the Netherlands, Department of Public Health, Erasmus University, Rotterdam
[38] The EuroQol Group, *op. cit.*

In order to convert the QALY losses into monetary amounts they need to be mapped onto some monetary estimate of the value of a QALY. There is a variety of means of estimating such values. They can be elicited from directly stated preferences or based on indirectly revealed preferences from observed behaviour. Carthy *et al.* (1999) undertook a study to value the prevention of serious road accidents for the Department for Transport, which employed a 'chained' methodology, similar to that used by Dolan *et al.*[39] This method has the advantage of being based on direct elicitation of money values for a relatively modest loss of health from a representative sample of the population, and is methodologically consistent with the QALY approach. It also does not overly incorporate contextual factors into the study's scenario design which would make it less applicable to the current context of crime. Using data from this study, the value of a QALY is estimated at £81,000. Applying this figure to our estimates of QALY loss gives the monetary estimates of the emotional and physical impacts of violent crimes presented in Table 2.1.

Finally, the estimates from Dolan *et al.* (2003) have been uprated to account for both inflation and growth in income per capita from 1997 (the original year used in Carthy *et al.* (1999)) to 2003. The estimates, based on willingness to pay, are assumed to increase as per capita incomes rise, in accordance with advice in the HM Treasury's Green Book and the DfT's Highways Economics Series.[40]

## *Results*

Table 2.2 presents the results of these calculations alongside the figures for the costs of the physical and emotional impacts of violence reported in HORS 217. The original HORS 217 estimates are also presented in 2003 prices to aid comparison with those derived from the new methodology.

**Table 2.2: Comparison of the emotional and physical costs of violent crime, 2000 and 2003/04 (£)**

| | Physical and emotional impact | | | | | |
|---|---|---|---|---|---|---|
| | **2000[1]** | | **2000[2]** | | **2003/04** | |
| Serious Wounding | 97,000 | 12,000 | 106,909 | 13,266 | 4,554 | |
| Other Wounding | 120 | | 132 | | | |
| Rape | 12,000[3] | | 13,226 | | 61,440 | 22,754[4] |
| Sexual assault | | | | | 17,447 | |
| Common assault | 240 | | 265 | | 788 | |
| Robbery | 2,400 | | 2,645 | | 3,048 | |
| NOTES: | | | | | | |

NOTES:
1. Original HORS 217 estimates in 1999 prices
2. HORS 217 estimates uprated to 2003 prices
3. HORS217 estimate for sexual offences did not distinguish between sexual assault and wounding.
4. Estimated by weighting values for rape and sexual assault by relative prevalence[41]
5. Estimates based on revised methodology have been up rated for inflation and growth in real income since 1997. To reflect changes in the price base and an expected increased willingness to pay in line with income. This assumes a unitary income elasticity of demand for prevention of injury.

It can be seen from Table 2.2 that the new figures for common assault and robbery are broadly comparable with HORS 217 estimates. The common assault figure has increased by over 100 per cent, although this amounts to only £523 per incident in absolute terms. It should be remembered that the HORS 217 figure for common assault was based on responses to the BCS, which should not be regarded as robust estimates of the costs of physical and emotional impacts. This is because the BCS questions on this issue are intended to provide only broad indications of these costs in money terms, rather than monetary estimates generated via specially designed value elicitation methodologies.

[39] Carthy, T, Chilton, S, Covey, J, Hopkins, L, Jones-Lee, M, Loomes, G, Pidgeon, N and Spencer, A. (1999), The contingent valuation of safety and the safety of contingent valuation, part 2: The CV/SG 'chained' approach, Journal of Risk and Uncertainty, 17, 187-213.
[40] HM Treasury (2003) "The Green Book: Appraisal and Evaluation in Central Government", London: TSO. See also Department for Transport *op. cit.*
[41] Walby, S and Allen, J (2004) Domestic violence, sexual assault and stalking: Findings from the British Crime Survey. Home Office Research Study 276, London: Home Office.

The new figure for sexual offences is equal to £22,754 when account is taken of the relative prevalence of rape and other sexual assaults. This compares with £13,226 (uprated) in HORS 217, a real increase of 72 per cent. However, this weighted estimate masks somewhat the fact that the physical and emotional impacts of rape are now costed at £61,440, the most serious violent crime after homicide. This suggests that the new figure should give a far better indicator of the value of interventions to reduce, for example, the number or severity of rape incidents than the HORS 217 estimates, which treated rapes and other sexual assaults as effectively the same.

The second significant difference between the revised and the HORS 217 figures relates to wounding offences. HORS 217 estimates were based around a proportion of woundings sustaining injuries equivalent to those sustained by serious casualties of road traffic accidents, and the remainder suffering injuries equivalent to minor casualties. The revised methodology uses information from the BCS and is thus directly tied to the reported health outcomes of victims. The new estimate reflects the fact that injuries sustained in road traffic accidents were, on average, more serious than those sustained in incidents of wounding.

# 3. Lost output

## *Methodology*

Many victims will have to spend time off work as a consequence of the emotional and physical impacts of violent crime. The value of lost output associated with time off work must be included in an estimate of the total economic and social cost of violent crimes. This is independent of whether the victim or employer is covered by insurance against loss of earnings, since such insurance merely serves to shift the burden of the loss from the insured to the insurer, leaving the actual loss unaffected.

Information on the prevalence and the duration of the health states resulting from violent crime, discussed in the previous section, can be used to estimate the value of lost output. The duration of the health states is not taken to be directly equivalent to time off work, as some injuries will be borne concurrently as a result of suffering an incident of violence. Additionally, for some injuries it will be possible to work for some of the time they are suffered. Assumptions have been made about the proportion of the duration of each health state that will entail time off work. For more severe reductions in health the time off has been assumed to be a larger proportion of the total length of the health state. These assumptions are detailed in Table 3.1. Calculated durations are discounted at a rate of 3.5 per cent year (the HM Treasury discount rate), to account for the fact that some health states have a duration of several months or even years.

To calculate the expected loss in output from each crime type, the prevalence of each health state is modelled as an independent probability of a binary event. The total time lost is assumed to be the maximum of those health states that do occur. This assumes that, as the health states will be concurrent, any health states which imply a duration shorter than the maximum for each case will not be a constraint on returning to work.

For each crime the mix of health states for 5,000 incidents was simulated. The average of the maximum number of days lost for each case was taken. The total number of days off was then multiplied by £51, an estimate of the average daily output per head in the UK in 2003.[42] Calculating lost output in this way implicitly assumes that victims are effectively drawn from the entire population at random. It therefore recognises that victims might not be members of the labour force. It also takes account of non-productive time, such as weekends and 'out of office hours'.

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[42] Economic Trends, no. 610 September 2004, Office for National Statistics. £18,524 is the average income per head per annum (current prices) for the UK in 2003 (Table 2.4 divided by 365.25).

**Table 3.1: Assumptions to estimate number of working days lost as a result of violent crime**

| Health states | Total discounted duration (days) [1] | Proportion of duration that entails time off work [2] | Time off work (days) [3] |
|---|---|---|---|
| **Physical health states** | | | |
| Broken bones | 42 | 75% | 31 |
| Broken nose | 21 | 50% | 11 |
| Minor bruise / black eye | 10 | 25% | 3 |
| Severe bruising | 21 | 50% | 10 |
| Scratches | 2 | 25% | 1 |
| Cuts | 9 | 25% | 2 |
| Broken or lost teeth | 7 | 25% | 2 |
| Chipped teeth | 7 | 25% | 2 |
| Concussion | 12 | 50% | 6 |
| Other injury | 7 | 50% | 3 |
| HIV diagnosis (asymptomatic)[4] | 6,761 | 25% | 1,690 |
| Gonorrhoea | 7 | 50% | 3 |
| Chlamydial infection | 7 | 50% | 3 |
| Trichomoniasis | 7 | 50% | 3 |
| Bacterial vaginosis | 7 | 50% | 3 |
| Abortion | 7 | 100% | 7 |
| Miscarriage | 7 | 100% | 7 |
| **Psychological health states** | | | |
| Acute stress disorder | 28 | 75% | 21 |
| Mild / moderate post-traumatic stress disorder | 1,028 | 25% | 257 |
| Severe post-traumatic stress disorder | 1,028 | 25% | 257 |
| Drug abuse | 1,670 | 50% | 835 |
| Alcohol abuse | 1,670 | 25% | 417 |
| Depression (mild) – long term | 1,670 | 25% | 417 |
| Depression (mild) – short term | 358 | 25% | 89 |
| Depression (moderate) - long term | 1,670 | 25% | 417 |
| Depression (moderate) - short term | 358 | 25% | 89 |
| Depression (severe) – long term | 1,670 | 50% | 835 |
| Depression (severe) – short term | 358 | 50% | 179 |
| Suicide[4] | 6,421 | 100% | 6,421 |
| Obesity / eating disorder | 1,670 | 50% | 835 |
| Anxiety | 1,037 | 25% | 259 |
| Sexual dysfunction | 60 | 50% | 30 |

NOTES:
1. Equivalent to assumed duration of health states for calculations for physical and emotional wellbeing, rounded to the nearest whole number.
2. Assumptions
3. All figures rounded to the nearest whole number.
4. Assumptions for the duration of HIV and suicide come from broad assumptions about the profile of these illnesses. Suicide is assumed to take place an average of five years subsequent to the incident and result in the same number of years lost as an average death as estimated in studies valuing life lost in road traffic accidents. HIV is assumed to last an average of 30 years from the incident and is discounted as with the duration of other injuries. These assumptions are consistent with the assumptions used by Dolan *et al.* (2004) *op. cit.* used to estimate the intangible health costs.

These advantages are at the expense of introducing other factors which effectively bias the revised estimate of the lost output costs of violence away from its true value. For instance, the

approach is based on UK GDP per head, whereas the scope of the current estimates is England and Wales, where GDP per head is higher. However, regional breakdowns of UK GDP are not produced as quickly as the national figure, which means that this approach allows the estimates to be kept more readily up-to-date. Moreover, Regional Economic Indicators (November 2004) indicates that the discrepancy between output in England and Wales and the UK as a whole is not extensive.[43] This suggests that the approach based on UK GDP does not introduce significant bias to the estimates.

In addition, the approach does not take account of the incidence of violent crime victimisation across the total population, and assumes that all members of the population are at equal risk of being victims of violent crime. However, the BCS suggests that the risk of victimisation varies significantly by location, by age and by sex (BCS 2003/2004)[44]. For instance, an adult in the London Region is more likely to be the victim of violent crime (7.7%) than an adult in Yorkshire and the Humber Region (5.6%). Men are almost twice as likely (5.4% in the 2003/04 BCS) to be victimised as women (2.9%), (although women made up 93 per cent of the victims of recorded rape in 2003/04[45]). Finally, men aged 16-24 are almost three times more likely to be victimised than men on average.

This variation in risk would not affect the estimate of the true lost output costs of violent crime if output per head did not vary by age, sex or region. For instance, average weekly earnings of an individual in London in 2002 were estimated to be 52 per cent higher than earnings of an individual in Yorkshire and The Humber.[46] The New Earnings Survey suggests that full-time male workers on average earned in 2002 almost a third more than full-time female workers.[47] The same survey also found that men aged 18-24 employed full-time earned around 40 per cent less than full-time male workers on average.

This implies that average GDP per head might not be a good estimate of the output of the average victim of violent crime, and that output lost as a result of a violent offence could vary significantly depending on the nature of the crime, where it is committed and upon whom.

However, the alternative would be to tailor our estimates of lost output according to the specific relevant characteristics of the victims of crime, according to their probability of victimisation. Although theoretically justified from an economic point of view, this would have the effect of valuing more highly the prevention of crimes against those on higher incomes. It would value least of all the prevention of crimes against those who are already most disadvantaged in society, for instance the unemployed and the disabled. This would have politically unacceptable distributional consequences, and would be generally counter to practice in other areas of government policy-making.[48]

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[43] Regional Economic Indicators, November 2004, Office for National Statistics, Table 1 provides estimates of UK Gross Value Added (GVA) in 2002 broken down by country. Applying country population estimates to these figures gives estimates of country GVA per head. This indicates that GVA per head for England and Wales is 1.1 per cent higher than for the UK as a whole. Applying this to the estimate of UK GDP per head published in Economic Trends (September 2004) gives an estimate of per head GDP per day for England and Wales of £51.29, compared with the estimate used in this report of £51.

[44] Home Office Statistical Bulletin 10/04 (2004), "Crime In England and Wales 2003/2004", Chapter 5, London: Home Office

[45] *ibid.* Table 7.01

[46] Regional Trends (2004) Office of National Statistics.

[47] New Earnings Survey (2003) Office of National Statistics, Volume F, Table 7.

[48] For instance, the DfT employs a single estimate of the value of preventing fatalities in road accidents, despite the fact that the risk of such fatalities falls more heavily on some sections of society, especially young men. That said, the Department for the Environment, Food and Rural Affairs has conducted research to estimate the value of preventing air pollution-related fatalities, based on scientific evidence which suggests that those most at risk from air pollution are the old and infirm, who are likely to be on much lower incomes than the average member of the population.

**Table 3.2: Comparison of the lost output costs of violent crime, 2000 and 2003/04**

| | Lost output | | | | | |
|---|---|---|---|---|---|---|
| | **2000[1]** | | **2000[2]** | | **2003/04** | |
| Serious Wounding | 14,000 | 2,000 | 15,430 | 2,204 | 1,166 | |
| Other Wounding | 400 | | 441 | | | |
| Rape | 2,000[3] | | 2,204 | | 9,965 | 4,430 |
| Sexual assault | | | | | 3,362 | |
| Common assault | 20 | | 22 | | 269 | |
| Robbery | 420 | | 463 | | 1,011 | |
| NOTES: 1. Original HORS 217 estimates in 1999 prices  2. HORS 217 estimates uprated to 2003 prices  3. HORS217 estimate for sexual offences did not distinguish between sexual assault and wounding.  4. Estimated by weighting values for rape and sexual assault by relative prevalence[49] | | | | | | |

## *Results*

Table 3.2 presents the results of these calculations alongside the estimates made in HORS 217. The HORS 217 estimates are presented in 1999 prices and uprated to 2003 prices to allow comparisons of change in the real value of the estimates.

The revised estimates of lost output have changed in a similar fashion to the estimates of emotional and physical impacts. The estimated lost output due to wounding offences has fallen significantly, again this is directly tied to the improved assumptions about the injury profile of victims. The new figure for sexual offences is equal to £4,430 when account is taken of the relative prevalence of rape and other sexual assaults. This compares with £2,204 (uprated) in HORS 217, approximately doubling in real terms. Common assault has increased by £247 in real terms. This is a twelve-fold increase that is a consequence of the extremely low estimate in HORS 217.

# 4. Health service costs

In cases of violent crime, which often involve some sort of injury to the victim, costs can fall on the NHS and other health service providers when the victim seeks medical treatment. The resources used in providing these services have an opportunity cost which should be included as part of the cost of violent crime.

The estimates of health service costs are based on assumptions about the activities that are likely to be involved in treating each health state. These are then weighted by the prevalence of each health state as used in estimating the other costs as a consequence of violence. The unit costs of health care activities come from Curtis and Netten (2004) and Department of Health (2004).[50]

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[49] Walby and Allen (2004) *op. cit.*
[50] Curtis, L and Netten, A (2004) Unit costs of health and social care 2004, http://www.pssru.ac.uk/uc/uc2004.htm, Canterbury: University of Kent. Department of Health (2004) NHS Reference costs 2003, http://www.dh.gov.uk/PolicyAndGuidance/OrganisationPolicy/FinanceAndPlanning/NHSReferenceCosts/fs/en, London: Department of Health

**Table 4.1: Assumed quantity of health treatement/resources by health state**

| Health states | Health cost category | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | General costs | | | | | | | Procedure specific costs | | | | | | | |
| | A+E (bed days) | Ambulance | Nurse (hours) | Registar (hours) | Consultant (hours) | Physio (hours) | Counselling (hours) | Limb fracture | Nose procedure | Sprains/ strains/ cuts | Oral surgery /restorative dentistry | Brain injury | Genito-urinal medicine | Obstetrics /delivery | Termination of pregnancy |
| Broken bones | - | 1 | - | - | - | 10 | - | 1 | - | - | - | - | - | - | - |
| Broken nose | - | 0.5 | - | - | - | - | - | - | 1 | - | - | - | - | - | - |
| Minor bruise/black eye | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Severe bruising | - | 0.5 | - | - | - | - | - | - | - | 1 | - | - | - | - | - |
| Scratches | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - |
| Cuts | - | 0.5 | - | - | - | - | - | - | - | 1 | - | - | - | - | - |
| Broken or lost teeth | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - |
| Chipped teeth | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - |
| Concussion | - | 0.3 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| Other injury | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | - | - | - | - | - | - | - | - | - | - |
| Acute stress disorder | - | - | - | - | - | - | 2 | - | - | - | - | - | - | - | - |
| Mild/moderate PTSD | - | - | - | - | - | - | 50 | - | - | - | - | - | - | - | - |
| Severe PTSD | - | - | - | - | - | - | 50 | - | - | - | - | - | - | - | - |
| Gonorrhoea | - | - | - | - | - | - | 50 | - | - | - | - | - | 1 | - | - |
| Chlamydial infection | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - |
| Trichomoniasis | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - |
| Bacterial vaginosis | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - |
| Abortion | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 |
| Miscarriage | - | - | - | - | - | - | 2 | - | - | - | - | - | - | 1 | - |
| Drug abuse | - | - | - | - | - | - | 50 | - | - | - | - | - | - | - | - |
| Alcohol abuse | - | - | - | - | - | - | 50 | - | - | - | - | - | - | - | - |
| Depression | - | - | - | - | - | - | 20 | - | - | - | - | - | - | - | - |
| Obesity/ eating disorder | | | | | | | | | | | | | | | |
| Anxiety | - | - | - | - | - | - | 25 | - | - | - | - | - | - | - | - |
| Sexual dysfunction | - | - | - | - | - | - | 2 | - | - | - | - | - | 1 | - | - |
| Unwanted pregnancy | - | - | - | - | - | - | 3 | - | - | - | - | - | - | 1 | - |

Table 4.1 contains a list of health cost categories derived from Curtis and Netten (2004) and the Department of Health (2004). The Table gives the quantity of each unit of health service cost that is assumed to result from each health state. Where possible, health states have been associated with specific procedures, rather than more general assumptions about staff time and A&E time etc. Thus where a health state is associated with a specific procedure it is expected that accident and emergency costs will be included as an overhead to that speciality according to the NHS costing manual.[51] For specific procedures this has been assumed to be equal to one. This may be an underestimate as it is likely that some victims require more than one treatment episode. Costs of counselling are based on assumptions about the number of counselling sessions. This is based on the nature of the injury and the assumed average duration of the health state. Ideally these assumptions would be based on real observations of the actual treatments that are given to victims of these injuries. This information is not currently available. It is possible that for some more common injuries (i.e. cuts, scratches and bruising) the treatment costs are overstated, as it is assumed here that they will be treated by health services rather that alternatives such as first aid.

Table 4.2 gives the assumptions of the unit costs that are applied to each of the health services given above. These costs might understate the true health service costs of criminal injuries. Being a sample survey, the BCS is unlikely to pick up rare health consequences. However, since these outliers could be associated with much larger health costs, they could have a significant impact on the expected cost of treatment. This is likely to be the case with crimes such as wounding, where the high likelihood of concussion indicates that there is probably some unobserved risk of serious brain injury. Treatments for serious brain injuries tend to be very expensive and could be a source of underestimate in Table 4.2. The costs of procedures that can be carried out as elective or non-elective and inpatient, outpatient or day care procedures have been given an average cost weighted by the number of admissions/finished consultant episodes in the costing sample used in the NHS reference costs.

*Table 4.2: Unit costs of health states*

| Health cost type | Cost (£) | Source |
|---|---|---|
| A+E (per attendance) | 129 | Curtis and Netten (2004) |
| Emergency ambulance (per patient) | 211 | Curtis and Netten (2004) |
| Staff nurse (per hour of client contact) | 34 | Curtis and Netten (2004) |
| Registrar (per hour worked)[1] | 40 | Curtis and Netten (2004) |
| Consultant (medical, per hour) | 109 | Curtis and Netten (2004) |
| Physiotherapy (per hour client contact) | 41 | Curtis and Netten (2004) |
| Counselling (adjusted per hour client contact)[2] | 43 | Curtis and Netten (2004) |
| Limb fracture | 2,018 | NHS reference costs (2003) |
| Nose procedure | 918 | NHS reference costs (2003) |
| Sprains/strains/cuts | 699 | NHS reference costs (2003) |
| Oral surgery/restorative dentistry | 215 | NHS reference costs (2003) |
| Concussion[3] | 479 | NHS reference costs (2003) |
| Genito-urinary medicine | 212 | NHS reference costs (2003) |
| Obstetrics/delivery | 292 | NHS reference costs (2003) |
| Termination of pregnancy | 479 | NHS reference costs (2003) |
| Notes: | | |
| [1] Average of Senior House Officer and specialist registrar | | |
| [2] Unit cost for counselling is adjusted to account for time spend in direct contact with clients. The costs of NHS counselling services are assumed to be equivalent to counselling that might be delivered by other organisations. | | |
| [3] The least costly treatment for brain injury was selected, as the evidence relates to concussion rather than more severe injuries. | | |

Table 4.3 summarises the total expected health cost by crime type. These estimates are calculated using the information in Tables 4.1 and 4.2. The health services cost for each health state is weighted by the prevalence of that health state for each crime type given in Table 2.1. The expected health service cost is the sum of the prevalence-weighted cost for all health states. The exception to this is for costs that are not specific to certain procedures, for example, ambulance and registrar costs. To avoid double-counting, the maximum expected

[51] Department of Health (2003), "NHS Costing Manual", available at
http://www.dh.gov.uk/PolicyAndGuidance/OrganisationPolicy/FinanceAndPlanning/NHSCostingManual/fs/en

cost is taken rather than the sum of all health states. This simplifies the calculation of costs but effectively assumes no treatment costs for those combinations of health states that do not include the health state associated with the maximum cost. Such combinations are likely to be relatively rare, since they exclude the most common health state, but will cause an underestimate in some of these health costs. The most significant health costs are procedures for sprains strains and cuts. This is primarily because of the relatively high prevalence of health states that are assumed to require this sort of treatment. Counselling costs for more serious violence are also significant as these crimes have higher prevalence of serious psychological ill-health, which tend to last for long periods of time.

*Table 4.3: Expected health cost by crime type, by health cost type, weighted by prevalence of health states (£)*

| Health cost type | Wounding | Common assault | Sexual assault | Rape | Robbery |
|---|---|---|---|---|---|
| A+E (per bed day) | 5 | 1 | 0 | 2 | 2 |
| Ambulance | 57 | 4 | 12 | 12 | 22 |
| Nurse (per hour) | 1 | 0 | 0 | 1 | 1 |
| Registrar (per hour) | 1 | 0 | 0 | 1 | 1 |
| Consultant (medical, per hour) | 4 | 1 | 0 | 2 | 2 |
| Physiotherapy (per hour visit) | 37 | 1 | 15 | 15 | 8 |
| Counselling | 131 | 28 | 568 | 1,633 | 110 |
| Limb fracture | 162 | 5 | 75 | 75 | 40 |
| Nose procedure | 33 | 2 | 0 | 0 | 9 |
| Sprains/strains/cuts | 850 | 80 | 78 | 78 | 262 |
| Oral surgery/restorative dentistry | 11 | 0 | 0 | 0 | 2 |
| Concussion | 55 | 1 | 0 | 0 | 24 |
| Genito-urinary medicine | 0 | 0 | 0 | 244 | 0 |
| Obstetrics/delivery | 0 | 0 | 0 | 9 | 0 |
| Termination of pregnancy | 0 | 0 | 0 | 12 | 0 |
| **Total** | **1,348** | **123** | **748** | **2,082** | **483** |

These cost estimates can be regarded as indicative of the expected costs based on the representative mix of injuries. However, it should be remembered that the links between health outcomes and required health services are assumptions based on informed judgement rather than on direct observation of the treatment of criminal injuries.

**Table 4.4: Comparison of the health treatment costs of violent crime, 2000 and 2003/04**

| | Health treatment cost | | | | | |
|---|---|---|---|---|---|---|
| | **2000[1]** | | **2000[2]** | | **2003/04** | |
| Serious Wounding | 8,500 | 1,200 | 9,368 | 1,323 | 1,348 | |
| Other Wounding | 200 | | 220 | | | |
| Rape | 1,200[3] | | 1,323 | | 2,082 | 916 |
| Sexual assault | | | | | 748 | |
| Common assault | 0 | | 0 | | 123 | |
| Robbery | 190 | | 209 | | 483 | |
| NOTES: 1. Original HORS 217 estimates in 1999 prices 2. HORS 217 estimates uprated to 2003 prices 3. HORS 217 estimate for sexual offences did not distinguish between sexual assault and wounding. 4. Estimated by weighting values for rape and sexual assault by relative prevalence[52] | | | | | | |

Table 4.4 presents a comparison of the health treatment costs of violent crime estimated in HORS 217 and following the application of the methodology revised as described. The relevant comparison is between the HORS 217 estimates uprated to 2003 prices and those resulting from the revised methodology. The estimate for wounding is comparable.

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[52] Walby and Allen (2004) *op. cit.*

# 5. Total cost of the impacts of violent crime on victims

Table 5.1 presents a comparison of the overall costs to victims of violent crime, according to HORS 217 and following application of the various methodological improvements described in this report. These include the emotional and physical impacts of injuries and illnesses and estimates of the associated costs to health services and of lost output from time spent at less than full health. It can be seen that the cost of wounding falls significantly in real terms between 2000 and 2003/04, by nearly 60 per cent. Evidence from the BCS suggests that the severity of the health states was overestimated by assuming similarities between serious and slight casualties of road traffic accidents.

The estimate for robbery is nearly 37 per cent higher in real terms in 2003/04 compared with HORS 217; the importance of lost output has increased from 14 per cent of the total in HORS 217 to just over 22 per cent. The estimate for common assault does rise significantly in both absolute and relative terms, by £893 or over four times.

**Table 5.1: Comparison of the total health-related costs of violent crime, 2000 and 2003/04**

| | Total health-related cost of crimes | | | | |
| --- | --- | --- | --- | --- | --- |
| | 2000[1] | | 2000[2] | | 2003/04 |
| Serious Wounding | 119,500 | 15,200 | 131,708 | 16,753 | 7,068 |
| Other Wounding | 720 | | 794 | | |
| Rape | 15,200[3] | | 16,753 | | 73,487 | 28,100[4] |
| Sexual assault | | | | | 21,587 | |
| Common assault | 260 | | 287 | | 1,180 |
| Robbery | 3,010 | | 3,317 | | 4,542 |
| NOTES:<br>1. Original HORS 217 estimates in 1999 prices<br>2. HORS 217 estimates uprated to 2003 prices<br>3. HORS217 estimate for sexual offences did not distinguish between sexual assaults and wounding.<br>4. Estimated by weighting values for rape and sexual assault by relative prevalence[53] | | | | | |

Finally, the estimate of the victim costs of sexual offences has risen by 68 per cent between HORS 217 and the current updates. Although significant in itself, the revised methodology has also permitted a separate victim cost of rape to be estimated. This shows that a case of rape has costs for the victim which are on average three and a half times greater than those for other sexual assaults. The new estimate of the victim costs of rape demonstrates the seriousness of this offence, and the importance of valuing its prevention appropriately in any appraisal or evaluation of targeted interventions.

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[53] Walby and Allen (2004) *op. cit.*