



The results of SCMH research and analysis, presented and interpreted clearly and concisely to inform and influence policy and practice.

The Sainsbury Centre for Mental Health (SCMH) is a registered charity, working to improve the quality of life for people with severe mental health problems. It aims to influence national policy and encourage good practice in mental health services, through a coordinated programme of research, training and development. SCMH is affiliated to King's College London.

# The economic and social costs of mental illness

## Introduction

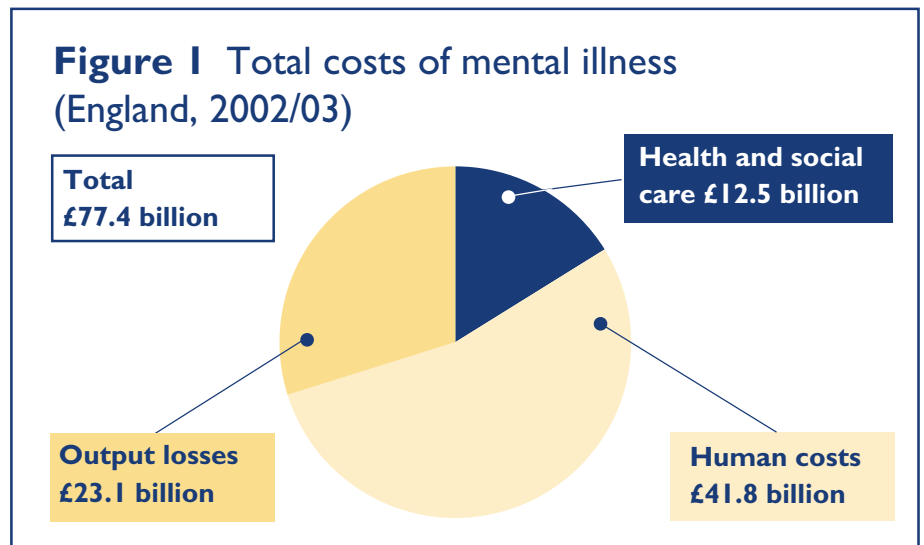
This policy paper presents broad estimates of the economic and social costs of mental illness for England in 2002/03.<sup>1</sup> It builds on earlier studies in this area but extends them in a number of ways, in particular by including a monetary valuation of the human costs of mental illness.<sup>2</sup>

Costs are described and evaluated under three headings:

- (i) the costs of **health and social care**, covering such costs as the services provided by the NHS and local authorities for people suffering from mental health problems and also the costs of informal care given by family and friends;
- (ii) the **human costs** of mental illness, corresponding to the adverse effects of mental illness on the health-related quality of life; and
- (iii) the costs of **output losses** in the economy which result from the negative impact of mental illness on an individual's ability to work.

On the basis of this classification it is estimated that the total costs of mental illness in England amounted to around £77 billion in 2002/03, broken down by type of cost as shown in Figure 1 below.

It is not appropriate to compare this figure with wider economic aggregates such as gross domestic product (GDP), as it includes a number of cost elements which are not reflected in national income as conventionally defined. By way of comparison, however, the aggregate costs of mental illness appear to be somewhat greater than the corresponding costs of crime in this country. A recent study by the Home Office, using broadly comparable methods of estimation, put the economic and social costs of crime at around £60 billion for England and Wales in 1999/2000.<sup>3</sup>



## Why measure the costs of mental illness?

### The meaning of the cost measure

By any yardstick mental illness imposes an enormous burden, on individuals, on families and on society. The broad aim of this study is to identify the various forms this burden may take (and the different groups in the population who are affected) and to combine these in a single total using the common measuring rod of money. Before describing the estimates in detail, it may be helpful to comment briefly on the potential usefulness, and the limitations, of such an exercise.

The best way of interpreting the figures in this paper is as a valuation of how much better off people would be if there were no mental illness. This includes being better off in terms of income, but also – and more importantly – being better off in terms of less pain and suffering and in related dimensions such as a reduced risk of premature death. All of these contribute to improved welfare or well-being and are in principle amenable to monetary valuation. The costs of mental illness thus correspond to a measure of the benefits to be secured if mental illness were eliminated.

### Potential uses for this study

Taken literally, the scenario of no mental illness is of course unrealistic. Figures for the total impact of mental illness on people’s welfare nevertheless have a number of potential uses. The most important of these are as follows.

1. **Highlighting the scale of the problem**  
An estimate of the aggregate cost of mental illness gives some measure of how important an issue it is. More awareness among policy-makers and the general public of the overall impact of mental illness can help to promote better-informed debate on matters of public policy and more understanding attitudes towards mental illness.
2. **Assessing the benefits of action to tackle it**  
The figures provide a broad measure of the potential benefits to be achieved by reducing the prevalence or severity of mental illness, for example by prevention and more effective methods of treatment. Specific interventions aimed at improving mental health must, of

course, be justified in their own right in terms of efficiency and effectiveness, but the evidence of this study gives some indication of the scale of the potential benefits.

### 3. Informing health and social care spending decisions

Estimates of the costs of mental illness can help to inform debate and decision-making about priorities and the use of resources within the NHS and social services, particularly when combined with comparable data on other causes of ill-health. Similarly the figures can contribute to decisions on priorities for research and development.

### 4. Showing the distribution of costs

The figures on the costs of mental illness also give a picture of how the social impacts are distributed across different groups in the population. Such information may help to steer priorities for allocation within a given total of spending on mental illness, whether this relates to spending on health and social services or on research.

In all these cases, figures for the total impact of mental illness provide a relevant context and background for further analysis or discussion.

### Monetary values and policy trade-offs

A possible criticism of the figures is that it is not possible or desirable to evaluate all of the costs of illness in money terms. Taking this argument at a very general level, it is undoubtedly true that there are some issues of public policy for which monetary valuation is not appropriate, because they can be decided on ethical grounds alone. For example, in the field of public safety, the exposure of individuals to patently excessive risks of injury or death is regarded as unacceptable, irrespective of any detailed consideration of costs.

There are, however, very many situations where policy decisions, including those about public spending on mental health, cannot be made in this absolute way. Very often, expenditure proposals have to be weighed against many other desirable ends, from general health care to crime prevention, national defence, public transport or protection of the environment. Trade-offs are inevitably made between the costs of extra spending and the social benefits the spending can bring. Deriving monetary values for these benefits, where it is feasible to do so, can lead to more transparent decision-making and better policy priorities.

The values derived in this paper are not based on the ethical views or professional judgements of experts. Some of the values are taken directly from the market values of resources used. Others are derived indirectly from market values or from estimates of the preferences of people in general (for example on the valuation of health status). The monetary valuation of non-marketed impacts is nonetheless often very difficult and problem areas are noted where relevant below. One purpose of this paper is to generate comment, with a view to improving the derivation and usefulness of the estimates. Comments in this area are therefore particularly welcome.

The remaining sections of this paper set out the cost estimates in detail, following the classification of cost components described in the introduction.

### The costs of health and social care

The costs of health and social care for mental illness are of two main types, corresponding broadly to the distinction between public funding and private funding. The former covers public expenditure on all services and support for people

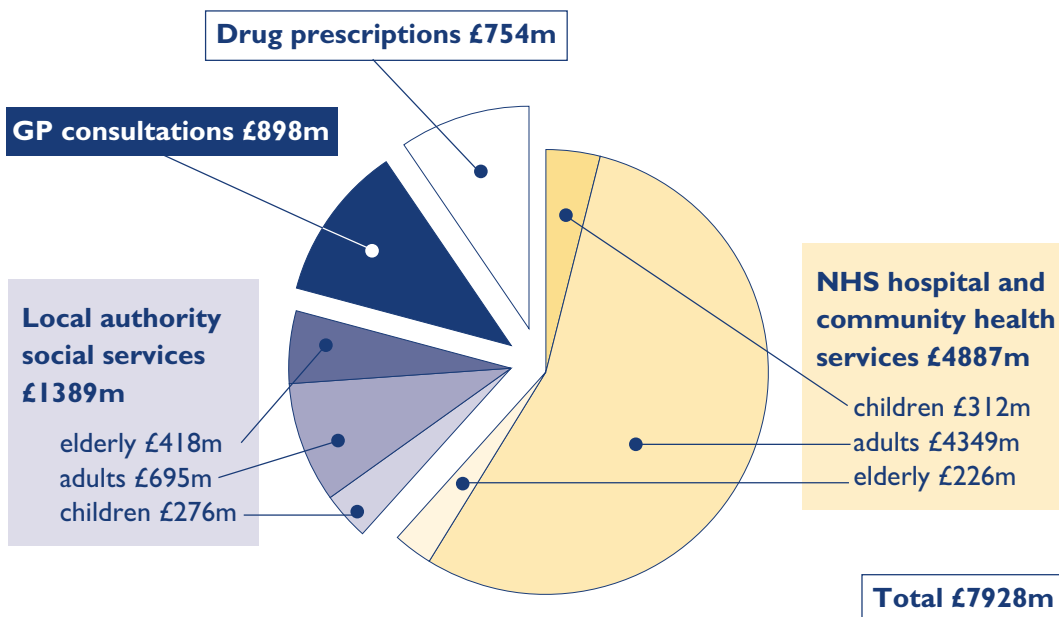
with mental health problems funded by the NHS, local authorities and other public sector agencies. The latter refers partly to private spending on services by individuals or by private sector bodies such as voluntary and charitable organisations but more importantly to the costs of informal care provided for people with mental health problems by family and friends.

### Public spending on mental health services

Total public spending on mental health services is estimated at £7.9 billion for England in 2002/03. This covers all mental health services provided by the NHS and local authorities, including services in primary care (GP consultations and drug prescriptions), hospital and community health services and the services provided to people with mental health problems by local authorities with social service responsibilities. A breakdown of the expenditure by type of service is given in Figure 2 below.<sup>4</sup>

The estimate of £7.9 billion compares with total public spending on the NHS and social services of £67.2 billion in 2002/03.<sup>5</sup> Expenditure on mental health thus accounted for 11.8 per cent of all public spending on health and social services.

**Figure 2** Public expenditure on mental health services (England, 2002/3)



## Other public sector costs

The bulk of public spending on mental health is accounted for by expenditure on health and social services, but two other categories of cost falling to the public sector may also be considered. These are social security costs and the costs of accommodation for people who are homeless and have a mental health problem.

Dealing first with social security, it was estimated by Patel and Knapp (1998) that cash benefits paid to mentally ill people amounted to £7.6 billion in 1996/97.<sup>6</sup> If spending on these benefits had increased in line with social security expenditure in general, the corresponding total for 2002/03 would be around £9.5 billion. It is, however, incorrect to count this form of spending as an economic cost. Social security payments are simply a transfer of purchasing power from one group in society (taxpayers) to another (benefit recipients). No output is lost in making the transfer, except for the resources tied up in social security administration, so there can be no economic cost. Social security benefits are paid to working age people who are sick and disabled primarily because they are unable to work. The fact that people cannot work does of course impose an economic cost in terms of lost output, but this cost is covered elsewhere in this study. It would therefore be a form of double counting to score the social security payments as well.<sup>7</sup>

The only relevant costs relating to social security are thus the costs of staff and other resources used in the administration of benefits. It is broadly estimated that costs of administration represent about 2.5 per cent of the value of benefits paid, implying a cost of around £240 million for the administration of benefits paid to people with mental health problems in 2002/03.

The cost of accommodation for homeless people with mental illnesses is a relatively small item but nevertheless worthy of consideration because of the high prevalence of mental illness in the population concerned. Relevant costs were estimated by Patel and Knapp at £0.15 billion in 1996/97. Since then, overall levels of spending on accommodation for homeless people have more than doubled.<sup>8</sup> Assuming that the prevalence of mental illness in this group has remained broadly constant, at about 35 per cent, this implies a level of expenditure in 2002/03 of around £0.3 billion.

Inclusion of this expenditure carries the implicit assumption that homelessness is in some sense a direct consequence of the mental health problems of the individuals concerned. This may not be true in all cases. The figure of £0.3 billion should therefore be regarded as a maximum estimate.

## Costs to individuals and families

The costs of health and social care falling on individuals and families include private spending on mental health services and the costs of informal care. Little information is available on the first of these components, although it is clear that the amounts involved are relatively small compared with the corresponding level of public expenditure.<sup>9</sup> Using a variety of sources, it was estimated by Patel and Knapp that in 1996/97 private expenditure in this area amounted to around £120 million, divided between £108 million for private spending on counselling and similar services and £12 million for the spending of mental health charities and voluntary organisations that was financed from private sources.<sup>10</sup> The total of £120 million corresponded to 2.1 per cent of public spending on mental health services in the year concerned. In the absence of better information, it is assumed that this proportion has remained broadly constant since 1996/97, giving an estimate of private spending on mental health services in 2002/03 of around £165 million.

Much more important in quantitative terms is the cost of informal care provided for people with mental health problems by relatives and friends. Measuring this cost is difficult for the obvious reason that such care is unpaid and so is not subject to a market valuation. This does not mean, however, that costing is either inappropriate or impossible.

Informal care is one of a range of unpaid services produced by households. Others include housework and childcare. By convention such outputs are not covered in the national income accounts, but they are clearly of value on any broad measure of economic well-being. In recognition of this and other limitations in the conventional measurement of national income, the Office for National Statistics (ONS) has recently been working on a series of experimental statistics, including a so-called 'household satellite account' which seeks to put a monetary value on the main forms of unpaid production in the household sector.<sup>11</sup> In essence this is done by imputing a value to such work on the basis of what it would cost to produce an equivalent output if undertaken as paid work by a third party.<sup>12</sup>

The household satellite account includes a valuation of informal care, based on evidence from the Family Resources Survey on the hours spent by carers. The monetary value of this input depends on whether it is continuous (i.e. round the clock) or non-continuous, the former being valued according to the fees charged in private residential homes and the latter according to the average

wage of an assistant nurse or nursing auxiliary. On the basis of these assumptions the aggregate value of informal care was estimated by the ONS at £13.9 billion for the UK in 2000. This covers all forms of informal care for adults, without any breakdown according to the characteristics of those cared for (mentally ill, physically disabled etc).

The ONS estimate compares with a much higher figure of £57.4 billion produced by the pressure group Carers UK.<sup>13</sup> There are two main reasons for this wide difference. First, Carers UK use a significantly higher imputed wage for valuing the input of carers' time; and second, they adopt a different approach in valuing continuous care, arguing that costs in residential homes are an inappropriate comparator, for example, because they reflect economies of scale which are not available to individual households. The second of these points is supported in a recent review of the ONS work by Hirst, who also suggests that on the basis of survey evidence the ONS figures may underestimate the total number of hours devoted to informal care by around 20 per cent.<sup>14</sup> As far as the valuation of carers' time is concerned, it certainly seems anomalous that 168 hours of continuous care are given a lower value than, say, 50 hours of non-continuous care, yet – as Hirst notes – this is one consequence of the ONS approach. Following a revision of the ONS estimates for continuous care on the lines suggested by Hirst but otherwise retaining the ONS's assumptions (e.g. on wage rates), it is

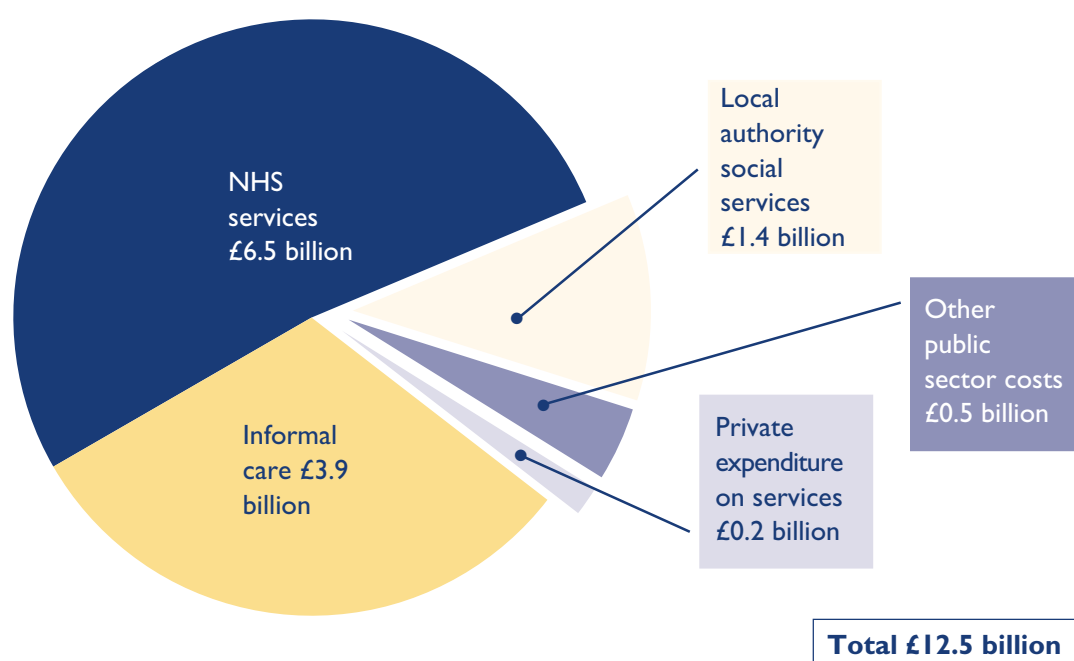
estimated that the aggregate costs of informal care for England in 2002/03 amounted to £23.4 billion.

The remaining step is to determine the proportion of this total that corresponds to the provision of informal care for people with mental illness rather than other health problems. Relevant information is provided in the report of a survey of carers carried out in 2000 for the Department of Health.<sup>15</sup> This shows that, of all people being cared for, 67 per cent had physical problems or difficulties, 19 per cent had both physical and mental problems, 7 per cent were described as being mentally affected only, and in 6 per cent of cases the problems were described as 'old age' rather than as physical or mental. In the absence of more detailed information, the proportion of total caring time attributable to mental health problems is taken here as 16.5 per cent, i.e. all of the 7 per cent described as mentally affected and half the 19 per cent with both physical and mental problems. On this assumption the estimated cost of informal care for people with mental health problems is £3.9 billion.

### The costs of health and social care – summary

In summary, the costs of health and social care are as set out in Figure 3 below. Public spending accounted for two-thirds of the total and private provision, mainly in the form of informal care, for the remaining third.

**Figure 3** The costs of health and social care (England, 2002/03)



## The human costs of mental illness

Previous studies of the costs of mental illness, and indeed cost-of-illness studies generally, have shied away from any attempt to put a monetary value on the adverse effects of ill-health on the quality of a person's life. Instead, quantification of the effects on individual patients has traditionally been confined to assessing the impact of illness on employment and earnings. Ill-health reduces the individual's capacity to work, whether temporarily or permanently, and output in the economy is correspondingly reduced. It is clear that this negative impact on productive capacity is a genuine cost (and numerical estimates relating to mental illness are given below), but equally it is obvious that the so-called 'human capital' approach tells only part of the story. Ill-health may reduce output, but the more serious social costs of illness are the less tangible ones of suffering, pain, disability and distress. Also, by its very nature the human capital approach cannot ascribe any cost of illness to those individuals who are outside the labour market, for example children or older people.

In the light of these and other weaknesses in the traditional approach, it has been decided in this study to estimate a monetary value for the reductions in the quality of life caused by mental illness. To the extent that any such attempt is regarded as novel or contentious, the approach described below should be seen as experimental and justified primarily on the grounds that it is better to be roughly right than precisely wrong. It is clearly wrong to ascribe a zero value to the human costs of mental illness. More refined estimates will depend on developments in both methodology and data availability.

Monetary valuation of the human costs of mental illness for this study has entailed two main steps:

- ❖ using a general measure of health status (the quality-adjusted life year or QALY) to quantify the adverse health effects of mental illness in the population as a whole each year. This calculation results in an estimate of the total number of QALYs lost annually as a result of mental health problems; and
- ❖ deriving an estimate of the monetary value of a QALY and using this to convert the estimated total number of QALYs lost to a monetary equivalent.

## The effects of mental illness on health status

The main data source used in the first of these steps is the *Health Survey for England 1996*.<sup>16</sup> The Health Survey for England is an annual household survey and the 1996 version has been chosen because in that year members of the sample were asked to provide information on a number of general measures of health status, including the so-called EuroQol instrument: an application of the QALY approach. In brief, EuroQol covers five dimensions of health status: mobility; self-care; ability to perform usual activities; pain/discomfort; and anxiety/depression. Informants were asked to rate themselves, on each of the five dimensions, as having no problems (level 1), some problems (level 2) and severe problems (level 3). This three-way classification gives rise to 243 possible health states, ranging from 11111 (no problems on any dimension) to 33333 (severe problems on all five dimensions). Having been classified into one of the 243 possible health states, each informant in the Health Survey was then assigned a tariff score that had been derived for each possible health state in a separate survey, the Measurement and Valuation of Health (MVH).<sup>17</sup> In this tariff, health state 11111 is taken as the upper limit and assigned a tariff value of 1.000, while a state of death is taken as the second reference point and given a score of zero. (Survey evidence suggests that some states are regarded as worse than death and tariff values can therefore be negative.)

Using a simple example to illustrate the approach, as just noted health state 11111 (no problems on any dimension) has a value of 1.000, whereas health state 11121 (moderate pain, no problems on any other dimension) has a score of 0.796 on the MVH tariff. A move from the first of these states to the second thus imposes a loss of health status equivalent to 0.204 of a QALY (or year of healthy life). Put another way, health-related quality of life is reduced by about 20 per cent as a result of this worsening of health.

*The Health Survey for England 1996* gives a prevalence rate of 23 per cent for mental health problems among the adult population, where this is measured by the number of respondents assigned to levels 2 or 3 on the EuroQol dimension of anxiety/depression. The total breaks down between 21 per cent on level 2 ('some problems, moderately anxious or depressed') and 2 per cent on level 3 ('severe problems, extremely anxious or depressed').

It is important to note that this estimate of prevalence may be subject to qualification. The measure being used essentially defines mental

illness as any self-reported problem with anxiety or depression and this may be imprecise for a number of reasons. For example, not everyone who is moderately anxious would agree that they have mental health problems or would benefit from treatment, and some categories of mental illness may not be captured very well on the anxiety/depression dimension. On the other hand, it is worthy of note that, even though based on a different method of measurement, the overall prevalence rate of 23 per cent is exactly the same as the prevalence rate for mental health problems given in a much more detailed survey of psychiatric morbidity carried out by the ONS for the Department of Health in 2000.<sup>18</sup>

The prevalence rate of 23 per cent corresponds to a total of just over 9 million adults in England, of whom 8.25 million have moderate mental health problems (i.e. those on level 2) and 770,000 have severe problems (those on level 3). Using the MVH tariff scores and allowing also for co-morbidity (other health problems at the same time), the average loss of health status is estimated at 0.098 of a QALY for each individual on level 2 and 0.352 of a QALY for those on level 3.<sup>19</sup> Bringing together the data on prevalence and tariff scores, the total number of QALYs lost each year as a result of mental illness is estimated at 1.085 million.<sup>20</sup>

## A monetary valuation

The remaining step is to convert the aggregate number of QALYs lost to a monetary equivalent and for this purpose the value of a QALY is taken to be of the order of £30,000. The empirical base for this figure is far from secure, but two pieces of evidence can be offered in support.

First, there is evidence that a value in the region of £30,000 is the approximate cost-effectiveness threshold or cut-off rate used by the National Institute for Clinical Excellence (NICE) in its assessments of health service interventions and procedures.<sup>21</sup> Put crudely, if a particular intervention costs significantly more than £30,000 for each QALY gained as a result of the intervention, it is not regarded by NICE as cost-effective and should not therefore be used in the NHS. Conversely, if the cost is significantly less than £30,000 per QALY, the intervention is said to represent good value for money and should be implemented. NICE is careful to say that its assessments do not operate in the mechanical way just described and that a range of other factors is relevant to an overall decision. Moreover, the figure of £30,000 is implicit rather than explicit in its assessments and has not been given any formal

endorsement. These are important qualifications but arguably they are also specific to the context of NICE's work. They do not necessarily apply with the same force to the present exercise, where the aim is a broad-brush costing of mental illness and not the detailed appraisal of individual policy options leading to mandatory guidance.

The second justification is that a figure of around £30,000 for a QALY appears to be broadly consistent with the value of life, or – more accurately – the value of a prevented fatality, which is used by the Department of Transport in the appraisal of transport safety.<sup>22</sup> This consists of two main components: the value of lost output which results from a fatality and the human cost of the life years which are lost. Focusing on the latter (lost output is dealt with separately below), this component of the value of life is derived from a range of evidence on people's willingness to pay for reductions in the risk of death and is valued at £0.82 million per prevented fatality in 2002/03 prices.

On average a road fatality reduces the expected length of life by 40 years. Valuing each of these life years at £30,000 implies a cost per fatality of £1.2 million, which is somewhat higher than the Department of Transport figure. However, allowance also needs to be made for: first, the effect of discounting, reflecting the fact that benefits accruing in the future are valued somewhat less highly than those accruing today; and second, the fact that not all the 40 years of life lost would have been in full health, so the number of QALYs lost is less than the number of life years lost. Plausible adjustments for these two factors suggest a close degree of consistency between the value of a QALY used in this exercise and the value of a prevented fatality used in transport appraisals.<sup>23</sup> As noted, the latter is based on a range of evidence on people's stated preferences and valuations.

As calculated above, the total number of QALYs lost each year as a result of mental illness is 1.085 million. If each QALY is worth £30,000, the aggregate cost is therefore £32.5 billion.

## Adjustments

Three adjustments to this total are required for completeness. First, the calculations relate to adults only, so an addition is needed for the costs of mental illness among children. Second, the Health Survey for England is based on a sample of individuals living in private households, so a further addition is required for the institutional population. And third, an adjustment of rather a different nature is needed to allow for the human costs

associated with premature mortality as well as morbidity. These are now taken in turn below.

### 1. Children

The *Health Survey for England* includes children in its sample but on a restricted basis in terms of the topics covered. One of the omissions is the EuroQol measure of health status. Information on the prevalence of mental health problems is not therefore available on the same basis as used above for adults. There is, however, other information in the survey which is relevant (for example, data on the prevalence of long-standing illnesses) and on this admittedly imperfect basis it is estimated that the prevalence of mental health problems among children (averaged over all ages up to 16) is around half the corresponding rate among adults. Grossing up to the national population and using the same QALY value and tariff scores as for adults, it can be calculated that the annual cost of health-related quality of life reductions caused by mental health problems among children is £4.5 billion.

### 2. The institutional population

Two sub-groups are covered here: first, those who are in institutions specifically because of mental illness, including patients in psychiatric hospitals and residents of homes for the mentally ill; and second, people in prisons, where it is known that the incidence of mental illness is particularly high.<sup>24</sup>

According to Department of Health data, numbers in the first category total around 100,000.<sup>25</sup> It seems reasonable to assume that all these individuals should be assigned to level 3 on the EuroQol dimension relating to mental health. Following the same steps as above, this gives rise to an estimate of £1.1 billion for the annual cost of QALYs lost among this group.

The prison population in England currently totals around 70,000.<sup>26</sup> It is reckoned by the Department of Health that as many as 9 out of 10 prisoners suffer from some kind of mental disorder and that one in 10 prisoners has a serious mental illness.<sup>27</sup> Assigning the latter to level 3 on the EuroQol scale and the remainder to level 2, it can be calculated that costs among this group total £0.23 billion.

### 3. Premature mortality

The final adjustment concerns the human costs associated with premature mortality. In 2000 (the latest available year for full data), there were 4,740 suicides in England.<sup>28</sup> In line with

previous work on the costs of mental illness,<sup>29</sup> it is assumed that 90 per cent of these deaths were associated with mental illness. For monetary valuation, use is made of the component for human costs in the Department of Transport's value of a prevented fatality, as discussed above. This is valued at £0.82 million in 2002/03 prices, leading to an overall total of £3.5 billion for the human costs of suicides associated with mental illness. A high degree of uncertainty attaches to this estimate. For example, the Department of Transport figure is derived from survey-based valuations of very small risks of death. These may possibly be closely relevant to the valuation of suicides consequent on mental illness, but there are also important differences in context which remain to be explored.

## The human costs of mental illness – summary

Bringing together the various calculations described above, the human costs of mental illness in 2002/03 are set out in summary form in Table 1 below. To repeat a point made at the beginning of this section, the experimental and highly provisional nature of these estimates must be emphasised. At the same time, the scale of the overall total is clearly of interest. It suggests, for example, that the human costs of mental illness are more than five times as large as the costs of services provided by the NHS and local authorities for people with mental health problems.

**Table 1: Human costs of mental illness (England, 2002/03)**

	£ billion
Household population	
– adults	32.5
– children	4.5
Institutional population	
– hospitals etc	1.1
– prisons	0.2
Premature mortality	3.5
<b>Total</b>	<b>41.8</b>



## The economic costs of lost output

It is well established that mental illness has a number of adverse effects on the level of economic activity. For example, people with mental health problems are less likely to be in paid employment than those without such problems, their spells of unemployment are typically longer in duration, and among those in employment more time is taken off work for health reasons. This section seeks to quantify these costs under four main sub-headings:

- ❖ sickness absence;
- ❖ non-employment;
- ❖ effects on unpaid work; and
- ❖ output losses resulting from premature mortality.

### Sickness absence

Dealing first with sickness absence from paid employment, it is estimated by the Confederation of British Industry (CBI) that 176 million working days were lost in the UK in 2001 for health reasons.<sup>30</sup> On average this represented 7.1 days off work per employee. The total cost of sickness absence was estimated by the CBI at £11.8 billion. It is further assessed by the CBI, on the basis of a survey of employers, that one third of all sick leave is because of stress, anxiety and depression. This implies a cost of sickness absence attributable to mental health problems of nearly £4 billion in 2001.

A number of minor adjustments are required to put this figure on the basis used elsewhere in this study. First, it is converted to an England-only basis in line with the ratio of GDP in England to GDP in the UK. Second, it is converted to 2002/03 terms by increasing in line with the growth of money GDP. And third, it is adjusted to allow for sickness absence among the self-employed as well as the employed by increasing in line with the relative numbers in the two groups.<sup>31</sup> Taken together, these adjustments give rise to an estimate of £3.9 billion for the costs of sickness absence attributable to mental health problems for England in 2002/03.

### Non-employment

The second category of costs covers the costs of non-employment, where this includes both unemployment and economic inactivity (i.e. non-participation in the active labour force). Relevant information on this is provided by the ONS survey of psychiatric morbidity among adults in private households referred to earlier. As noted in a

report based on this source which deals with social and economic circumstances,<sup>32</sup> only 61 per cent of working-age adults with any type of mental disorder were in paid employment in 2000, compared with 67 per cent among those without any such disorder. Put another way, non-employment was higher by nearly a fifth among the former group (39 per cent as against 33 per cent).

Combining this difference with the data on prevalence given in the ONS survey of psychiatric morbidity and grossing up to the national population, it is estimated that the higher rate of non-employment among people with mental health problems is equivalent to 400,000 person-years of lost employment. In turn, this loss of potential employment and hence output is valued at £9.4 billion in 2002/03 prices, based on national accounts data for total compensation per person in paid employment.<sup>33</sup>

It should be noted that the above method of calculation probably results in a maximum estimate of the costs of non-employment. This is because of its implicit assumption that all of the difference in non-employment between people with mental health problems and those without such problems is attributable to this distinguishing characteristic. In practice, other factors may also be at work. For example, it is known that there is a higher than average incidence of physical ill-health among those with mental health problems and this may also affect their capacity to work. Part of the costs of non-employment should therefore be attributed to these other factors. On the other hand, it should also be noted that for different reasons the cost of output losses as calculated in this section may be understated to a degree. For example, among the 61 per cent of people with mental health problems who are in paid employment, no allowance is made for any possible adverse effects of ill-health on their productivity at work, except to the extent that this is reflected in above-average rates of sickness absence.

### Unpaid work

The third category of costs to be covered here relates to the adverse effects of mental illness on the ability of those affected to carry out unpaid work such as housework. As noted above with reference to informal care, such output is not included in national income as conventionally measured but is nevertheless of economic benefit. As before, use is made of the ONS's household satellite account to derive a monetary valuation.

No quantitative information appears to be available on the adverse effects of mental illness on

the overall volume of unpaid work. Only a very rough and approximate calculation is therefore possible. The method of estimation used here is to assume that the proportion of total time spent on unpaid work, which is lost because of mental health problems, is the same as the corresponding proportion of time lost in paid employment. Combining the effects of sickness absence and non-employment as calculated above, the latter works out at 2.5 per cent. It is thus assumed that the total amount of time spent on unpaid work is also reduced by 2.5 per cent as a result of mental illness. It should be emphasised that this is largely an illustrative assumption and may need to be revised in the light of more detailed information.

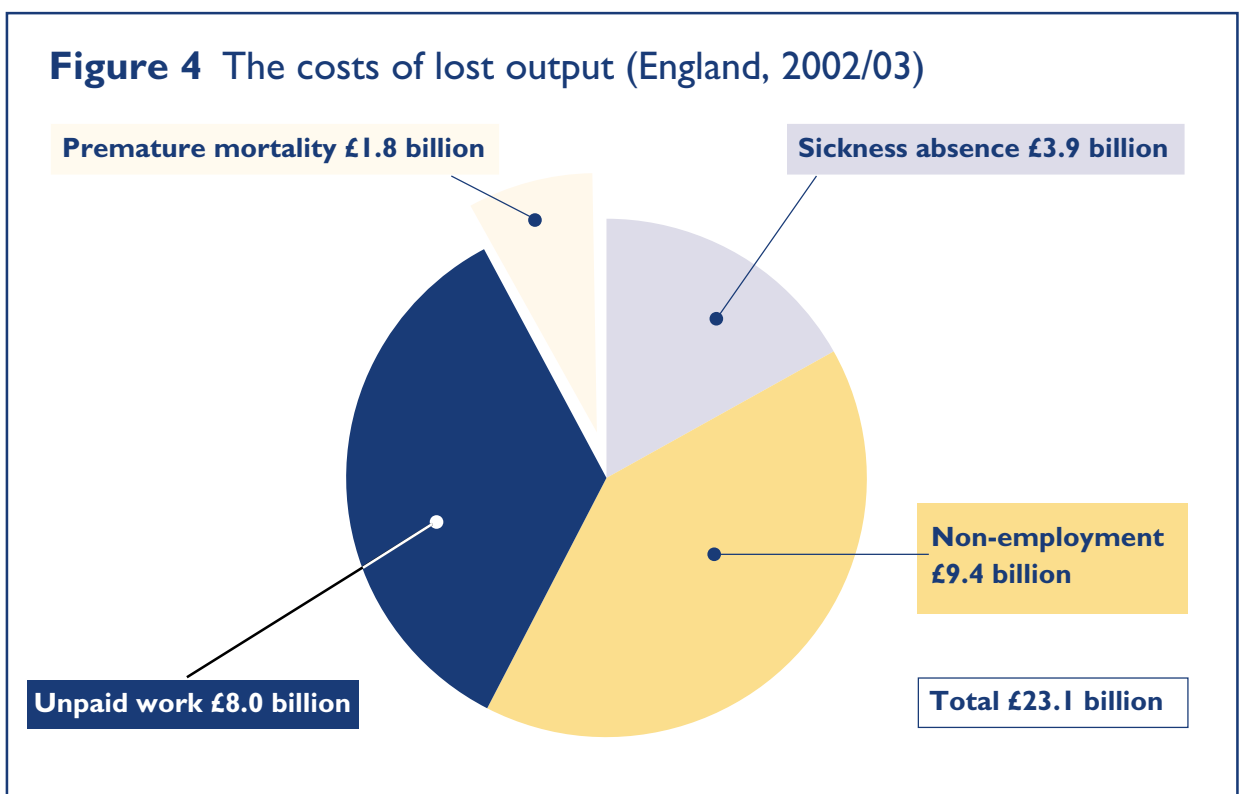
The ONS household satellite account indicates that the aggregate imputed value of unpaid household production in the UK amounted to £693 billion in 2000. Not all of this total is, however, relevant to the present exercise. In particular, a substantial proportion relates to capital costs such as housing, but the appropriate focus in the present context is on changes to the input of labour. A broad adjustment has therefore been made to the ONS estimate so as to exclude the contribution of factors of production other than labour. A reduction of 2.5 per cent in the resulting total represents a loss of output valued at £8 billion for England in 2002/03 prices.

### Premature mortality

The final category of costs to be covered in this section relates to the costs of output lost as a result of premature mortality. Very much the same procedure is followed as described above to calculate the human costs of premature mortality. Thus it is assumed that 90 per cent of all suicides are associated with mental illness and a monetary cost is then derived by applying to this total the element of the Department of Transport's value of a prevented fatality which corresponds to the value of lost output, estimated at around £0.43 million in 2002/03 prices. The resulting calculation gives a total cost of lost output attributable to premature mortality of £1.8 billion.

### The costs of lost output – summary

Figure 4 below sets out in summary form the estimated costs of lost output associated with mental illness.



## Conclusions

All categories of cost are brought together in summary form in Table 2, overleaf. As can be seen, the human costs of mental illness account for over half the estimated total, while public expenditure on mental health services and support represents about a tenth.

The provisional nature of these estimates should be emphasised, particularly in the case of human costs where the figures are based on assumptions and data sources which are very much open to improvement in future work. Also relevant are the inherent limitations which apply to any study of the costs of illness. In particular, information on aggregate costs cannot by itself establish whether devoting more resources to combatting a particular condition is worthwhile, as this depends on factors outside the scope of the analysis such as the costs of additional services and their individual effectiveness.

Figures on total costs do nevertheless give a broad indication of the potential benefits to be achieved by reducing prevalence or severity and in the case of mental illness it is clear from the evidence of this study that the scale of these potential benefits is very large indeed. Mental illness is, for example, an extremely important risk factor for suicide and the Government has set a target for reducing the number of such deaths by at least a fifth by 2010. It can be calculated from the cost estimates given here that the benefits of meeting this target may be valued at around £1.2 billion a year.

It may be helpful to conclude with a brief comment on the question of who bears the costs of mental illness. In some cases this is self-evident from the way in which costs are defined. Thus the human costs fall directly on those who suffer from mental health problems, together with their families. In other cases it is less obvious where the costs fall. For example, the costs of lost output are borne partly by the individual, because of lower earnings, but also partly by the rest of the population. This is because some of the gross earnings that are lost as a result of ill-health would have been subject to tax. This loss of tax revenue may in turn have a variety of consequences. For example, other taxpayers may have to make up the shortfall; alternatively, the overall level of public spending may be lower than it otherwise would have been, implying that part of the cost falls on other users of public services.

A focus on distributional effects also means that social security payments have to be brought back into the reckoning. As noted above, these payments are not a cost to the economy as a whole. They are, however, a cost to taxpayers, offset by an equivalent benefit to those who receive the payments.

Taking into account these various considerations, a very rough calculation suggests that, overall, about 70 per cent of the costs of mental illness fall on people who experience it and their families and about 30 per cent on the rest of the population, mainly in the form of higher taxes or reduced provision of other public services.

**Table 2: The economic and social costs of mental illness (England, 2002/03)**

	£ billion	% of total
Health and social care		
– NHS services	6.5	8.4
– local authority social services	1.4	1.8
– other public sector costs	0.5	0.6
– private expenditure on services	0.2	0.3
– informal care	3.9	5.0
	<b>12.5</b>	<b>16.1</b>
Human costs		
– household population	37.0	47.8
– institutional population	1.3	1.7
– premature mortality	3.5	4.5
	<b>41.8</b>	<b>54.0</b>
Lost output		
– sickness absence	3.9	5.0
– non-employment	9.4	12.1
– unpaid work	8.0	10.3
– premature mortality	1.8	2.3
	<b>23.1</b>	<b>29.9</b>
<b>Total</b>	<b>77.4</b>	<b>100.0</b>

## Notes

1. Because this paper draws on a number of different statistical sources, each with its own choice of concepts and methods appropriate to the study in hand, it has not been possible to apply a single consistent definition of mental illness throughout the analysis. However, the general approach has been to follow a broad definition, to the extent that this is made possible by the underlying sources, including not only the common neurotic and psychotic conditions but also such conditions as personality disorder and alcohol or drug dependence. Learning disability is excluded.
2. The most recent comprehensive study is Patel, A. and Knapp, M. (1998), *Costs of mental illness in England*, *Mental Health Research Review* 5, 4–10. This includes a list of references for earlier studies. The total costs of mental illness were estimated by Patel and Knapp at £32.1 billion for England in 1996/97. This is equivalent to around £37 billion in 2002/03 prices, around half the total estimated in the present study. A number of differences in methodology and data sources account for this discrepancy, but by far the most important in quantitative terms is that Patel and Knapp do not include any estimate for the human costs of mental illness whereas the present study does.
3. Brand, S. and Price, R. (2000), *The economic and social costs of crime*, Home Office Research Study 217. The estimate of £60 billion for the costs of crime cannot be compared directly with the figure of £77 billion for the costs of mental illness because of differences in the year of valuation and in geographical coverage. Adjustments for these two factors would, however, go in opposite directions. Also, the overall level of crime has generally been on a downward trend in recent years, implying lower costs, although the precise effect will also depend on whether there have been changes in the composition of crime. On balance, it seems safe to conclude that a directly comparable figure for the aggregate costs of crime (i.e. 2002/03, England only) would remain significantly below the total of around £77 billion for mental illness as estimated in this study.
4. The figures for NHS hospital and community health services (HCHS) are based on Department of Health programme budget data for 1998/99, rolled forward to 2002/03 on the assumption that spending on mental health services remained broadly constant as a percentage of total HCHS expenditure. The same procedure is used for local authority social services. In the case of GP consultations, it is noted in the *National Service Framework for Mental Health* (Department of Health, 1999) that “one quarter of routine GP consultations are for people with a mental health problem”. It is accordingly assumed that mental illness accounts for 25 per cent of spending on GP services. Figures for total expenditure on GP services are given in the Department of Health’s Departmental Report, *Expenditure Plans 2002-03 to 2003-04*, Cm 5403, July 2002. Finally, the estimate for drug prescriptions is based on data in *Prescription Cost Analysis: England 2001* (Department of Health, 2002). This gives very detailed information on numbers and costs of prescriptions by therapeutic category, from which it was possible to derive an estimate for spending on all prescriptions related to mental illness for 2001. The total was rolled forward to 2002/03 on the basis of less detailed data produced by the Prescription Pricing Authority (see the periodic *Growth in Prescription Volume and Cost Reports*, available at [www.ppa.org.uk](http://www.ppa.org.uk)). An addition was also made for dispensing costs, on the assumption that such costs are proportionate to the numbers of prescriptions issued. Figures for total dispensing costs are given in the Department of Health’s Departmental Report cited above.
5. Figures for planned total NHS expenditure and social service expenditure in 2002/03 are given in Figures 3.2 and 3.3 respectively in the Department of Health’s 2002 Departmental Report.
6. See reference in note 2.
7. A possible qualification is that although social security payments are properly regarded as a transfer and not an economic cost, taxes have to be raised to pay for them and taxation tends to reduce the overall level of output in the economy, for example because of its adverse effects on work incentives. Social security payments do therefore impose some economic cost, because of the so-called excess burden of tax. Moreover, this argument applies not just to social security payments but to all forms of public expenditure. It is estimated that the total costs of mental illness, including social security benefits, which score as public expenditure and are therefore financed out of taxation, amounted to £17.9 billion in 2002/03. Attempts to quantify the excess burden of tax have generated a substantial technical literature and a wide range of estimates, but a broad consensus might be that every £1 raised in tax imposes an extra cost on the economy of around £0.30 because of distortionary effects. Inclusion of the excess burden of tax would therefore increase the overall costs of mental illness as estimated in this study by £5.4 billion.
8. Audit Commission (2003), *Homelessness: responding to the new agenda*.
9. It should be emphasised that the focus here is on private *spending* on mental health services and not on the *supply* of such services by the private sector. The latter is on a fairly substantial scale, particularly in relation to hospital services. For example, it is estimated by the Independent Healthcare Association that more than a third of all medium-secure hospital care is provided by the independent sector (see [www.ihc.org.uk](http://www.ihc.org.uk)). Such services are however largely purchased by the NHS on a contractual basis and the corresponding expenditure is included in this study as public rather than private spending.
10. See reference in note 2.
11. Full details can be found on the ONS website [www.statistics.gov.uk/hhsa](http://www.statistics.gov.uk/hhsa).
12. It should be noted that this so-called replacement cost method is not the only means of attaching a monetary value to informal care or other forms of unpaid work in the household. The main alternative is to measure the opportunity cost of such work, which in the case of informal care could be proxied by the earnings of carers to the extent that their caring input reduces the opportunities for paid employment or their value of leisure time if not. Other considerations might also come into play, such as the stress (and fulfilment) of caring, which is of course difficult to value. It is by no

means clear on *a priori* grounds whether these two approaches would give significantly different figures for the overall cost of caring. Also, it is beyond the scope of this study to produce estimates using the opportunity cost method. Use is therefore made of the ONS estimates largely on the pragmatic grounds of availability and not necessarily because they embody the most appropriate method of valuation.

13. Carers UK (2002), *Without Us...? Calculating the Value of Carers' Support*.
14. Hirst, M. (2002), *Costing Adult Care: Comments on the ONS valuation of unpaid adult care*, Social Policy Research Unit, University of York.
15. ONS (2002), *Mental Health of Carers*.
16. Department of Health (1998), *Health Survey for England 1996*.
17. MVH Group (1995), *The Measurement and Valuation of Health: Final Report on the Modelling of Valuation Tariffs*, Centre for Health Economics, University of York.
18. ONS (2001), *Psychiatric Morbidity among Adults Living in Private Households, 2000*. The overall prevalence rate of 23 per cent is given in Figure 2.9.
19. An allowance for co-morbidity is necessary because the existence of other adverse health states alongside mental health problems affects the tariff scores in a way that is not straightforwardly additive. The figures used here are therefore weighted averages, with the weights depending on the numbers in the Health Survey for England sample with mental health problems who also reported other health problems such as physical disability.
20. Table 5.29 in the Health Survey for England 1996 shows that across the full sample of adults the mean EuroQol tariff is 0.85. This implies an average QALY loss or deficit of 0.15 from all causes of morbidity combined. Grossing up to the national population, the total number of QALYs lost annually as a result of morbidity is six million. Mental illness accounts for 1.085 million of these lost QALYs, equivalent to 18 per cent of the total reduction in the quality of life caused by ill-health.
21. See *Cost-Effectiveness Thresholds: Economic and Ethical Issues*, edited by Adrian Towse, Clive Pritchard and Nancy Devlin (King's Fund and OHE, 2002), particularly chapter 2 by Adrian Towse and Clive Pritchard of the Office of Health Economics, which sets out the evidence for thinking that there is an approximate threshold of £30,000 per QALY in NICE appraisals, and chapter 3 by Peter Littlejohns, Clinical Director of the National Institute for Clinical Excellence, which gives a response from the NICE perspective.
22. Details are given in Department of Transport (2001), *Highways Economics Note No. 1*.
23. The discount rate used in central government appraisals is currently set at 3.5 per cent a year in real terms (see HM Treasury (2003), *The Green Book: Appraisal and Evaluation in Central Government*). Allowance also needs to be made for the conventional assumption made by the Department of Transport that the value of life rises in step with the growth of real GDP per head, which according to Treasury guidance is around 2 per cent a year. A convenient short cut when discounting a quantity which is changing in real

value over time is to adjust the discount rate instead of adjusting the cost or benefit for the change in value over time and then discounting at the standard rate. In the present context, this implies an adjusted discount rate of 1.5 per cent. The undiscounted value of 40 years of life at £30,000 a year is £1.2 million. The equivalent discounted total, based on a discount rate of 1.5 per cent, is around £0.92 million. A further adjustment is then required to allow for the fact that not all the 40 years will be in full health. Referring to note 20, the average QALY deficit resulting from all causes of ill-health is 0.15. Reducing the discounted total of £0.92 million by 15 per cent leads to a revised total of £0.78 million, which is very close to the Department of Transport figure of £0.82 million.

24. Because of the high incidence of mental illness among prisoners, it is arguable that the costs of mental illness as calculated in this study should include an attributed proportion of the costs of crime. As noted in the Introduction, the latter are estimated by the Home Office at around £60 billion for England and Wales in 1999/2000. Two points may be noted. First, mentally ill people are themselves more likely to be the victims of crime, particularly violent crime, than the general population. Further research is needed in this important area, but see, for example, 'Mental health patients more likely to suffer violence', *The Guardian*, 30 January 2003, reporting on a survey carried out by researchers at the Institute of Psychiatry which found that people with severe mental illness were more than twice as likely to be the victims of violence as the general population. Similar findings are reported in Hiroeh, U., Appleby, L., Mortensen, P. and Dunn, G. (2001), Death by homicide, suicide and other unnatural causes in people with mental illness: a population-based study, *The Lancet* **358**, 2110–2112. Second, any attribution of a proportion of the costs of crime to mental illness is far from straightforward and it is clearly important to avoid inappropriate stigmatisation. In many cases the incidence of mental illness among prisoners may be the consequence rather than the cause of their being in prison. More generally, there are major difficulties in assessing the relationship between mental illness and crime because of the many potentially confounding factors, particularly the co-existence of drug or alcohol abuse. Some evidence can be found to support a limited association between certain forms of mental illness and certain forms of crime – see, for example, Walsh, E., Buchanan, A. and Fahy, T. (2002), Violence and Schizophrenia: examining the evidence, *British Journal of Psychiatry* **180**, 490–495. This, however, is insufficient for the purposes of the present study, where the focus is on measurement of costs at the aggregate level, because of the possibility that positive statistical associations between crime and mental illness among some sub-groups in the population may be offset by negative associations among others. Such evidence as is available at the aggregate level tends to support this view. For example, it is noted by the National Institute for Mental Health in England (NIMHE) that of all people involved in criminal activity about 20 per cent are estimated to have a psychiatric disorder (see [www.nimhe.org.uk/usersurvivor/facts.asp](http://www.nimhe.org.uk/usersurvivor/facts.asp)). This is somewhat lower than the prevalence of psychiatric disorder in the population as a whole, estimated at

- around 23 per cent (see note 18). In other words, mentally ill people are, if anything, on average less likely to be involved in criminal activity than members of the general population. Such evidence makes it difficult to support a case for attributing any proportion of the costs of crime to mental illness at the aggregate level.
25. Table B23 in the 2002 edition of the Department of Health publication, *Health and Personal Social Services Statistics*, gives information on numbers of hospital beds and places in residential and nursing care homes for people with mental illness. This shows that in 2000/01, the latest available year, the number of daily available NHS beds was 35,490 and the number of places in residential and nursing care homes was 68,880. Assuming an average occupancy rate of 95 per cent, this gives an overall figure of 99,151 for the number of residents in institutions for people with mental illness.
  26. According to the Home Office publication, *Prison Population Brief October 2002*, the total number in custody in England and Wales in October 2002 was 72,986. The small adjustment needed to put this figure on an England-only basis suggests a total for England of around 70,000.
  27. These figures were quoted by the Health Minister, Jacqui Smith MP, in a speech on 15 November 2001. See Department of Health Press Release 2001/0544, *Major Cash Boost for Mental Health Services*.
  28. See Figure 3 in Department of Health (2002), *National Suicide Prevention Strategy for England*.
  29. See for example Patel and Knapp, (reference in Note 2).
  30. CBI, *Healthcare Brief*, December 2001.
  31. It is acknowledged that this is an arbitrary assumption, but the quantitative impact is small.
  32. ONS (2002), *The Social and Economic Circumstances of Adults with Mental Disorders*.
  33. ONS (2003), *National Accounts: The Blue Book 2002*, Tables 2.2 and 2.5.

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