# Homelessness kills:

An analysis of the mortality of homeless people in early twenty-first century England

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Crisis

## About Crisis

Crisis is the national charity for single homeless people. We are dedicated to ending homelessness by delivering life-changing services and campaigning for change.

Crisis Skylight, our award winning and accredited education, training and employment centres, offer practical and creative workshops in a supportive and inspiring environment together with formal learning opportunities that lead to qualifications and finding work.

Crisis has Skylight centres in Birmingham, Edinburgh, London, Merseyside, Newcastle, Oxford, Bermondsey (South London) and is currently planning to extend services to Sheffield and Coventry.

## About the author

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# Foreword

Too much discussion of health and social policy, too much measurement of its success and failure, appears, on occasion, to take place in a vacuum, untainted by the realities of the world at the time.

This study by Crisis is the first to estimate mortality for homeless people at a national level in England. This study is timely for several reasons. Firstly, because the numbers of homeless people and rough sleepers are once more on the rise. And, secondly, because its publication coincides with an NHS reorganisation that focuses attention on health inequalities.

The fact that the average age of death, emerging from the study, is in-keeping with previous, smaller scale studies carried out over the past 20 years, is both credible and shocking – there is little evidence that we are improving outcomes for the most vulnerable in our society. It is worth reflecting that virtually, every day, since 1948, the NHS has been said to be in crisis, and that for the last 64 years, morale within it has invariably never been lower. And yet, it is the most trusted and cherished national institution in our society. Such knowledge matters because it can ward off false despair – there is something we can do at this moment to respond to the indictment of these inescapable mortality figures for homeless people.

Specifically, the Health and Social Act includes a statutory duty at all levels in the NHS from the Secretary of State downward to 'have regard to the need to reduce health inequalities and commission accordingly'. In the NHS Outcomes Framework 2012/13, the first of five domains is 'preventing people from dying prematurely'. In the Public Health Outcomes Framework 2013/16, the vision is 'to improve and protect the nation's health and well-being, and improve the health of the poorest fastest', and Outcome 1 is 'increased healthy life expectancy', while Outcome 2 is 'reduced differences in life expectancy and healthy life expectancy between communities – through greater improvements in more disadvantaged communities'.

The timing for action has never been more propitious. This comprehensive study provides an urgent prompt that improving healthcare integration, access and outcomes for homeless people will be crucial to the NHS meeting its new duties.

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# Acknowledgments

# Executive Summary

## Main findings

- From the records of deaths in England between 2001-2009, 1,731 were identified as having been homeless people.[1] Of these 90% were male and 10% female whereas the gender split of deaths of the adult general population is 48% male and 52% female.

- Nearly a third of the deaths of homeless people identified from the records were in the London region.

- Homeless people are more likely to die young, with an average age of death of 47 years old and even lower for homeless women at 43, compared to 77 for the general population, 74 for men and 80 for women. It is important to note that this is *not* life expectancy; it is the average age of death of those who die on the streets or while resident in homeless accommodation.

- At the ages of 16-24, homeless people are at least twice as likely to die as their housed contemporaries; for 25-34 year olds the ratio increases to four to five times, and at ages 35-44, to five to six times. Even though the ratio falls back as the population reaches middle age, homeless 45-54 year olds are still three to four times more likely to die than the general population, and 55-64 year olds one and a half to nearly three times.

- Drug and alcohol abuse are particularly common causes of death amongst the homeless population, accounting for just over a third of all deaths. Homeless people have seven to nine times the chance of dying from alcohol-related diseases and twenty times the chance of dying from drugs.

- Homeless men and women had similar mortality ratios for deaths due to alcohol, while for deaths due to drugs, men were seventeen times, and women thirteen times, more likely to die than the general population. Men were also more likely to die from cardiovascular problems than women.

As these findings clearly indicate, being homeless is incredibly difficult both physically and mentally and has significant impacts on people's health and well being. Homelessness leads to very premature mortality and increased mortality rates. Ultimately, homelessness kills.

## Introduction and method

This study investigates the mortality of homeless people in England for the period 2001-2009. It is a follow-up to previous research carried out by Crisis.[2]

It is the first research that attempts to analyse homeless mortality at the national level for all causes of death and how these differ from the general adult population. It looks at a wider dataset than previous studies which have been limited in that they have drawn solely on coroners' reports.

Despite the best efforts of homeless organisations and government initiatives over the last decade, homelessness is very much still with us; due to the combination of the continuing economic downturn and the coalition Government's cuts to welfare, particularly housing benefit, homelessness

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1. This figure of 1,731 is based on the HP scenario which includes those that were definitely homeless and a high probability that some of the additional deaths were of homeless people.
2. In 1991-92 called *Sick to death of homelessness* and in 1995-96 called *Still dying for a home*.

is on the rise again.[3] It is therefore important that we know what the health effects of homelessness are on the individuals concerned, with mortality the ultimate health effect. In addition to concern for the individuals affected by homelessness, poor health and mortality we need to consider the costs in health, welfare and other social budgets that homelessness engenders.

The previous Crisis research, together with studies on homeless mortality undertaken in North America and Northern Europe, found that homeless people suffer high mortality rates and premature mortality. The average age of death in the research commissioned previously by Crisis was found to be 47 years in 1991-92 and 42 years in 1995-96. Research in the USA over the last 30 years has found an average age of death ranging from 41 to 51, and mortality rates 1.6 to 10 times that of the general population. In Denmark, studies in the 2000s found standardised mortality ratios ranging from 3.8 to 6.7 for homeless people compared to the general population.[4]

This study is the first that investigates the mortality of homeless people for all causes of death at the national level in England. It looked at national death records and matched the postcode given in each of them to the known addresses of homeless projects to ascertain the number of deaths that were likely, with varying degrees of certainty, to be attributed to homeless people. The ages and causes of death were analysed and standardised mortality ratios then constructed to draw comparisons between the circumstances faced by homeless people and those of the general population.

Almost by definition, it is difficult to count

homeless people and it is also difficult to count deaths of homeless persons as death certificates do not record the deceased's housing status. When a death is registered however, the registration authorities do their utmost to link the deceased to an address. A rough sleeper might be linked to the last hostel at which they stayed or a day centre that they regularly used.

The research looked first at individual level mortality data for the years 2001-2009 supplied by the Office for National Statistics (ONS). The records of people aged over 16 were extracted and from this any death records that had a postcode that matched the postcodes of known homelessness projects obtained. These postcodes were further checked against the Royal Mail's Postcode Address File and the census headcount in order to ascertain whether each record could be of a homeless person or not. Advice centres and day centres were included in an attempt to include rough sleepers who might use such centres as a contact address. Due to the difficulties in disaggregating the postcode data, different scenarios were constructed (see full report for further explanation) reflecting differing probabilities of deaths being attributable to homeless people.

Using these methods, a dataset of 1,731 deaths were drawn from the 4,573,667 deaths recorded between 2001-2009. This dataset includes those who are definitely homeless and where there is a high probability that some of the additional deaths were of homeless people (the HP scenario as discussed in the main report). The analysis of the causes of death and standardised mortality rates are based on these records.

3. Fitzpatrick, et al. (2011) *The Homelessness monitor Tracking the impacts of policy and economic change in England 2011-2013 Year 1: Establishing the baseline.* London, Crisis.

4. Centers for Disease Control and Prevention (CDC) (1987), 'Deaths among the homeless in Atlanta, Georgia', *MMWR*, 36: 297-299; CDC (1991), 'Deaths among Homeless Persons: San Francisco', *MMWR*, 40: 877-880; Hanzlick, R & Parrish, R.G. (1993), 'Deaths among the homeless in Fulton County, GA, 1988-90', *Public Health Reports*, Jul-Aug, 108(4): 488-491; Hibbs, J.R, et. al. (1994), 'Mortality in a cohort of homeless adults in Philadelphia', *NEJM*, 331(5): 304-309; O'Connell, J.J. (2005), *Premature Mortality in Homeless Populations: A Review of the Literature*, Nashville: National Health Care for the Homeless Council; Barrow, S.M, et. al. (1999), 'Mortality among homeless shelter residents in New York City', *AJPH*, 89(4): 529-534; Nordentoft, M. & Wandall-Holm, N. (2003), '10 year follow up study of mortality among users of hostels for homeless people in Copenhagen', *BMJ*, 327(7406): 81; Nielsen, S.F, et al. (2011), 'Psychiatric disorders and mortality among people in homeless shelters in Denmark: a nationwide register-based cohort study', *The Lancet*, 377(9784): 2205-2214.

**Figure 1: Age distribution of deaths for the general population**
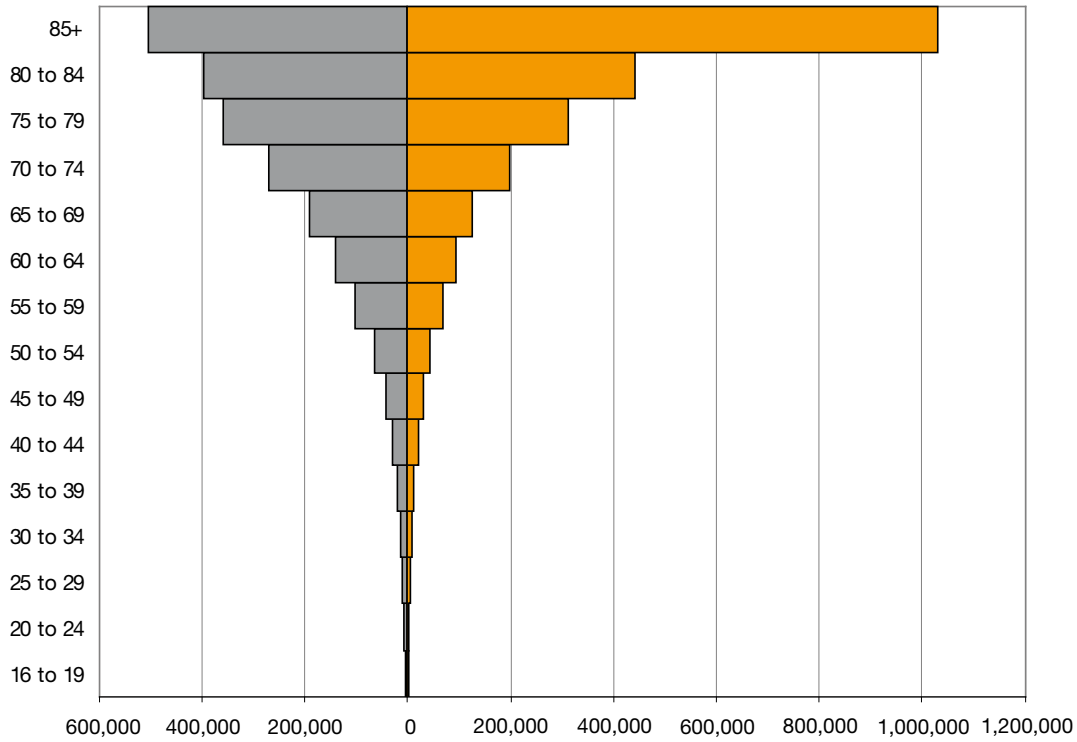


**Figure 2: Age distribution of homeless people for scenario HP[5]**
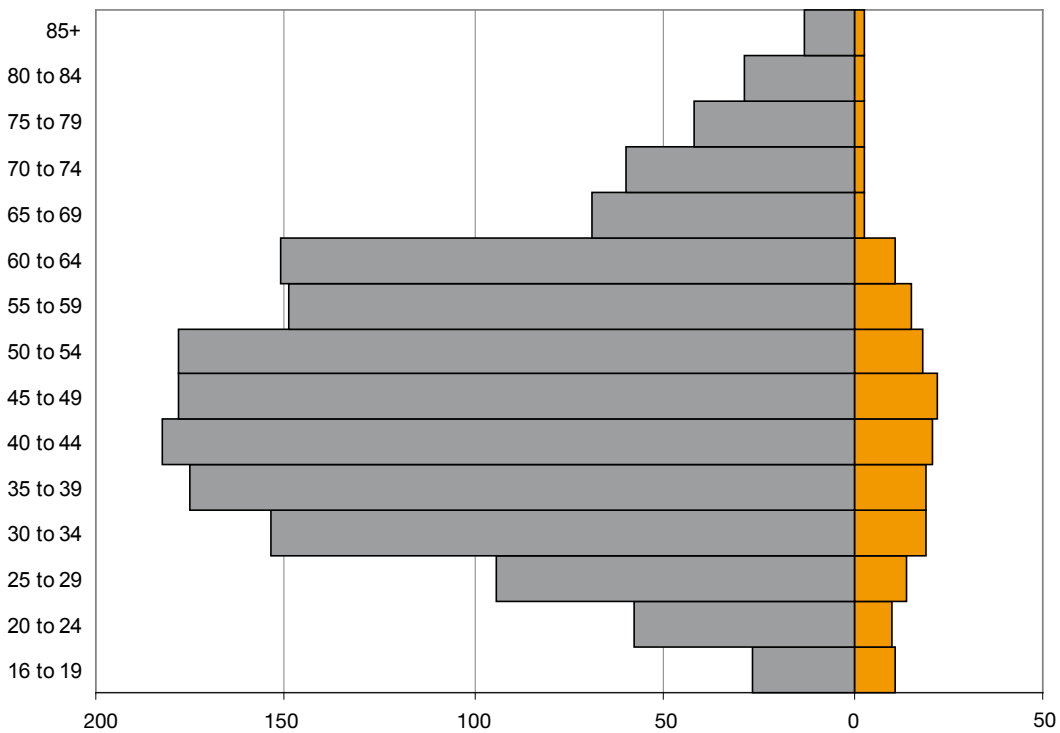


5.   Definitely homeless people and a high probability that some of the additional deaths were of homeless people.

**Figure 3: Distribution of causes of death for the general population**

Cardiovascular (36.5%)

Other external causes (1.0%)

Traffic accidents (0.4%)

Falls (0.6%)

Suicide/undetermined intent (0.9%)

Due to drugs (0.3%)

Due to alcohol (1.3%)

Cancer (27.3%)

Other diseases and disorders (16.7%)

Infections (1.2%)

Respiratory (13.8%)
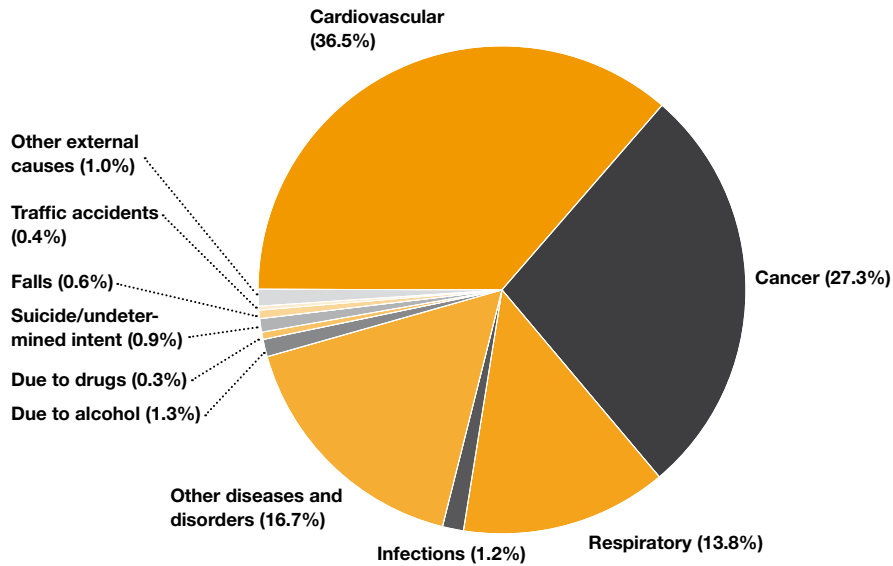
**Figure 4: Distribution of causes of death for homeless people for scenario HP**

Cancer (9.8%)

Respiratory (8.4%)

Infections (2.5%)

Cardiovascular (18.3%)

Other diseases and disorders (10.9%)

Other external causes (2.3%)

Traffic accidents (1.2%)

Falls (2.0%)

Due to alcohol (14.4%)

Suicide/undetermined intent (8.5%)

Due to drugs (21.7%)
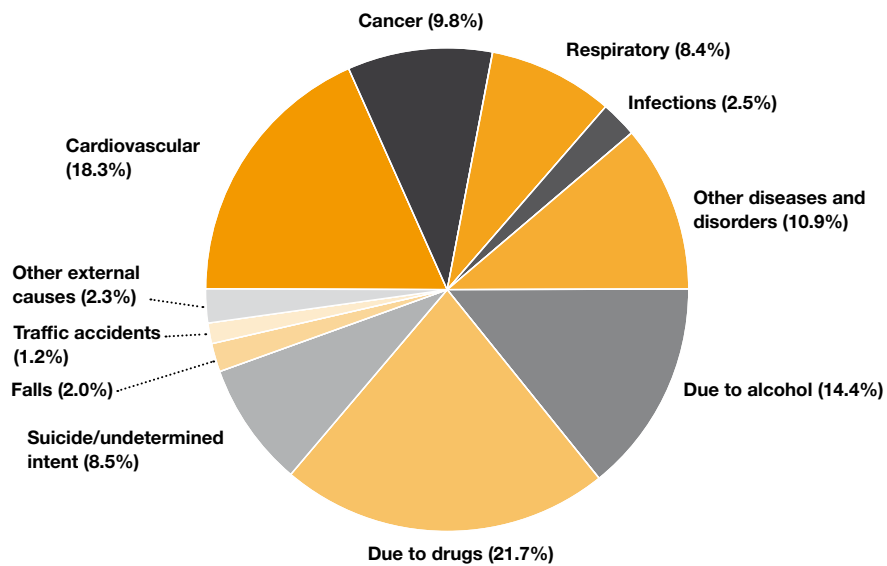
It is important to note that this research is based on estimates and will exclude some homeless people. For example, any homeless person's death that was not registered to a postcode containing homeless accommodation, or advice or day centre – e.g. they were registered at a previous address, a hospital, to parents or family, or in some instances, no address - would not be included in this research. This research also excludes domestic violence shelters due to suppression of postcodes and those who have previously been homeless but are now in their own accommodation. Given these caveats it is likely that this research underestimates the number of deaths of people who are and have been homeless.

While this study has its limitations in that it does not cover all typologies of homelessness, and because of the difficulties in estimating homeless mortality, it adds significantly to previous research on British homeless mortality and adds to the international literature.

## Regional analysis

Nearly a third of the deaths of homeless people identified from the records were in the London region (30.9%), which would reflect the preponderance of homelessness in all its forms in the capital. Outside London the regions with the highest numbers of deaths were the South East (12.3%), the North West (11.9%) and the West Midlands (12%).

As the table above shows, London has a very different distribution of homeless deaths from the other regions, particularly for deaths from cardiovascular causes and due to drugs. In the capital a quarter of homeless deaths were from cardiovascular causes, compared with just under a fifth nationally. Deaths due to drugs account for an eighth of all homeless deaths in London compared with a fifth nationally. This might reflect differences in the homeless population in the capital with a relatively lower proportion of those with the highest and multiple needs.[6]

**Table 1: Distribution of causes of deaths for scenario HP**

| Distribution of causes of death | East Midlands | East of England | London | North East | North West | South East | South West | West Midlands | Yorks & Humber |
|---|---|---|---|---|---|---|---|---|---|
| Cardiovascular | 17.8 | 12.7 | 24.5 | 19.0 | 14.6 | 12.2 | 12.2 | 19.8 | 18.0 |
| Cancer | 6.7 | 5.9 | 11.8 | 11.0 | 10.7 | 9.4 | 7.7 | 12.6 | 3.3 |
| Respiratory | 8.9 | 9.8 | 8.8 | 10.0 | 10.2 | 6.1 | 7.7 | 9.2 | 5.7 |
| Other diseases and disorders | 15.6 | 14.7 | 15.0 | * | 10.7 | 10.8 | 11.5 | 17.4 | 13.1 |
| Due to alcohol | 8.9 | 11.8 | 16.3 | 17.0 | 14.1 | 15.5 | 14.7 | 12.6 | 11.5 |
| Due to drugs | 24.4 | 26.5 | 12.5 | 22.0 | 24.3 | 24.9 | 30.1 | 20.8 | 36.9 |
| Suicide/ undetermined intent | 10.0 | 7.8 | 6.9 | 11.0 | 11.2 | 13.1 | 9.0 | 4.3 | 7.4 |
| Other external causes | 7.8 | 10.8 | 4.3 | * | 4.4 | 8.0 | 7.1 | 3.4 | 4.1 |

Note: * denotes data suppressed to comply with data disclosure rules.

**6.**    See Fitzpatrick, S. Johnson, S., and White, M. (2011) 'Multiple Exclusion Homelessness in the UK: Key Patterns and Intersections', *Social Policy & Society,* 10:4, 501-12.

## Standardised Mortality Ratios (SMRs)

Because age and sex has a bearing on death, crude death rates alone cannot be used to fully explain patterns of mortality. Different locations have different age-sex structures and the homeless population is very different in its demographic structure from the national pattern. In order to address the need to examine variations in mortality and carry out a more sophisticated analysis we use indirect age-sex Standardised Mortality Ratios (SMRs), based on deaths under age 65.

SMRs are a means of measuring mortality which take into account the age structure of the population being considered. They are calculated using a standard set of age-specific death rates which are used to determine how many deaths could be expected in a particular population, given its size and age structure. This gives a total number of 'expected' deaths. This figure is then compared with the actual number of 'observer' deaths which did occur.[7]

### Main findings using SMRs

- Homeless people aged 16-24 have twice the chance of dying as the general population; those aged 25-34 four times; aged 35-44 year olds five times; aged 45-54 to three times; and aged 55-64 one and a half times the national risk.

- The under 45s have four times the chance of dying than their housed contemporaries, the under 55s three and a half times, and the under 65s two and three-quarter times.

**Table 2: Standardised Mortality Ratios (SMRs) for all causes of death by age-group for scenario HP**

| Age | SMRs |
| --- | --- |
| Age 16-24 | 200 |
| Age 25-34 | 418 |
| Age 35-44 | 513 |
| Age 45-54 | 305 |
|  |  |
| Under 45 | 397 |
| Under 55 | 361 |
| Under 65 | 279 |

- For selected causes of death homeless people have even higher mortality ratios compared to the general population:

  > The chances of homeless people dying from alcohol-related causes are seven times higher than for the general population. The average age of death for homeless people from alcohol is 48, slightly below the national average of 51.

  > The average age of death of homeless people due to drugs is 34, very similar to the national average age of 35. The chance of dying from drug-related causes is 20 times higher for the homeless population compared to the general population.

  > The average age of homeless people committing suicide (or where the intent was undetermined) is 37 compared to the national average of 46. Homeless people are three and a half times more likely to commit suicide than the general population.

  > Homeless people have nearly seven times the chance of dying from HIV and hepatitis than the general population.

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7. ONS (2008), *Standardised Mortality Ratios - the effect of smoothing ward-level results.* London: ONS.

> Homeless people have three times the chance of dying from chronic lower respiratory diseases than their housed contemporaries, with an average age of death of 56 compared to 76.

> Homeless people are twice as likely to die as the general population to die from heart attacks and chronic heart disease, at an average age of 59 – 16 years lower than the 75 of the general population.

> Homeless people have seven times the chance of dying from falls than the general population, with an average age of death of 45 compared to 77.

**Table 3: Average age of death and SMRs for causes of death for scenario HP**

| Cause | Homeless people | Homeless people average age of death | General pop. average age of death |
|---|---|---|---|
| Alcohol | 710 | 48 | 51 |
| Drugs | 1971 | 34 | 35 |
| Suicide | 340 | 37 | 46 |
| HIV & Hepatitis | 682 | 41 | 39 (HIV) 56 (HEP) |
| Respiratory | 306 | 56 | 76 |
| Heart attacks | 190 | 59 | 75 |
| Falls | 716 | 45 | 77 |

## Underlying causes

This study has focused on the actual mortality figures and has not looked in detail at what might lie behind them. Clearly, however, being homeless precludes a healthy lifestyle. Poor sleep quality, inadequate diet, difficulty in maintaining personal hygiene, and problematic access to health care and maintaining a treatment regime can lead to sub-optimal health. Additionally, many homeless people have alcohol, drug, or mental health problems, often multiple, that can lead to neglect of, and exacerbate, any physical health issues. These issues, in themselves, often lead to premature death.

Smoking, alcohol and drugs in turn increase the risk of respiratory, cardiovascular disease and cancer. As well as being direct causes of death, they also contribute to the premature deaths of the older age group who survive the immediate risks of smoking, alcohol and drugs, but later succumb to longer term effects.

Finally other research evidence and the experience of those working with homeless people is clear that poor health is exacerbated by limited access to appropriate health services and limited integration between services. The poor outcomes homeless people often experience from the health service mean that health conditions are not always treated effectively and can in turn lead to worse conditions developing.

## Implications for public policy and recommendations

The findings of this research highlight the shocking truth about how homeless people are being failed by the health system. The upcoming restructure and reform of the NHS provides an opportunity to tackle this and create a health service that truly works for homeless people.

The Health and Social Care Act will bring about a huge restructure of the NHS. Primary Care Trusts are being abolished, with commissioning budgets and responsibilities handed over to Clinical Commissioning Groups (CCGs) made up of GPs and hospital staff. Local Health and Wellbeing Boards will oversee healthcare provision in their areas and local authorities will hold a ring fenced public health budget. At a national level, the NHS Commissioning Board will oversee the delivery of the Government's outcomes framework across the whole system and the Secretary of State for Health will have a new legal duty to reduce health inequalities throughout the NHS.

The new structure presents both challenges and opportunities. There is a real risk that in the face of pressure to demonstrate outcomes and the proposed payment by results system, CCGs will find it difficult to provide services for homeless people. This could be exacerbated by an unprecedented budget squeeze on the NHS. Longstanding problems with the system remain, such as the lack of specialist drug and alcohol services, and a lack of coherence and consistency over integration, access and outcomes for homeless people both within the health service and in how it interacts with housing and other services.

However, localised commissioning does have the potential to make sure services are more responsive to the needs of their communities. For this to work, analysis, planning and delivery must take account of the needs of the whole community, including marginalised, mobile and vulnerable groups such as homeless people. Perhaps most significantly, the new duty will enshrine in law for the first time a commitment that health outcomes for the most vulnerable will be prioritised.

This research points to a series of recommendations to improve the healthcare that homeless people experience generally and in the context of the new NHS structure.

1. **The restructure of the NHS should ensure the health needs of homeless people are a priority**

   The mortality ratios faced by homeless people make the new duty to reduce health inequalities all the more important. The NHS national commissioning board should take a lead on commissioning specialist services for homeless people where appropriate. Health and Wellbeing Boards should include representatives from the housing and homelessness sectors who can advise on the links between health care and housing and homelessness. Homelessness should be considered as part of the Joint Strategic Needs assessment. Firstly, the Care Quality Commission should review the standard of healthcare homeless people experience and make recommendations for improvement.

2. **The delivery of mainstream health services should be reformed to meet the needs of homeless people.**

   Primary health services should be flexible and responsive to the needs of homeless people, such as through providing out of hours or drop-in services. Accident and Emergency departments should signpost homeless admissions to other relevant services. Providers of secondary health services should ensure that homeless people receive appropriate care, building on the work of approaches such as that undertaken by Pathway[8] to ensure that they are linked in with homelessness services and that all patients are discharged properly and with secure accommodation to go to.

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8. Pathway is a model of integrated healthcare for single homeless people and rough sleepers. More information is available at www.londonpathway.org.uk

### 3. Specialist services should be protected and improved

There are some strong services in parts of the country, such as GP surgeries and the Find and Treat tuberculosis service, which have developed a specialism in working with homeless people. These and the funding they rely on should be protected in the reorganisation of the NHS. The experience they have developed should be built upon to commission further specialist services. In particular, there has long been a need for far more drug and alcohol and dual diagnosis services.

### 4. Services should reflect the demographics of homeless people

Services should be tailored to the demographic needs of the local homeless population. Socio-cultural beliefs can affect homeless people's approach to and behaviour regarding substance use so it is important to take account of cultural background, for example when delivering drug and alcohol services.

### 5. Prevent and resolve homelessness

The research is clear that homelessness quite literally kills. Accommodation needs to be provided alongside health services. More needs to be done to prevent people becoming homeless in the first place as well as supporting people to break out of homelessness. Local authorities and other homelessness services should take account of the specific needs of young homeless people, ensuring help and accommodation offered is age appropriate, and statutory duties to support and house 16 and 17 year olds and young care leavers are fulfilled. It remains a shocking fact that there is no right to shelter in England. Crisis has long argued that the support offered to single homeless people should be improved, through strengthening the duty to provide homelessness assistance, advice and accommodation for all homeless people, not just those currently considered in 'priority need' to ensure no-one can be turned away when they seek help.

# 1. Introduction

The aim of this research was to investigate homeless mortality in England for the period 2001-2009. It aimed to take previous research on homeless mortality forward for both rough sleepers and homeless hostel residents, and to investigate how the patterns of mortality of homeless people differ from those of the general adult population. Access to individual mortality records meant that it was possible to undertake a more in-depth investigation than had been possible in previous research on homeless mortality.

In the 1990s Crisis commissioned research on homeless mortality (Keyes & Kennedy, 1992 and Grenier, 1996). These studies found that the average age of death was 47 years in 1991-2 and 42 years in 1995-6. The findings were based on coroners' records of death where the deceased were identified as rough sleepers.

The role of a coroner is to inquire into violent or unnatural deaths, sudden deaths of unknown cause, and deaths which have occured in prison (MoJ, 2012). However, less than 50% of deaths are reported to the coroner (MoJ, 2012): deaths from external causes (rather than disease) are automatically referred, while unexplained deaths, which may result from disease, will also be referred. For example, a death resulting from assault will be referred to the coroner, as will the death from a heart attack of a young woman in her twenties with no record of heart disease. In comparison, the death from a stroke of a man of 72 who has been treated for hypertension (high blood pressure) by his GP would probably not be referred. We can see therefore that the previous studies were limited in the scope of deaths covered, a situation acknowledged by the authors.

This study differs from its predecessors in that it attempts to estimate mortality among homeless people for all causes of death. Almost by definition, it is difficult to count homeless people. There are various counts and estimates made of rough sleepers, which give different results. While the numbers of residents of accommodation for homeless people are easier to ascertain, it is not possible to enumerate those who might have been rehoused by their local authority or who have found accommodation in the private rented sector. Hence, it is not possible to reliably estimate mortality for the previously homeless who have now found secure accommodation and discover what the long-term effects of a period of former homelessness on mortality might be. It is almost impossible to estimate the numbers of hidden homeless people, such as 'sofa surfers' and squatters. It is also difficult to count deaths of homeless persons. Death certificates do not record the deceased's housing status (Keyes & Kennedy, 1992).

This study investigates homeless mortality in England for the period 2001-2009. Scotland has different housing legislation, and also mortality data is supplied at a coarser geography which means that the method used here was not appropriate. It was hoped to include Wales in this analysis, but there do not appear to be any available rough sleeper counts as there are for England.

# 2. Literature Review

Although there has been little research into the mortality of homeless British people, there has been much more research in other developed countries. Keyes & Kennedy (1992) analysed central London coroner's records and found an average age of death of homeless people whose deaths had been referred to the coroner of 47 years in 1991/2. They found that homeless people had an excess mortality rate three times that of the general population, and had a high risk of being fatally assaulted, of committing suicide, of dying in an accident, and of dying from hypothermia or pneumonia. Grenier (1996), using a similar methodology to Keyes & Kennedy for London, Manchester and Bristol, found an average age of death of 42 years in 1995/6, with the mortality rate for homeless people being between 3.8 and 5.6 times that of the general population. Shaw, Dorling & Brimblecombe (1999) reported that hostel residents in Britain had a death rate seven times greater, and rough sleepers a death rate 25 times greater, than the housed population. In 2000, a retrospective cohort study of homeless mortality in Glasgow found an average age of death of 41 years and hazard ratio of all-cause mortality of 4.4 (Morrison, 2009).

By far the most research has been conducted in the United States. The Centers for Disease Control and Prevention (CDC, 1987) reported that a review by the Fulton County Medical Examiner of deaths of homeless people had found a median age at death of 44 years in Atlanta in 1985/6; a later study by the Medical Examiner's office in Atlanta for the period 1988-90 reported an average age of death of 46 years (Hanzlick & Parrish, 1993). In San Francisco, homeless deaths reported to the Medical Examiner's office over a six year period 1985-90 occurred at an average age of 41 years (CDC, 1991). In Philadelphia Hibbs et al. (1994) calculated that the homeless population, identified from users of homelessness services, had

a mortality rate 3.5 times that of the general population.  Hwang et al. (1997) found that in Boston for the period 1988-93, the average age of death of homeless people, identified though a homeless health care program, was 47 years with mortality ratios ranging from 1.6 to 5.9. O'Connell & Swain (2005) report on a program run by the Boston Health Care for the Homeless Program of rough sleepers, finding an average age of death of 51 years. Barrow et al. (1999) investigated mortality among homeless shelter residents in New York and concluded that homeless people's age adjusted death rates were four times those of the United States general population and two to three times those of New York City as a whole.

A study of male users of Toronto homeless shelters 1995-97 also found high mortality rate ratios, with a mean age of death of 46 (Hwang, 2000), while a cohort study of women using homeless shelters in 1995 in the same city found that the average age of death was 39 years, with women aged 18-44 ten times more likely to die than the general population (Cheung & Hwang, 2004).

Nordentoft & Wandall-Holm (2003) found that users of hostels for homeless people in Copenhagen had a standardised mortality ratio (SMR) of 3.8. Nielsen et al. (2011), in a nationwide register-based study, report SMRs of 5.6 for men and 6.7 for women for people in homeless shelters in Denmark.

All of these studies find that homeless people suffer high mortality rates and premature mortality. Many homeless people have alcohol, drug, or mental health problems, often multiple (Broadway, 2009). It is known that alcohol and drug-related deaths are very premature: Shaw et al. (2008) found that the average age of death was 35 years due to drugs and 51 years due to alcohol. Alcohol and drug use in themselves lead to impaired health and can lead to other diseases and

# 3. Methodology

disorders, such as cancer and mental health problems, even if they are not the direct cause of death. Even for those homeless people without such problems, the lifestyle is such as to militate against a long and healthy life. Sleep quality must be poor (especially for rough sleepers), diet often inadequate, and personal hygiene problematic (Jones & Pleace, 2010). Access to health care may be difficult and maintaining a treatment regime can difficult. The sheer stress of living a homeless life must result in impaired health.

To investigate homeless people's mortality, we need to know the number of deaths by sex, age and cause of death. The mortality records available do not include information about housing status and hence it was therefore necessary to use a number of data sources to arrive at an estimate of homeless deaths.

The following datasets were used to undertake the analysis.

**1.** A Homeless Link dataset of homeless projects comprising accommodation, advice centres and day centres. This dataset includes basic information such as:
   i.   Name of the project;
   ii.  Type of project;
   iii. Various postcodes associated with the project;
   iv.  Number of spaces (for accommodation projects);
   v.   Target age range of project (if any); and
   vi.  Whether the project was gender specific.

**2.** Individual level mortality data in England for the years 2001-2009 was supplied by the Office for National Statistics (ONS). Because of data disclosure rules, a long enough time period had to be used; a single year would not have included sufficient deaths of homeless people to be statistically robust. The dataset includes information on:
   i.   Year of death;
   ii.  Age (in years) at death;
   iii. Sex;
   iv.  Cause of death classified according to the International Classification of Diseases tenth revision (ICD-10); and
   v.   Postcode.

**3.** The Royal Mail Postcode Address File (PAF). This is the definitive listing of postcodes in the UK. For every postcode, it gives each delivery address, and also what businesses (if any) are there.

**4.** The Census 2001 postcode headcount. This dataset gives the number of people, men, women and households for each postcode in England and Wales.

From these datasets, we had to ascertain which of the deaths were of homeless people. This was a time-consuming manual process. The Homeless Link projects accommodation postcodes were checked against the PAF to ascertain the actual postcode for the location of the accommodation and not, for example, a referral address. Some of the accommodation projects (mainly housing schemes) are dispersed across multiple sites, and hence excluded from this analysis. Domestic violence shelters have their postcodes suppressed both in the Homeless Link data and in the PAF and have also been excluded. Advice centres and day centres were included in an attempt to include rough sleepers who might use such centres as a contact address.

When a death is registered, the registration authorities do their utmost to link the deceased to an address. A rough sleeper might be linked to the last hostel at which they stayed or a day centre that they regularly use. The mortality dataset contains a number of deaths with no postcode allocated; although these may include some homeless deaths, for the most part they are of visitors to England who died while here. This data cannot be disaggregated.

However, the actual address to which a death can be registered is not necessarily clear-cut. The person registering the death (usually a relation) can decide which address to use. For example, the parents of a student who dies could register his/her death at their home address, rather than the student's term-time address. Similarly, people living in care or nursing homes may be registered at their old address or their children's address. It is likely that a proportion of deaths of young homeless people will have been registered to their parents' home address and therefore the number of young deaths is probably an underestimate.

From the mortality dataset, the records in England of people aged over 16 (the general population) were extracted. Technically, there should not be any homeless people below the age of 18 as they would be in priority need and hence eligible for rehousing by their local authority. However, we know that there are young homeless people of 16 and 17 (and indeed younger) and there are homeless accommodation projects whose target age range includes 16 and 17 year olds.

From this adult deaths dataset, an extract was made of the death records that had a postcode that matched the Homeless Link project postcodes. These postcodes were checked against the PAF and the census headcount in order to ascertain whether each record could be of a homeless person or not. The census headcount is of course out-of-date and does not include any new build or demolition since then. Such change was picked up from the PAF and further web searches undertaken to ascertain if there were other households in any new development.

Some of the matching was simple: there was only one address at that postcode and hence any deaths at that postcode must almost certainly have been of a homeless person. Of course, there may be a few deaths of resident staff included – this is perhaps more likely to be the case for religious or spiritual accommodation providers. Where there is only one homeless project address to a postcode it is generally of a large hostel, such as Salvation Army hostels, or other large accommodation projects such as foyers.

Where there are multiple addresses to a postcode the matter is more complicated. It was realised that outcomes of those who are or have been resident in large hostels (single postcode) may differ from those in smaller sized accommodation. Therefore it was important to attempt to make an estimate of the numbers of deaths in such smaller sized accommodation, where there are many

addresses in a postcode.

Much of the accommodation for homeless people is targeted at specific age groups so any deaths outside of the age range would not have been of homeless persons, although deaths just outside the age range were included as possible homeless deaths. For example, if a postcode contains a foyer for 16-25 year olds, as well as other households, any deaths of older people would not have been homeless deaths; however the death of a 26 year old would be flagged as a possible. It might be that a resident in such a foyer turned 26 while they were living there, or alternatively they may have moved onto the streets and this was their last known address.  Similarly, where accommodation was sex specific any deaths of the opposite sex could be excluded.

For many postcodes containing multiple households it is not possible to definitely ascertain whether deaths were of homeless people or not. However, it is possible to estimate whether there is a higher probability that some of the deaths were of homeless people. A single postcode relating to homeless accommodation with a high number of young deaths (under 55) was flagged as there being a higher probability that at least some of the deaths in that postcode were of homeless people, particularly if the pattern of deaths was different from the other postcodes in the same postcode sector (for example, postcode E1 6LT is in postcode sector E1 6). It is, of course, impossible to be sure whether such deaths were of homeless people or not. Some postcodes had surprisingly high numbers of elderly deaths: it transpired that such postcodes contained care or nursing homes. Additionally, some of the agencies providing homeless services also run sheltered housing for the elderly or a care or nursing home in the same postcode. The decision was made that for any postcode that contained a care or nursing home, any deaths over the age of 74 would be allocated to care and not regarded as homeless. This may, of course, exclude some homeless deaths but it is

not possible to disaggregate the data further.

Having inspected all the deaths and postcodes, a number of mortality datasets were generated of different scenarios. In the tables and figures that follow, the different scenarios have been given the associated codes.

**Table 1: Scenarios**

| 1. The general population | This dataset is included for comparison purposes. |
|---|---|
| 2. H | Definitely homeless people (although may include a few resident staff deaths). |
| 3. HP | Definitely homeless people + a high probability that some of the additional deaths were of homeless people. |
| 4. HPQ | Definitely homeless people + a high probability that some of the additional deaths were of homeless people + the remaining deaths where it is not possible to say one way or the other under 65. |
| 5. HPQOLD | Definitely homeless people + a high probability that some of the additional deaths were of homeless people + the remaining deaths where it is not possible to say one way or the other under 75. |
| 6. HPQVOLD | Definitely homeless people + a high probability that some of the additional deaths were of homeless people + all the remaining deaths where it is not possible to say one way or the other. |
| 7. HPOS | All deaths that cannot be definitely excluded that were registered to the project postcodes; this dataset includes many deaths of residents of nursing and care homes. |

As we move through the homeless deaths scenarios more non-homeless people are included at each stage. Although it is less likely that deaths at older ages are of homeless people (and perhaps more so for women), such deaths cannot automatically be excluded.

This research does not include deaths of people living in 'homeless households' that have been rehoused, perhaps in bed and breakfast or other temporary accommodation, by their local authority. Nor does it include those who have previously been homeless and have found accommodation other than that provided by the various homeless projects, for example having been rehoused by their local authority or having found private rented accommodation. It does include those sleeping rough, those in nightshelters and emergency accommodation as well as those in more supported housing. The 'definitely homeless' (H) scenario is almost certainly an underestimate as it excludes those whose deaths have been registered to another address (such as parents' home in the case of young people) or who have no associated postcode registered; nor does it include any deaths in domestic violence refuges, the postcodes of these refuges being suppressed. This scenario also possibly includes the deaths of some resident staff, but again it is impossible to determine this accurately.

Table 2 shows the European Typology of Homelessness and Housing Exclusion

(ETHOS), taken from Jones & Pleace (2010) and provides a convenient basis for enumerating the differing types of homelessness this research aims to cover. Both categories 1 and 2, people living rough and people staying in a nightshelter, of ROOFLESS are included, as are categories 3 (people in accommodation for homeless people (including temporary accommodation), 4 (people in women's shelters) and 7 (people receiving support) in HOUSELESS. The research does not attempt to cover any of the other categories of homelessness or insecure or inadequate housing as it is not possible to extract the possible deaths that occurred in those categories.

Due to data disclosure control rules on the supply of mortality data, numbers below 4 must be suppressed, as must any percentages based on them. Any such numbers here have been given a dummy value of 2.5.

Having created these mortality datasets, analysis was undertaken to investigate the average age of death, the various causes of death, and to calculate standardised mortality rates for all deaths and for selected causes of death.

**Table 2: The European Typology of Homelessness and Housing Exclusion (ETHOS)**

| ROOFLESS | 1 | People living rough |
|---|---|---|
| | 2 | People staying in a night shelter |
| HOUSELESS | 3 | People in accommodation for homeless people (including temporary accommodation) |
| | 4 | People in women's shelters |
| | 5 | People in accommodation for immigrants |
| | 6 | People due to be released from institutions (prison and hospital) who are at risk of homelessness due to support needs and people who are unable to move on from institutions due to lack of suitable move on housing) |
| | 7 | People receiving support (due to homelessness i.e. in supported accommodation, including those unable to move on from supported housing due to lack of suitable) |
| INSECURE | 8 | People living in insecure accommodation (squatting, illegal camping, sofa surfing or sleeping on floors, staying with friends or relatives) |
| | 9 | People living under threat of eviction |
| | 10 | People living under threat of violence |
| INADEQUATE | 11 | People living in temporary / non-standard structures |
| | 12 | People living in unfit housing |
| | 13 | People living in extreme overcrowding |

(Source Jones & Pleace, 2010)

# 4. Overview of deaths

There were 4,573,667 deaths of people aged 16 and over in England for the period 2001-2009: 2,173,878 men and 2,399,789 women.

In the relevant postcodes there were a total of 8,267 deaths. Many of these deaths could be excluded by sex and/or age range. Once these have been excluded it is estimated that there are 3,890 deaths that theoretically could have been of homeless people. Table 3 shows the numbers of deaths of men, women and people in each of the datasets.

Across all the scenarios, the number of female deaths is very much lower than male deaths. This may reflect the far lower number of female rough sleepers compared to males, but may also be a result of under-identification of female homeless deaths.

Table 4 shows the total number of homeless deaths for each scenario in each Government Office Region (GOR). London has around a third of the deaths in each case.

**Table 3: Number of deaths in each of the datasets**

| Men | Women | People | Deaths |
|---|---|---|---|
| 2,173,878 | 2,399,789 | 4,573,667 | General population |
| 914,381 | 612,327 | 1,526,708 | General population under 75 |
| 452,736 | 286,663 | 739,399 | General population under 65 |
| 208,183 | 126,886 | 335,069 | General population under 55 |
| 98,189 | 52,777 | 150,966 | General population under 45 |
| 971 | 86 | 1,057 | H |
| 1,559 | 172 | 1,731 | HP |
| 2,065 | 353 | 2,418 | HPQ |
| 2,324 | 444 | 2,768 | HPQOLD |
| 2,600 | 638 | 3,238 | HPQVOLD |
| 2,812 | 1,078 | 3,890 | HPOS |

**Table 4: Number of deaths by Government Office Region (GOR)**

| GOR | H | HP | HPQ | HPQOLD | HPQVOLD | HPOS |
|---|---|---|---|---|---|---|
| North East | 75 | 100 | 123 | 133 | 147 | 185 |
| North West | 134 | 206 | 293 | 328 | 383 | 389 |
| Yorkshire and The Humber | 67 | 122 | 153 | 179 | 202 | 252 |
| East Midlands | 38 | 90 | 133 | 149 | 186 | 203 |
| West Midlands | 134 | 207 | 284 | 346 | 423 | 523 |
| East of England | 37 | 102 | 190 | 211 | 259 | 285 |
| London | 387 | 535 | 774 | 881 | 987 | 1,253 |
| South East | 104 | 213 | 260 | 285 | 336 | 363 |
| South West | 81 | 156 | 208 | 256 | 315 | 437 |
| ENGLAND | 1,057 | 1,731 | 2,418 | 2,768 | 3,238 | 3,890 |

# 5. Average age of death

For each of the scenarios listed in Table 1 the mean and median age of death was calculated for men, women and all people. These are shown in Table 5. It is important to note that this is not life expectancy; it is the average age at which those homeless people who die do so.

It is immediately obvious that the average age of death, whether mean or median, is far lower for each of the homeless scenarios than for the general population, with the definitely homeless having a mean age of death for people of only 50 years. Including the 'probably some of these deaths are of homeless deaths' (scenario HP) gives an even lower mean age of death of 47. These averages are for all deaths, not only those referred to the coroner. Keyes & Kennedy (1992) reported an average age of death of 47 and Grenier (1996) 42. The different scenarios of homeless deaths (excluding the HPOS scenario) give remarkably similar results, the average age of death of people ranging from 47 to 55 as more deaths of older, possibly homeless, people are included. These average ages of death are very similar to those reported in the literature.

It is surprising that the average age of death for women tends to be lower than for men.  Generally, women have a longer life expectancy than men.  It may be because not all deaths of homeless females have been identified; certainly there are far fewer deaths of homeless females across all the scenarios. In particular, because domestic violence refuges are not included in this analysis (because all postcode information about them is suppressed) there are an unknown number of deaths. Also, many women with children would be accommodated by their local authority and hence would not be included in this study.  Additionally, it may be that local authorities are more likely to rehouse single women than men as they may be seen to be at greater risk sleeping on the streets; the gender split of male to female rough sleepers in London is around 85%:15% (Broadway, 2009).  Alternatively, it may be that women survive less well on the streets than men.

For each of the datasets the age profile was graphed. In each graph the men are coloured grey on the left and the women orange on the right. To start with, the graph of the age distribution of death of the general population is shown (Figure 1). This is the distribution we would expect to see. There are few deaths of young people, the numbers increasing

**Table 5: Mean and median age of death for each of the scenarios**

| Dataset | Men | | Women | | People | |
|---|---|---|---|---|---|---|
| | mean age of death | median age of death | mean age of death | median age of death | mean age of death | median age of death |
| General population | 74 | 77 | 80 | 83 | 77 | 80 |
| H | 50 | 50 | 43 | 41 | 50 | 49 |
| HP | 48 | 47 | 43 | 42 | 47 | 46 |
| HPQ | 48 | 49 | 46 | 47 | 48 | 49 |
| HPQOLD | 51 | 51 | 51 | 53 | 51 | 52 |
| HPQVOLD | 54 | 54 | 61 | 64 | 55 | 56 |
| HPOS | 56 | 56 | 72 | 81 | 61 | 61 |

with increasing age. Male deaths outnumber female deaths until the 80-84 age band, reflecting male lower life expectancy.

The next graph (Figure 2) shows the age distribution of those deaths identified as definitely homeless (which may include some resident staff deaths). This graph has a dramatically different shape to that for the general population. There are very few female deaths, the majority being male and the majority of deaths being at much younger ages, particularly from 30 to 64.

Figure 3 shows the age distribution for the 'definitely homeless' together with those deaths where there is a high probability that some of the remaining deaths were of homeless people. Note that not all of these deaths will have been of homeless people, but it is not possible to disaggregate them. This graph is very similar in appearance to Figure 2.

The next graph (Figure 4) is of the data shown in Figure 3 with the addition of the 'no way of telling' deaths below the age of 65 – again a similar picture. Note that because there is an artificial cut-off at 65 the higher age bands in this graph are identical to Figure 3.

Figure 5 is the same as Figure 4 but the age range extended to the under 75s. Again, remember there is an artificial cut-off.

Figure 6 includes the deaths of those aged 75 and over. It is noteworthy just how consistent the shape of the graph is for all the homeless scenarios, particularly for men.

Finally, for information purposes only, Figure 7 is of all the deaths that cannot be excluded in the relevant postcodes. This includes the deaths of people resident in care homes.

**Figure 1: Age distribution of deaths of the general population**
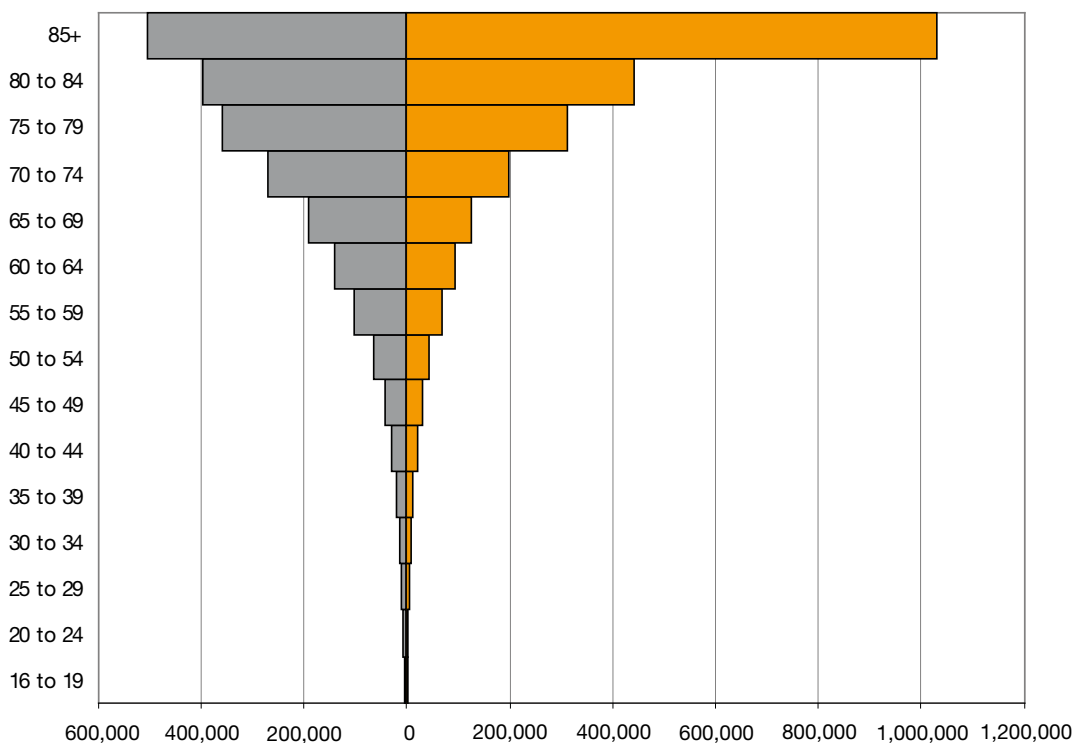
**Figure 2: Age distribution of deaths of the definitely homeless for scenario H[9]**
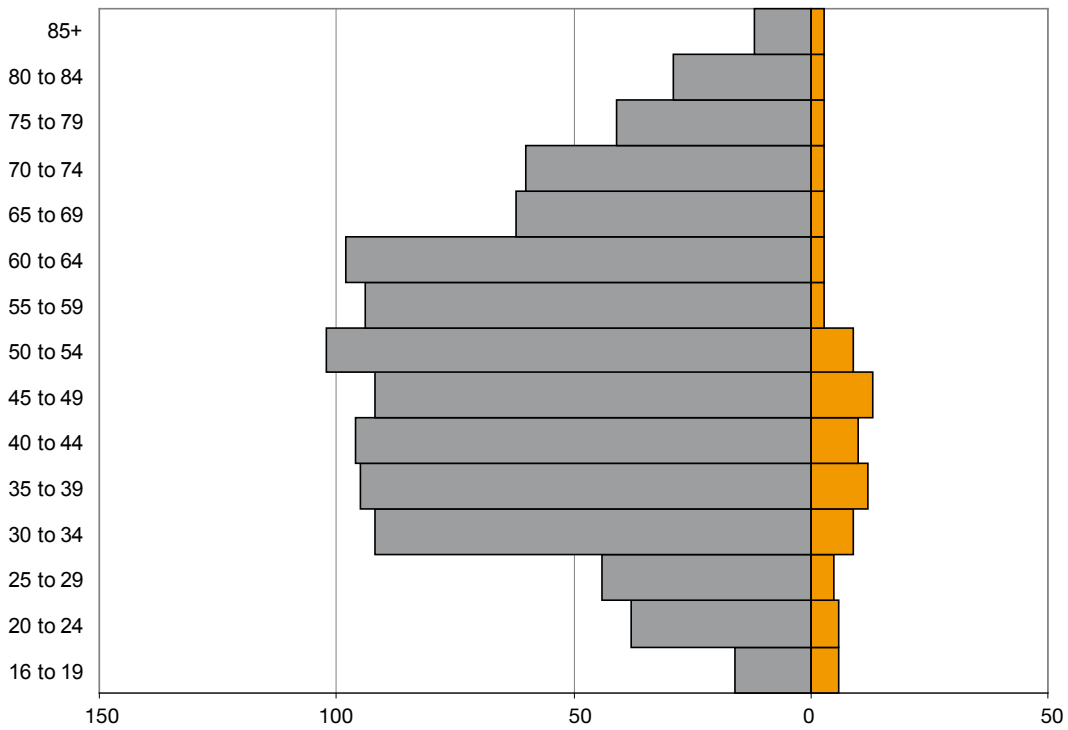


**Figure 3: Age distribution of deaths for scenario HP[10]**
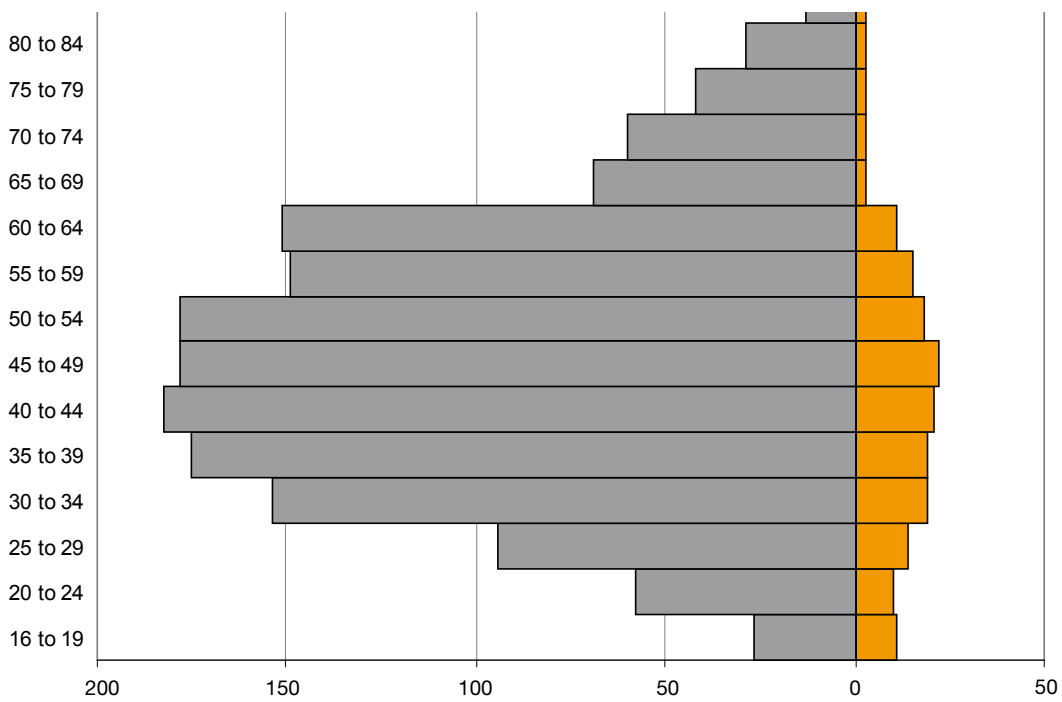


**9.**  Definitely homeless people (although may include a few resident staff deaths).

**10.**  Definitely homeless people and a high probability that some of the additional deaths were of homeless people.

**Figure 4: Age distribution of deaths for scenario HPQ[11]**
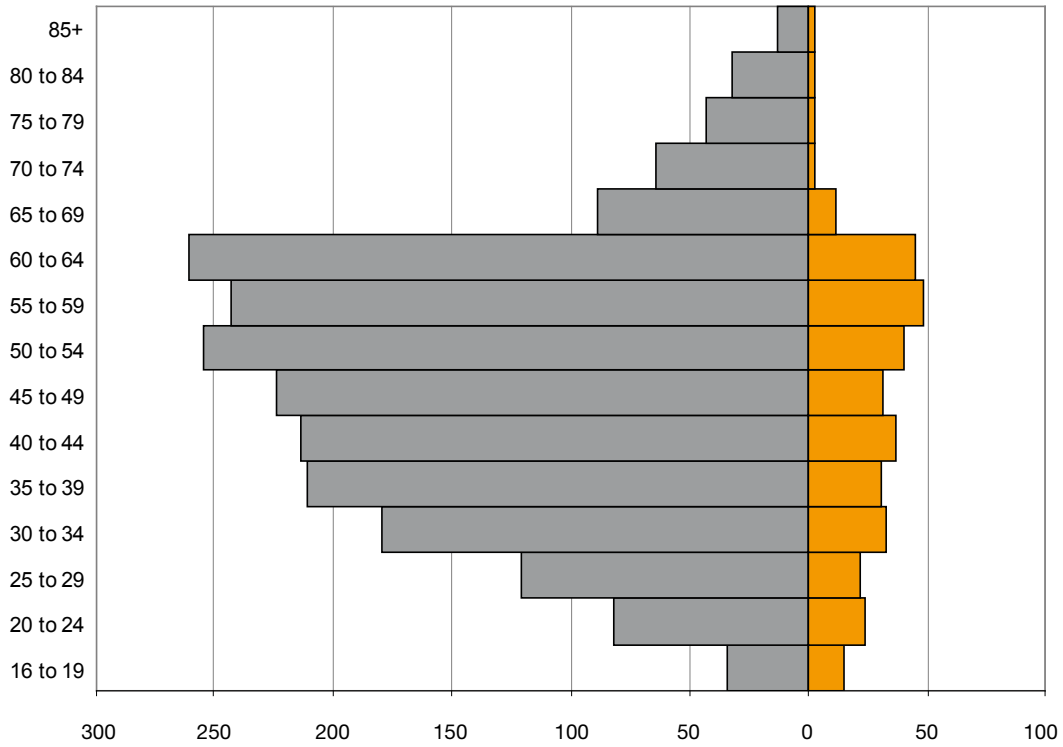


**Figure 5: Age distribution of deaths for scenario HPQOLD[12]**
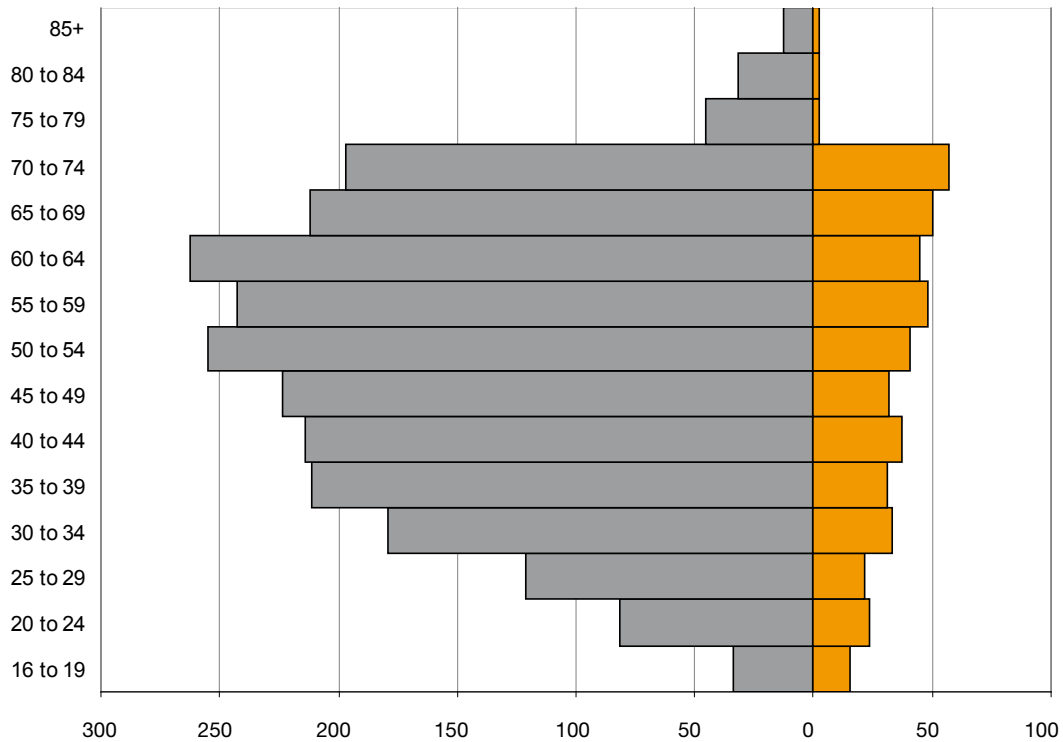


11. Definitely homeless people and a high probability that some of the additional deaths were of homeless people and the remaining deaths where it is not possible to say one way or the other under 65

12. Definitely homeless people and a high probability that some of the additional deaths were of homeless people and the remaining deaths where it is not possible to say one way of the other under 75.

**Figure 6: Age distribution of deaths for scenario HPQVOLD[13]**
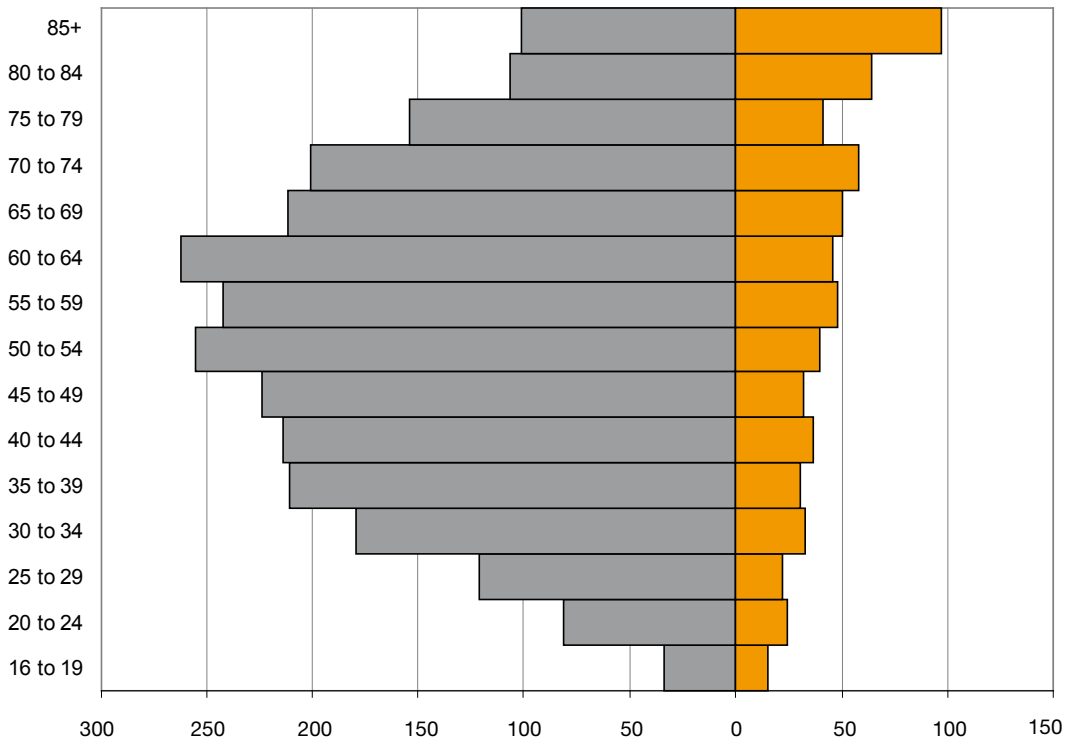


**Figure 7: Age distribution of all deaths for scenario HPOS[14]**
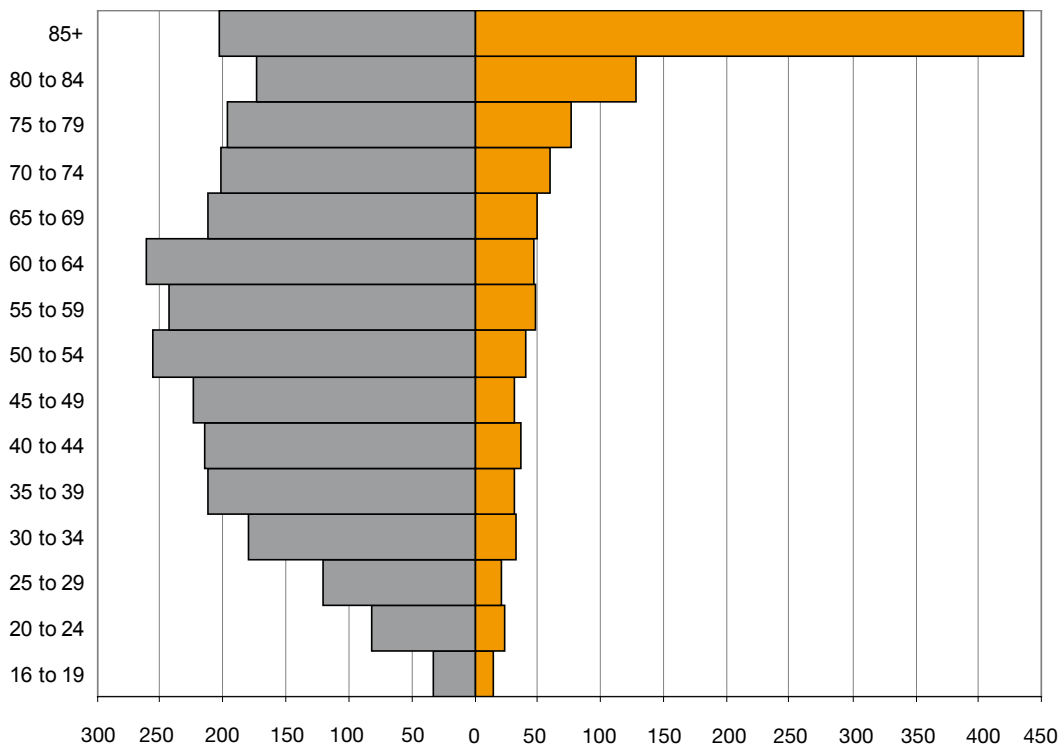


13. Definitely homeless people and a high probability that some of the additional deaths were of homeless people and all the remaining deaths where it is not possible to say one way of the other.

14. All deaths that cannot be definitely excluded that were registered to the project postcodes; this dataset includes many deaths of residents of nursing and care homes.

# 6. Causes of death

For each of the scenarios of homeless deaths, broad groupings of causes of death were graphed, showing the proportion that each cause grouping comprises of all deaths. The same groups of causes are shown for each scenario.

To start, the distribution of causes of death for the general population is shown in Figure 8. As we would expect, the majority of deaths are from diseases, with cardiovascular disease and cancer accounting for nearly two thirds of deaths. Deaths due to drugs and alcohol account for only 1.6% of deaths. However, we know from Table 4 that for whichever scenario of homeless deaths we choose that the average age of death, whether mean or median, is much lower than for the general population. The next four figures 9-12 show the distribution of the causes of death for the general population aged under 75, under 65, under 55 and under 45 to enable some meaningful comparison to be made with the causes of death of homeless people. As we decrease the upper age of death for the general population, the proportion of deaths from diseases decreases while deaths from external causes increase, particularly from traffic accidents, drugs and alcohol. For deaths under the age of 45, cardiovascular causes and cancer account or just over a third of deaths while drugs and alcohol account for just over a fifth.

The distribution of causes of death for the various homeless scenarios is displayed in the following pie charts. It can be seen that the distribution is very different from even that of the under 45 general population, with a far higher proportion of drug and alcohol deaths – twice the proportion of alcohol related deaths and three times the proportion of drug related deaths for the definitely homeless shown in Figure 13. Together they account for a third of all definitely homeless deaths.

Adding in the high probability deaths (scenario HP, Figure 14) increases the proportion of deaths from drugs and alcohol to just over a third, but the overall picture is very similar to Figure 13.

As we increase the age cut off, the proportion of deaths from drugs and alcohol decreases while deaths from diseases increase. For the HPQ scenario (including not possible to say deaths under 65, Figure 15) the proportion of drug/alcohol deaths has decreased to a little under a third.

When we include the under 75s, the proportion of alcohol and drug deaths is a little over a quarter (Figure 16). Including the over 75s gives drugs and alcohol accounting for just under a quarter of deaths (Figure 17).

The final pie chart (Figure 18), for information purposes only, is of all the deaths that cannot be excluded.

**Figure 8: Distribution of causes of death for the general population**



Cardiovascular (36.5%)
Other external causes (1.0%)
Traffic accidents (0.4%)
Falls (0.6%)
Suicide/undetermined intent (0.9%)
Due to drugs (0.3%)
Due to alcohol (1.3%)
Other diseases and disorders (16.7%)
Infections (1.2%)
Respiratory (13.8%)
Cancer (27.3%)

**Figure 9: Distribution of causes of death for the general population under 75**



Cardiovascular (29.3%)
Other external causes (1.0%)
Traffic accidents (1.2%)
Falls (0.6%)
Suicide/undetermined intent (2.5%)
Due to drugs (0.9%)
Due to alcohol (3.5%)
Other diseases and disorders (11.0%)
Infections (1.2%)
Respiratory (8.9%)
Cancer (39.9%)

**Figure 10: Distribution of causes of death for the general population under 65**



Cardiovascular (24.6%)
Other external causes (1.6%)
Traffic accidents (2.2%)
Falls (0.7%)
Suicide/undetermined intent (4.8%)
Due to drugs (1.9%)
Due to alcohol (5.9%)
Other diseases and disorders (11.3%)
Infections (1.4%)
Respiratory (6.4%)
Cancer (39.2%)

**Figure 11: Distribution of causes of death for the general population under 55**



Cancer (31.0%)
Cardiovascular (20.5%)
Other external causes (2.6%)
Traffic accidents (4.3%)
Falls (1.0%)
Suicide/undetermined intent (9.0%)
Due to drugs (3.8%)
Due to alcohol (8.2%)
Other diseases and disorders (13.1%)
Infections (1.9%)
Respiratory (4.6%)

**Figure 12: Distribution of causes of death for the general population under 45**
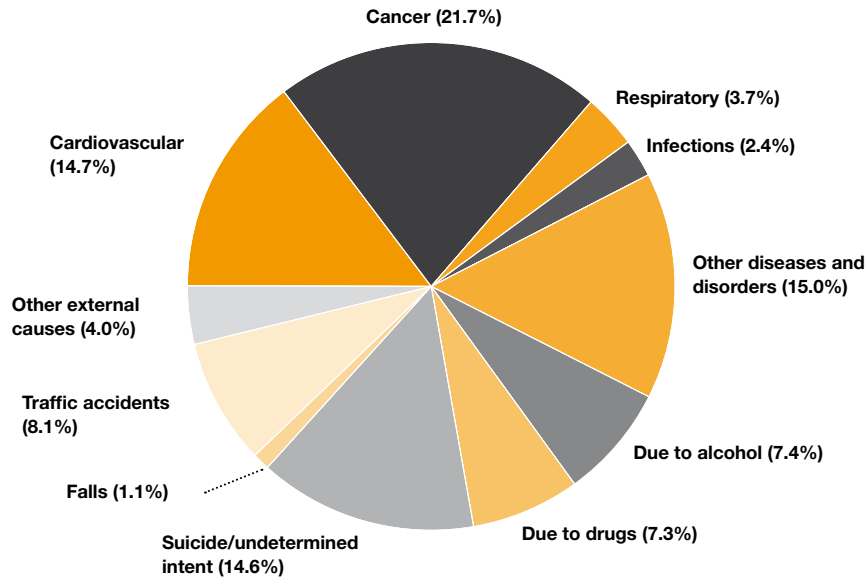


**Figure 13: Distribution of causes of death for the definitely homeless for scenario H[15]**
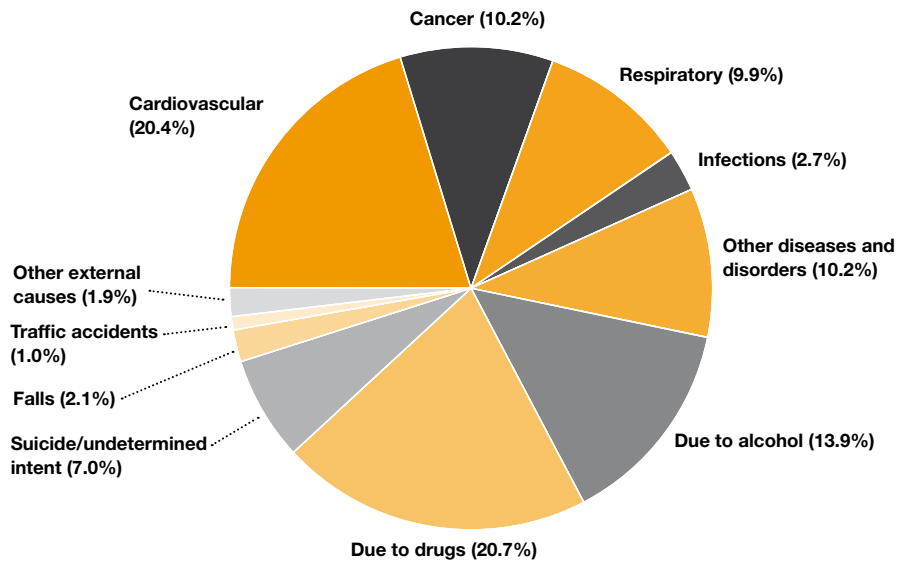
**Figure 14: Distribution of causes of death for scenario HP[16]**
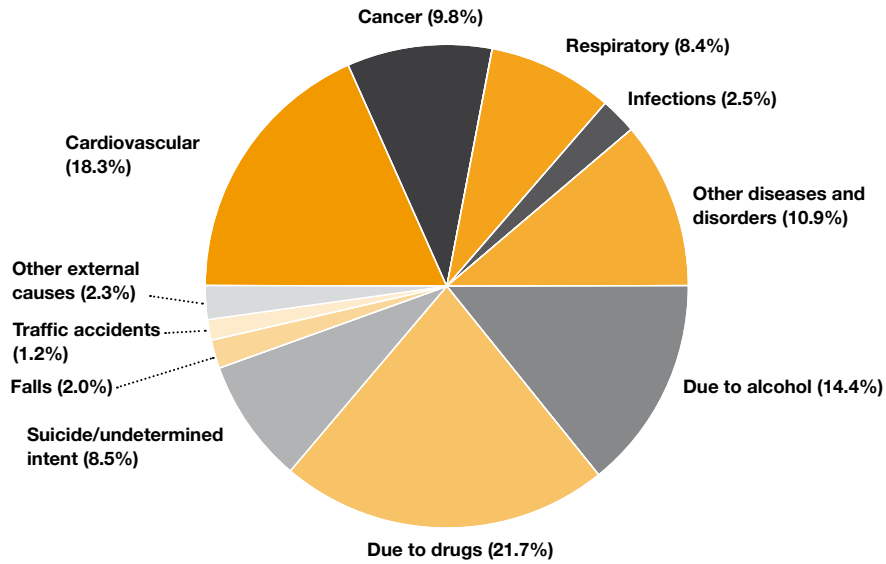


**Figure 15: Distribution of causes of death for scenario HPQ[17]**
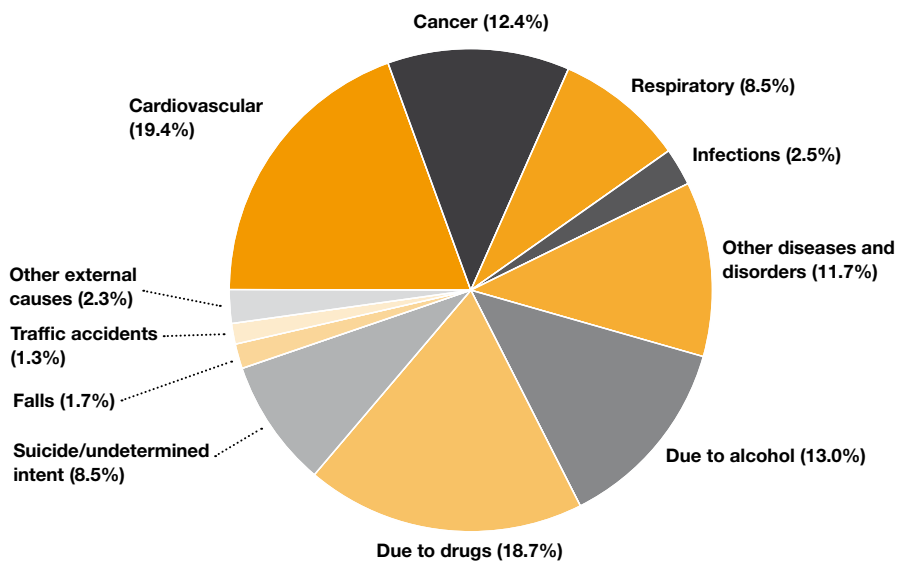


16. Definitely homeless people and a high probability that some of the additional deaths were of homeless people

17. Definitely homeless people and a high probability that some of the additional deaths were of homeless people and the remaining deaths where it is not possible to say one way or the other under 65.

**Figure 16: Distribution of causes of death for scenario HPQOLD[18]**



**Figure 17: Distribution of causes of death for scenario HPQVOLD[19]**
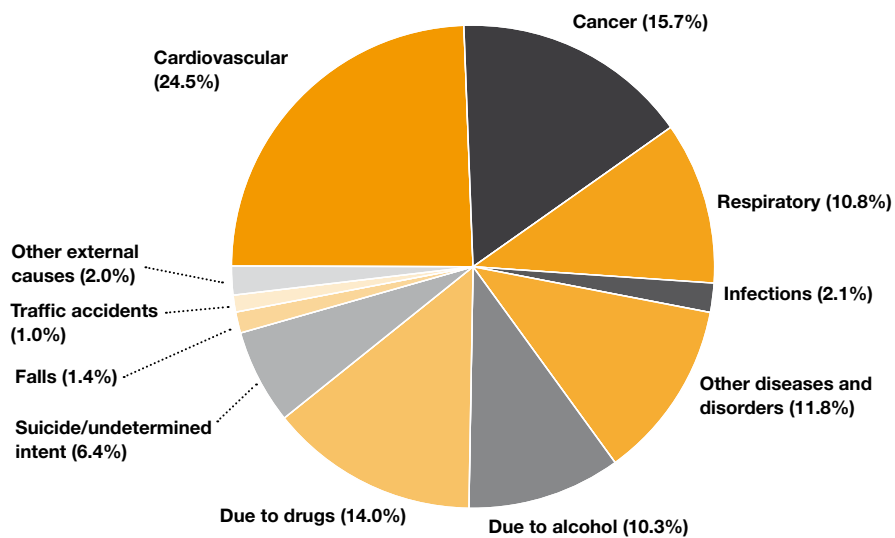


18. Definitely homeless people and a high probability that some of the additional deaths were of homeless people and the remaining deaths where it is not possible to say one way or the other under 75.

19. Definitely homeless people and a high probability that some of the additional deaths were of homeless people and all the remaining deaths where it is not possible to say one way or the other.

**Figure 18: Distribution of causes of death for scenario HPOS[20]**
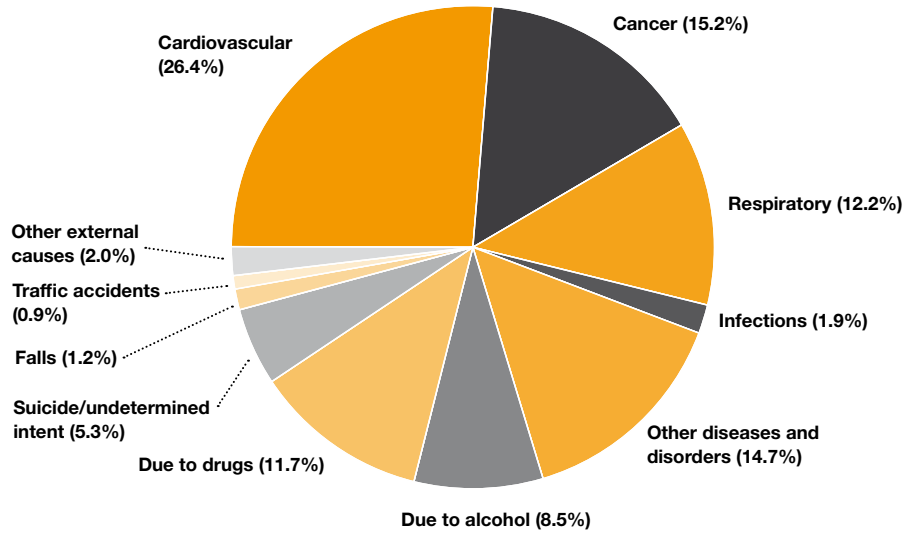
# 7. Causes of death in Government Office Regions

The following series of tables shows the proportions of deaths by scenario for each of the homeless scenarios by Government Office Region. Note that here infections are included in the Other diseases and disorders category. Also note that due to data disclosure rules (any counts of 3 or below percentages based on such counts, or any percentages that could be reverse engineered to reveal such counts) have to be suppressed (denoted by an asterisk).

Across all the scenarios it is noticeable that London has a very different distribution of homeless deaths from the other regions, particularly for deaths from cardiovascular causes and due to drugs. For the H scenario, a quarter of London's homeless deaths are from cardiovascular causes, compared to a fifth nationally. A tenth of London's homeless deaths are due to drugs against a fifth for England as a whole. Similarly, for the HP scenario, cardiovascular causes account for a quarter of all homeless deaths (just

under a fifth nationally) and drugs, an eighth (nationally, a fifth).

London is very different from the rest of the country, with far higher levels of homelessness and commensurately higher levels of support available to people who are homeless. The profile of the population affected also looks very different in the capital (see Fitzpatrick et. al, 2011). It might well be that with better health interventions, London's homeless people either do not use drugs to the extent that their regional counterparts do, or that the health consequences of drug use are better mitigated. Part of the explanation may be that London's homeless population is more ethnically and culturally diverse that elsewhere, and that drug use is not traditionally part of certain cultures. Existing evidence points to the fact that sociocultural beliefs can shape the approach to and behaviour regarding substance use and abuse (Abbott & Chase, 2008).

**Table 6: Distribution of causes of death by Government Office Region (GOR) for scenario H[21]**

| H | East Mid-lands | East of England | London | North East | North West | South East | South West | West Mid-lands | Yorks & Humber |
|---|---|---|---|---|---|---|---|---|---|
| Cardiovascular | 18.4 | 27.0 | 26.4 | 18.7 | 15.7 | 15.4 | 7.4 | 17.9 | 23.9 |
| Cancer | * | * | 12.1 | 13.3 | 11.9 | 7.7 | 8.6 | 11.2 | * |
| Respiratory | 10.5 | * | 9.8 | 9.3 | 14.2 | 5.8 | 9.9 | 12.7 | * |
| Other diseases and disorders | 13.2 | 18.9 | 15.2 | * | 11.2 | 8.7 | 7.6 | 15.7 | 11.9 |
| Due to alcohol | * | * | 16.0 | 10.7 | 10.4 | 16.3 | 18.5 | 14.2 | 9.0 |
| Due to drugs | 31.6 | 18.9 | 10.6 | 25.3 | 20.9 | 26.0 | 33.3 | 22.4 | 41.8 |
| Suicide/ undetermined intent | 10.5 | * | 5.7 | 13.3 | 10.4 | 9.6 | 7.4 | 3.0 | * |
| Other external causes | * | * | 4.1 | 21.1 | 5.2 | 10.6 | 7.4 | 3.7 | * |

21. Definitely homeless people.

**Table 7: Distribution of causes of death by Government Office Region (GOR) for scenario HP[22]**

| HP | East Mid-lands | East of England | London | North East | North West | South East | South West | West Mid-lands | Yorks & Humber |
|---|---|---|---|---|---|---|---|---|---|
| Cardiovascular | 17.8 | 12.7 | 24.5 | 19.0 | 14.6 | 12.2 | 12.2 | 19.8 | 18.0 |
| Cancer | 6.7 | 5.9 | 11.8 | 11.0 | 10.7 | 9.4 | 7.7 | 12.6 | 3.3 |
| Respiratory | 8.9 | 9.8 | 8.8 | 10.0 | 10.2 | 6.1 | 7.7 | 9.2 | 5.7 |
| Other diseases and disorders | 15.6 | 14.7 | 15.0 | * | 10.7 | 10.8 | 11.5 | 17.4 | 13.1 |
| Due to alcohol | 8.9 | 11.8 | 16.3 | 17.0 | 14.1 | 15.5 | 14.7 | 12.6 | 11.5 |
| Due to drugs | 24.4 | 26.5 | 12.5 | 22.0 | 24.3 | 24.9 | 30.1 | 20.8 | 36.9 |
| Suicide/ undetermined intent | 10.0 | 7.8 | 6.9 | 11.0 | 11.2 | 13.1 | 9.0 | 4.3 | 7.4 |
| Other external causes | 7.8 | 10.8 | 4.3 | * | 4.4 | 8.0 | 7.1 | 3.4 | 4.1 |

**Table 8: Distribution of causes of death by Government Office Region (GOR) for scenario HPQ[23]**

| HPQ | East Mid-lands | East of England | London | North East | North West | South East | South West | West Mid-lands | Yorks & Humber |
|---|---|---|---|---|---|---|---|---|---|
| Cardiovascular | 21.1 | 17.9 | 24.3 | 20.3 | 16.4 | 13.1 | 13.0 | 21.1 | 16.3 |
| Cancer | 9.0 | 7.9 | 15.6 | 12.2 | 13.0 | 10.4 | 9.1 | 14.4 | 8.5 |
| Respiratory | 8.3 | 9.5 | 8.5 | 9.8 | 11.3 | 5.8 | 7.2 | 8.5 | 7.2 |
| Other diseases and disorders | 16.5 | 15.3 | 15.2 | * | 12.6 | 11.5 | 12.5 | 17.6 | 12.4 |
| Due to alcohol | 9.0 | 10.5 | 14.6 | 15.4 | 13.0 | 14.2 | 13.0 | 11.3 | 10.5 |
| Due to drugs | 21.1 | 21.6 | 10.5 | 20.3 | 19.8 | 24.2 | 27.4 | 17.6 | 32.7 |
| Suicide/ undetermined intent | 9.8 | 8.4 | 7.1 | 10.6 | 9.2 | 13.1 | 10.1 | 6.0 | 6.5 |
| Other external causes | 5.3 | 8.9 | 4.1 | * | 4.8 | 7.7 | 7.7 | 3.5 | 5.9 |

**Table 9: Distribution of causes of death by Government Office Region (GOR) for scenario HPQOLD[24]**

| HPQOLD | East Mid-lands | East of England | London | North East | North West | South East | South West | West Mid-lands | Yorks & Humber |
|---|---|---|---|---|---|---|---|---|---|
| Cardiovascular | 22.8 | 19.9 | 26.0 | 21.1 | 18.6 | 13.3 | 17.2 | 25.1 | 19.0 |
| Cancer | 9.4 | 11.4 | 17.0 | 14.3 | 14.3 | 14.0 | 11.7 | 18.2 | 12.8 |
| Respiratory | 10.7 | 9.5 | 9.4 | 10.5 | 12.5 | 6.3 | 9.8 | 9.0 | 6.7 |
| Other diseases and disorders | 14.8 | 14.7 | 14.8 | * | 12.8 | 11.2 | 13.3 | 15.9 | 11.7 |
| Due to alcohol | 8.7 | 9.5 | 13.4 | 14.3 | 11.6 | 13.7 | 10.9 | 9.5 | 10.1 |
| Due to drugs | 18.8 | 19.4 | 9.2 | 18.8 | 17.7 | 22.1 | 22.3 | 14.5 | 27.9 |
| Suicide/ undetermined intent | 8.7 | 7.6 | 6.4 | 9.8 | 8.2 | 12.3 | 8.2 | 4.9 | 5.6 |
| Other external causes | 6.0 | 8.1 | 3.9 | * | 4.3 | 7.0 | 6.6 | 2.9 | 6.1 |

22. Definitely homeless people and a high probability that some of the additional deaths were of homeless people

23. Definitely homeless people and a high probability that some of the additional deaths were of homeless people and the remaining deaths where it is not possible to say one way or the other under 65.

24. Definitely homeless people and a high probability that some of the additional deaths were of homeless people and the remaining deaths where it is not possible to say one way or the other under 75.
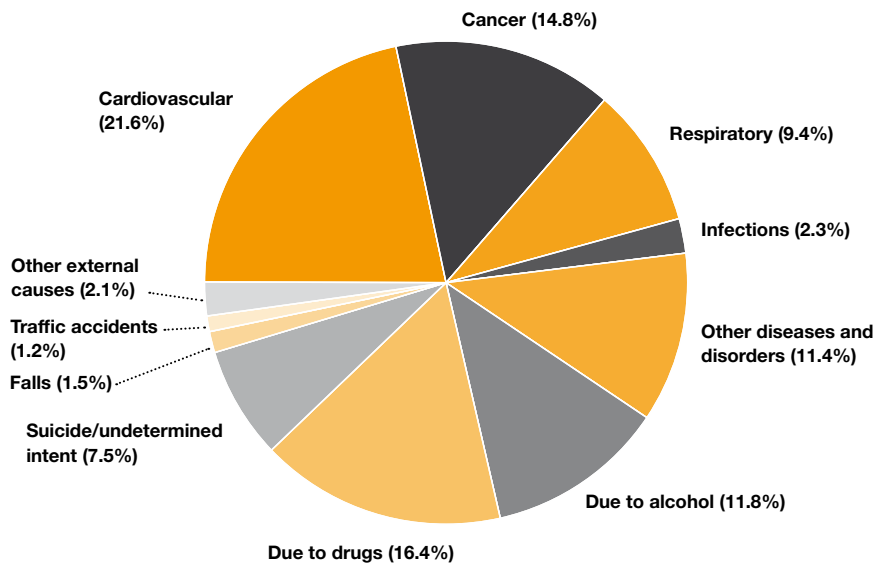
**Table 10: Distribution of causes of death by Government Office Region (GOR) for scenario HPQVOLD**[25]

| HPQVOLD | East Midlands | East of England | London | North East | North West | South East | South West | West Midlands | Yorks & Humber |
|---|---|---|---|---|---|---|---|---|---|
| Cardiovascular | 28.0 | 23.9 | 27.2 | 22.4 | 21.4 | 15.5 | 24.4 | 27.9 | 23.8 |
| Cancer | 12.9 | 13.1 | 17.6 | 15.0 | 14.9 | 15.2 | 14.3 | 17.7 | 12.4 |
| Respiratory | 10.8 | 11.2 | 10.9 | 10.9 | 14.4 | 9.2 | 9.2 | 11.6 | 6.9 |
| Other diseases and disorders | 14.0 | 15.4 | 14.5 | * | 13.1 | 12.5 | 12.7 | 16.3 | 12.4 |
| Due to alcohol | 7.0 | 7.7 | 12.2 | 19.9 | 10.2 | 11.9 | 8.9 | 8.0 | 9.4 |
| Due to drugs | 15.1 | 15.8 | 8.2 | 17.0 | 15.1 | 18.8 | 18.1 | 11.8 | 12.8 |
| Suicide/ undetermined intent | 7.0 | 6.2 | 5.7 | 8.8 | 7.0 | 10.4 | 6.7 | 4.0 | 5.0 |
| Other external causes | 5.4 | 6.6 | 3.7 | * | 3.9 | 6.5 | 5.7 | 2.6 | 5.4 |

**Table 11: Distribution of causes of death by Government Office Region (GOR) for scenario HPOS**[26]

| HPQOLD | East Midlands | East of England | London | North East | North West | South East | South West | West Midlands | Yorks & Humber |
|---|---|---|---|---|---|---|---|---|---|
| Cardiovascular | 28.1 | 26.3 | 28.3 | 24.9 | 21.9 | 17.4 | 29.5 | 28.7 | 26.6 |
| Cancer | 15.3 | 14.0 | 16.2 | 14.1 | 14.9 | 15.2 | 14.9 | 16.3 | 11.9 |
| Respiratory | 10.8 | 11.6 | 13.0 | 11.9 | 14.7 | 9.1 | 11.0 | 12.8 | 11.5 |
| Other diseases and disorders | 14.3 | 14.7 | 18.4 | 16.2 | 12.9 | 14.3 | 15.8 | 20.7 | 14.3 |
| Due to alcohol | 6.4 | 7.0 | 9.6 | 10.3 | 10.0 | 11.0 | 6.4 | 6.5 | 7.5 |
| Due to drugs | 13.8 | 14.4 | 6.5 | 13.5 | 14.9 | 17.4 | 13.0 | 9.6 | 19.8 |
| Suicide/ undetermined intent | 6.4 | 5.6 | 4.5 | 7.0 | 6.9 | 9.6 | 4.8 | 3.3 | 4.0 |
| Other external causes | 4.9 | 6.3 | 3.7 | 2.2 | 3.9 | 6.1 | 4.6 | 2.3 | 4.4 |

25.  Definitely homeless people and a high probability that some of the additional deaths were of homeless people and all the remaining deaths where it is not possible tp say one way or the other.

26.  All deaths that cannot be definitely excluded that were registered to the project postcodes; this dataset includes many deaths of residents of nursing and care homes.

# 8. Standardised Mortality Ratios (SMRs)

Because age and sex has a bearing on death, crude death rates cannot be used to fully explain patterns of mortality. Different places have different age-sex structures and the homeless population is very different in its structure from the national pattern. In order to fully address the need to examine variations in mortality and carry out a more sophisticated analysis we use indirect age-sex Standardised Mortality ratios (SMRs), based on deaths under age 65.

SMRs are a means of measuring mortality which takes into account the age structure of the population being considered. They are calculated by using a standard set of age-specific death rates which are used to calculate how many deaths could be expected in a particular population, given its size and age structure. This gives a total number of 'expected' deaths. This figure is then compared with the actual number of 'observer' deaths which did take place (ONS, 2008).

To calculate mortality ratios we need a population at risk figure. For the general population, the Mid-Year Population estimates (MYE) from 2001 to 2009 were used. An adjustment was applied to move students back home, as the MYE puts students at their term time address. Mortality rates for young people are generally low so it might be thought that this was unimportant. However, young people at university are concentrated in small geographical areas. Further, in some places students tend to live in the poorer parts of town (where there are higher mortality rates) and their large numbers would have a huge effect on rates there; this is compounded by the fact that for those who do die, their parents are likely to register their usual residence as being their home address. A detailed explanation of how this was achieved can be found in Shaw et al. (2008).

Estimating a population for homeless people was more problematic. The census of 2001 enumerated numbers of homeless hostel residents and rough sleepers, although as we will see there are questions as to the accuracy of those counts. It is of course difficult to count homeless people. Obviously, those living in hostels and other homeless accommodation can be more easily enumerated. For those sleeping rough, the counting becomes much harder; a sleeper actually on the pavement or in other visible place is easier to count than a sleeper who may be in an abandoned warehouse, a derelict building or other hidden place. It is, of course, not possible to count the hidden homeless.

The only systematic count of rough sleepers is undertaken by the Combined Homeless and Information Network (CHAIN) for rough sleepers in London (Broadway, 2009). The CHAIN data only covers London, which it does in great detail, but it tracks all individuals seen sleeping rough over the course of a year, many of whom are returning rough sleepers, that is they may spend some time in homeless accommodation or other accommodation and return to the streets. Hence there is a risk that using the CHAIN figures overestimates the total number of homeless people.

The Department of Communities and Local Government (DCLG) has collected local authority estimates of rough sleepers for a number of years but these estimates have been criticised by homeless agencies as using a flawed methodology and consistently severely underestimating the numbers; indeed DCLG itself has recently recognised that these estimates have been, essentially, useless. Therefore, DCLG issued revised guidance for counting rough sleepers in 2010; the subsequent autumn 2010 rough sleeper count resulted in substantially higher estimated numbers of rough sleepers than had hitherto been reported.

It was decided to use this dataset, obtained via the Survey of Needs and Provision (SNAP) at Homeless Link (http://homeless.org. uk/snap). This count gave a total of 1,768 rough sleepers in England in autumn 2010. In comparison the census enumerated only 842 rough sleepers in England in 2001 and it is very likely that this was an undercount. Obviously, the number of rough sleepers varies over time and had been decreasing over recent years, although there has more recently been a rise.

It is not known if the numbers of rough sleepers in the other regions reflect the changes that have been seen in London. In the absence of any other robust counts, it was decided to assume that there were 1,768 rough sleepers in each of the years 2001-2009. This rough sleeping population was disaggregated using the proportions shown in Table 12, extracted from Figure 24 in Profiling London's Rough Sleepers (Broadway, 2009). It is not known whether the demographic profile of rough sleepers in the remainder of the country differ from those in London but there appears to be no detailed nationwide data.

**Table 12: Demographic characteristics of rough sleepers in London**

| Sex | Percentage |
|---|---|
| Female | 13.0 |
| Male | 87.0 |
| **Age** | |
| <25 | 12.7 |
| 25-34 | 35.0 |
| 35-44 | 30.0 |
| 45-54 | 14.3 |
| 55-64 | 5.5 |
| 65+ | 2.5 |

The other homeless population is that of homeless accommodation residents. The census enumerated 25,308 people living in homeless hostels. This figure seems very low compared with that reported by the Survey of

Needs and Provision. In 2009, SNAP reported 42,000 bed spaces, in January 2010 there were 43,665 bed spaces and in November 2010, 42,993 bed spaces. It was decided to use the 42,993 figure for each of the nine years the study covers. Again, there is a fluctuating number of bed spaces. Around 90% of hostels have no spare beds, and of those that do, the majority only have one vacant bed. Therefore it has been assumed that there is full capacity for this research.

There appears to be no data on the demographic breakdown of hostel residents, so the proportions from the census count were applied to the number of hostel residents.

Because it was not possible to disaggregate the deaths of hostel residents from rough sleepers, the two separate homeless populations were summed to create a total homeless population.

Having ascertained population estimates for both the general population and the homeless population, the next step was to calculate the standardised mortality ratios. Firstly, the national age–sex specific rates for all deaths for the general population were calculated. These national rates were then multiplied by the homeless population for each age band across both sexes and for all people. This gives the expected number of deaths from each cause for homeless people if their mortality conformed to the national average.

Finally, the observed number of deaths was divided by the expected number of deaths and multiplied by 100 to arrive at the indirect SMR. An SMR of 100 means that there is no difference between the observed number and the expected number of deaths. An SMR over 100 means that mortality is higher – for example an SMR of 120 means that mortality is 20% higher than that of the general population, while an SMR of 200 means that mortality is twice that of the general population. Conversely, an SMR below 100

means that mortality in that neighbourhood is below that of the general population: an SMR of 50 is half that of the general population.

SMRs were calculated for all deaths by 10 year age bands and for people under 45, under 55 and under 65. Because there is much less certainty about which deaths of older adults were actually of homeless people, mortality ratios for persons older than 64 years of age have not been calculated. Therefore SMRs were calculated for the H, HP and HPQ scenarios as shown in Table 13. The information is repeated in Table 14 without confidence intervals.

We know that the H scenario is an undercount as it only includes those deaths that occurred in postcodes where the homeless accommodation was the single address, but it is included here to give a baseline against which to compare the HP and HPQ scenarios.

Using the HP scenario, at the ages of 16-24, homeless people are twice as likely to die as their housed contemporaries. For 25-34 year olds the ratio increases to four times, and at ages 35-44, to five times. Even though the ratio falls back as the population reaches middle age, 45-54 year olds are still three times more likely to die than the general population, and 55-64 year olds one and a half times. Females 'do better' than males, at age 16-24 they are one and a half times more likely to die than their housed counterparts while males are twice as likely. At age 25-34 females have double and males quadruple the chances of dying as the general population of that age. By early middle age, 35-44, females are nearly three times and males nearly five times as likely to die, while for 45-54 year olds the ratio falls back to twice for females and nearly three times for males. It is not until we reach 55-64 that the ratio approaches the national average, with females having the same chance of dying as the general population and males only having a third higher risk.

Moving onto the HPQ scenario, the picture is even bleaker. Homeless people aged 16-24 have three times the chances of dying as the general population, those aged 25-34 over five, and the 35-44 year olds over six times the usual death rate. The ratio then falls back at age 45-54 to just under four times, and by 55-64, to just under three times. By sex, at age 16-24 females have two and a half times higher chance of dying than the housed population, compared to three times for males. By the age of 25-34 the ratio has increased to four and five times respectively, and by age 35-44 to nearly five and nearly six times. By the age of 45-54 the ratio has fallen back to three and a half times for females and just over three and three quarter times for males. At age 55-64, the female ratio remains at three and a half while the male ratio improves to two and a quarter times.

**Table 13: Standardised Mortality Ratios (SMRs) with 95% confidence intervals [27]**

### Age 16-24

| Scenario | Females 95% CI | SMR | 95% CI | Males 95% CI | SMR | 95% CI | People 95% CI | SMR | 95% CI |
|---|---|---|---|---|---|---|---|---|---|
| H | 42 | 82 | 144 | 103 | 137 | 179 | 96 | 125 | 159 |
| HP | 89 | 144 | 220 | 173 | 216 | 268 | 164 | 200 | 242 |
| HPQ | 190 | 267 | 365 | 244 | 295 | 354 | 249 | 293 | 343 |

### Age 25-34

| Scenario | Females 95% CI | SMR | 95% CI | Males 95% CI | SMR | 95% CI | People 95% CI | SMR | 95% CI |
|---|---|---|---|---|---|---|---|---|---|
| H | 54 | 99 | 166 | 186 | 222 | 263 | 189 | 223 | 262 |
| HP | 160 | 233 | 327 | 356 | 405 | 459 | 371 | 418 | 470 |
| HPQ | 293 | 388 | 505 | 436 | 490 | 548 | 475 | 528 | 586 |

### Age 35-44

| Scenario | Females 95% CI | SMR | 95% CI | Males 95% CI | SMR | 95% CI | People 95% CI | SMR | 95% CI |
|---|---|---|---|---|---|---|---|---|---|
| H | 98 | 156 | 237 | 225 | 261 | 300 | 240 | 275 | 315 |
| HP | 203 | 284 | 387 | 438 | 487 | 540 | 464 | 513 | 566 |
| HPQ | 375 | 483 | 613 | 526 | 580 | 638 | 582 | 637 | 696 |

### Age 45-54

| Scenario | Females 95% CI | SMR | 95% CI | Males 95% CI | SMR | 95% CI | People 95% CI | SMR | 95% CI |
|---|---|---|---|---|---|---|---|---|---|
| H | 68 | 109 | 165 | 133 | 154 | 177 | 145 | 167 | 190 |
| HP | 141 | 198 | 270 | 254 | 283 | 314 | 276 | 305 | 337 |
| HPQ | 279 | 356 | 449 | 347 | 380 | 416 | 390 | 425 | 462 |

### Age 55-64

| Scenario | Females 95% CI | SMR | 95% CI | Males 95% CI | SMR | 95% CI | People 95% CI | SMR | 95% CI |
|---|---|---|---|---|---|---|---|---|---|
| H | 10 | 26 | 53 | 75 | 87 | 101 | 81 | 93 | 107 |
| HP | 62 | 96 | 140 | 122 | 137 | 153 | 137 | 153 | 170 |
| HPQ | 276 | 342 | 419 | 210 | 229 | 250 | 258 | 280 | 303 |

### Under 45

| Scenario | Females 95% CI | SMR | 95% CI | Males 95% CI | SMR | 95% CI | People 95% CI | SMR | 95% CI |
|---|---|---|---|---|---|---|---|---|---|
| H | 83 | 112 | 149 | 198 | 219 | 242 | 197 | 217 | 239 |
| HP | 177 | 220 | 269 | 368 | 397 | 428 | 370 | 397 | 426 |
| HPQ | 322 | 378 | 441 | 452 | 484 | 518 | 477 | 508 | 540 |

### Under 55

| Scenario | Females 95% CI | SMR | 95% CI | Males 95% CI | SMR | 95% CI | People 95% CI | SMR | 95% CI |
|---|---|---|---|---|---|---|---|---|---|
| H | 87 | 111 | 140 | 176 | 192 | 208 | 182 | 197 | 213 |
| HP | 178 | 213 | 252 | 328 | 349 | 371 | 340 | 361 | 382 |
| HPQ | 325 | 371 | 422 | 417 | 440 | 465 | 452 | 475 | 499 |

### Under 65

| Scenario | Females 95% CI | SMR | 95% CI | Males 95% CI | SMR | 95% CI | People 95% CI | SMR | 95% CI |
|---|---|---|---|---|---|---|---|---|---|
| H | 67 | 85 | 107 | 137 | 148 | 158 | 146 | 156 | 167 |
| HP | 151 | 177 | 207 | 245 | 259 | 273 | 265 | 279 | 293 |
| HPQ | 324 | 362 | 404 | 335 | 351 | 368 | 381 | 398 | 415 |

27.  In statistics a confidence interval is a range of values that describes the uncertainty surrounding an estimate. They are important as they indicate how good an estimate of a population is, based on the sample of the population. 95% confidence intervals (CI) indicates the range of values within which the statistic would fall 95% of the time. In the above table, the first CI is the lower interval and the second CI is the upper interval which means that 95% of the time the SMR would fall between these two figures.

**Table 14: Standardised Mortality Ratios (SMRs) without confidence intervals**

| | Age 16-24 | | | Age 25-34 | | |
|---|---|---|---|---|---|---|
| Scenario | Females SMR | Males SMR | People SMR | Females SMR | Males SMR | People SMR |
| H | 82 | 137 | 125 | 99 | 222 | 223 |
| HP | 144 | 216 | 200 | 233 | 405 | 418 |
| HPQ | 267 | 295 | 293 | 388 | 490 | 528 |

| | Age 35-44 | | | Age 45-54 | | |
|---|---|---|---|---|---|---|
| Scenario | Females SMR | Males SMR | People SMR | Females SMR | Males SMR | People SMR |
| H | 156 | 261 | 275 | 109 | 154 | 167 |
| HP | 284 | 487 | 513 | 198 | 283 | 305 |
| HPQ | 483 | 580 | 637 | 356 | 380 | 425 |

| | Age 55-64 | | | Under 45 | | |
|---|---|---|---|---|---|---|
| Scenario | Females SMR | Males SMR | People SMR | Females SMR | Males SMR | People SMR |
| H | 26 | 87 | 93 | 112 | 219 | 217 |
| HP | 96 | 137 | 153 | 220 | 397 | 397 |
| HPQ | 342 | 229 | 280 | 378 | 484 | 508 |

| | Under 55 | | | Under 65 | | |
|---|---|---|---|---|---|---|
| Scenario | Females SMR | Males SMR | People SMR | Females SMR | Males SMR | People SMR |
| H | 111 | 192 | 197 | 85 | 148 | 156 |
| HP | 213 | 349 | 361 | 177 | 259 | 279 |
| HPQ | 371 | 440 | 475 | 362 | 351 | 398 |

# 9. Standardised mortality ratios for selected causes of death

As with the all cause standardised mortality ratios, the SMRs for selected causes of death are for the under 65 year olds and calculated for the H, HP and HPQ scenarios. However, the average age of death is open ended, i.e. the calculation includes all the people in each scenario who died of that cause, regardless of age.

## Deaths due to alcohol

Table 15 shows standardised mortality ratios for deaths due to alcohol. For the HP scenario, the chances of people dying from alcohol related causes are seven times higher then for the general population, while for the HPQ scenario the ratio is nearly nine times higher. For females the ratio is six times higher (HP) and nine times higher (HPQ), for males the respective multipliers are six and seven. This is a reflection of the high proportion of homeless people who have alcohol problems. The average of death is 48-49, slightly below the 51.2 calculated by Shaw et al (2008). These are only deaths that can be directly attributable to alcohol and do not include those deaths from diseases where alcohol may have been a contributing factor, such as cancers.

## Deaths due to drugs

Table 16 shows SMRs for deaths due to drugs. Here the average age of death is around 34, very close to Shaw et al's (2008) mean age of 35. The ratios are very high, with females having a 12 to 18 fold chance (HP) of dying, and males a 17 to 20 fold chance (HP) of dying compared to the under 65 population. Again, this reflects the high proportion of homeless people who use one or more drugs.

## Suicide and undetermined intent

Table 17 shows the SMRs for suicide and undetermined intent. Conventionally, the two are considered together as many cases of undetermined intent were likely to have been suicides but there was insufficient evidence to establish a verdict of suicide. The average age of death is 37; Shaw et al. (2008) calculated an average of death in Britain from suicide of 45.8. Females have a three times (HP) or five and a half times (HPQ) chance of dying than would be expected in the general under-65 population, although it should be noted that the confidence intervals are very wide. For males the chances respectively for the HP and HPQ scenarios are three or four times the chances of the general population committing suicide.

**Table 15: SMRs for deaths due to alcohol**

|  | Average age of death | Females | | | Males | | | People | | |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  | 95% CI | SMR | 95% CI | 95% CI | SMR | 95% CI | 95% CI | SMR | 95% CI |
| H | 49 | 177 | 317 | 523 | 284 | 342 | 408 | 343 | 408 | 482 |
| HP | 48 | 410 | 613 | 880 | 510 | 586 | 671 | 623 | 710 | 806 |
| HPQ | 49 | 658 | 909 | 1224 | 637 | 722 | 816 | 798 | 896 | 1003 |

**Table 16: SMRs for deaths due to drugs**

|  | Average age of death | Females | | | Males | | | People | | |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  | 95% CI | SMR | 95% CI | 95% CI | SMR | 95% CI | 95% CI | SMR | 95% CI |
| H | 35 | 482 | 801 | 1250 | 842 | 972 | 1116 | 1001 | 1148 | 1310 |
| HP | 34 | 853 | 1264 | 1805 | 1509 | 1681 | 1868 | 1776 | 1971 | 2180 |
| HPQ | 34 | 1347 | 1854 | 2489 | 1800 | 1988 | 2190 | 2161 | 2374 | 2603 |

**Table 17: SMRs for suicide/undetermined intent**

|  | Average age of death | Females | | | Males | | | People | | |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  | 95% CI | SMR | 95% CI | 95% CI | SMR | 95% CI | 95% CI | SMR | 95% CI |
| H | 37 | 59 | 137 | 269 | 108 | 140 | 179 | 131 | 168 | 211 |
| HP | 37 | 182 | 307 | 486 | 234 | 280 | 333 | 287 | 340 | 400 |
| HPQ | 37 | 374 | 546 | 771 | 322 | 376 | 437 | 412 | 475 | 545 |

**Table 18: SMRs for HIV and hepatitis**

|  | Average age of death | People | | |
|---|---|---|---|---|
|  |  | 95% CI | SMR | 95% CI |
| H | 38 | 187 | 375 | 671 |
| HP | 41 | 417 | 682 | 1054 |
| HPQ | 42 | 579 | 887 | 1300 |

**Table 19: SMRs for chronic lower respiratory diseases**

|  | Average age of death | People | | |
|---|---|---|---|---|
|  |  | 95% CI | SMR | 95% CI |
| H | 63 | 133 | 204 | 299 |
| HP | 56 | 217 | 306 | 418 |
| HPQ | 60 | 366 | 478 | 614 |

**Table 20: SMRs for heart attacks and chronic heart disease**

|  | Average age of death | Females | | | Males | | | People | | |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  | 95% CI | SMR | 95% CI | 95% CI | SMR | 95% CI | 95% CI | SMR | 95% CI |
| H | 61 | 11 | 55 | 161 | 65 | 82 | 103 | 89 | 112 | 139 |
| HP | 59 | 30 | 92 | 214 | 117 | 139 | 165 | 159 | 190 | 224 |
| HPQ | 58 | 238 | 385 | 589 | 190 | 219 | 251 | 276 | 316 | 359 |

**Table 21: SMRs for falls**

|  | Average age of death | People | | |
|---|---|---|---|---|
|  |  | 95% CI | SMR | 95% CI |
| H | 44 | 282 | 455 | 696 |
| HP | 45 | 493 | 716 | 1005 |
| HPQ | 46 | 601 | 846 | 1156 |

**Table 22: SMRs for road traffic accidents**

|  | Average age of death | People | | |
|---|---|---|---|---|
|  |  | 95% CI | SMR | 95% CI |
| H | 40 | 16 | 35 | 67 |
| HP | 36 | 42 | 71 | 112 |
| HPQ | 35 | 76 | 114 | 163 |

**Table 23: Self-reported limiting long-term illness (LLTI) rates by age and housing status**

| Limiting long-term illness | Age 15-24 (%) | Age 25-34 (%) | Age 35-44 (%) | Age 45-54 (%) | Age 55-64 (%) | Age 65+ (%) | All people (%) |
|---|---|---|---|---|---|---|---|
| LLTI rate people in households | 5.5 | 7.5 | 11.0 | 17.8 | 29.7 | 49.1 | 20.5 |
| LLTI rate homeless hostel residents | 14.6 | 28.4 | 48.5 | 58.4 | 65.4 | 52.5 | 34.1 |
| Hostel rate worse than h/holds | 2.7 | 3.8 | 4.4 | 3.3 | 2.2 | 1.1 | 1.7 |
| LLTI rate rough sleepers | 27.1 | 50.7 | 57.2 | 54.2 | 54.3 | 83.3 | 48.0 |
| Rough rate worse than h/holds | 4.9 | 6.7 | 5.2 | 3.0 | 1.8 | 1.7 | 2.3 |

**Figure 19: Self-reported limiting long-term illness (LLTI) rates by age and housing status**
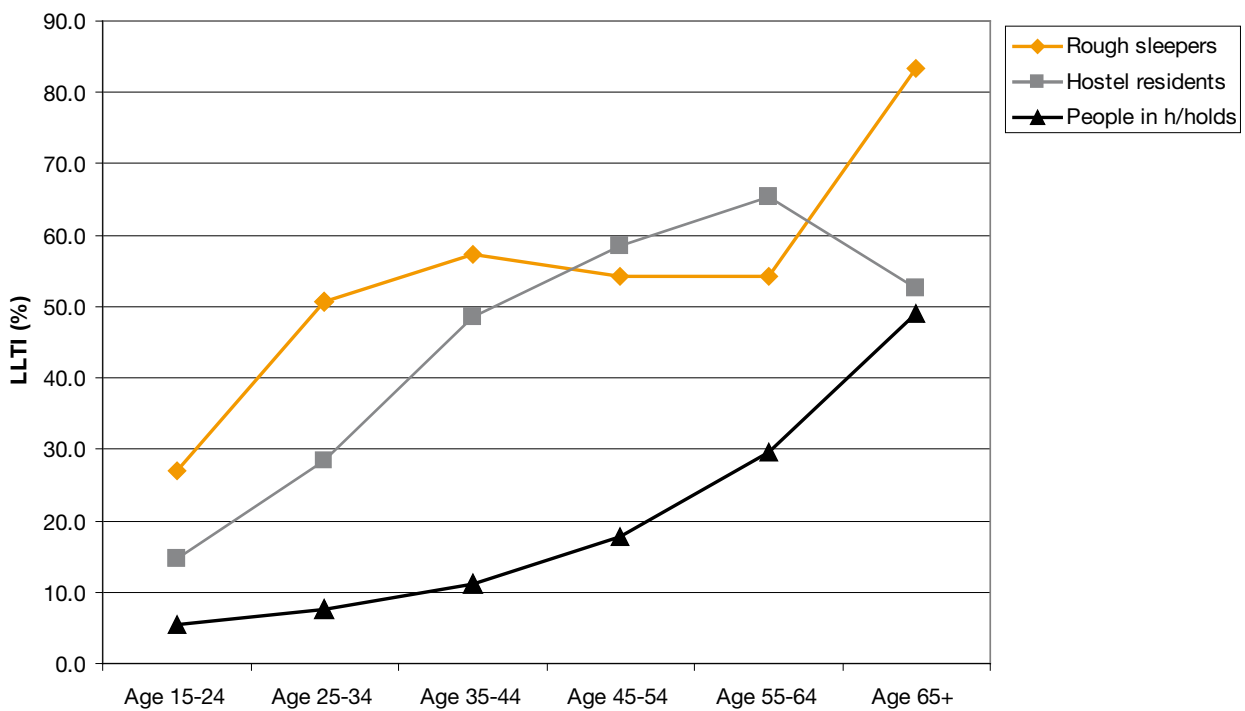
## HIV and hepatitis

Because the numbers of deaths recorded for HIV and hepatitis are so low, the two causes have been grouped together there. Shared drugs paraphernalia is a leading cause of these infections. Only the figures for people are reported, as female numbers are very low. Shaw et al. (2008) reported an average age of death of 39.3 for HIV and 56 for hepatitis. Homeless people falling into the HP scenario have an SMR of nearly seven times the general population and those in the HPQ scenario nearly nine times, but note that the confidence intervals are very wide.

## Chronic lower respiratory diseases

The SMRs for chronic lower respiratory diseases, a leading causative factor of which is smoking, are shown in Table 19. Note that as the female numbers are so low, only the SMRs for people are shown. The average age of death, ranging from the late 50s to the early 60s is very much below the 76 reported by Shaw et al. (2008). People in the HP scenario have three times the chance of dying from this disease than their housed contemporaries, while for the HPQ scenario the ratio is almost five times.

## Heart attacks and chronic heart disease

Heart attacks and chronic heart disease are considered together as there is variation in how the medical profession records these causes of death. One doctor might decide a particular death was from a heart attack while another might record the same death as from chronic heart disease. The average age of death of 59 is 16 years lower than the 75.3 reported by Shaw et al (2008). In the HP scenario, females have around the same chance as the general population, and men a third higher chance of dying. In the HPQ scenario, women are nearly four times and men twice as likely to die from heart attacks or chronic heart disease than the housed.

## Falls

The SMRs for falls are shown in Table 21 for people as the number of female deaths from this cause is so low. The average age of death of around 45 is very low compared to that ascertained by Shaw et al. (2008) of 76.8. That reported figure was due to old people falling, probably related to mobility and medical problems. Here, falls are more likely to be the result of intoxication from alcohol or drugs.

## Road traffic accidents

Homeless people are far less likely than the general population to die from road traffic accidents. As female numbers are so low, the ratios for people are reported here. The HP scenario has three quarters of the chance of dying in a road traffic accident than would be expected, the HPQ scenario ten percent higher than would be expected. While this would appear to be a welcome statistic, it reflects the fact that homeless people use cars very much less than their housed counterparts. Additionally, if the general population, particularly young men, were not dying on the roads, it would make the ratios of homeless deaths even higher than they currently are.

## Limiting long-term illness (LLTI)

To give some context to these findings, this section compares rates of limiting long-term illnesss (LLTI) for people in households and for homeless people. The Office for National Statistics (ONS) has made available datasets on rough sleepers and homeless hostel residents from the 2001 census. In addition to counts by age and sex, there are also datasets of LLTI by age and homelessness type. The 2001 Census definition of limiting long-term illness is:

> *A self assessment of whether or not a person has a limiting long-term illness, health problem or disability which limits their daily activities or the work they can do, including problems that are due to old age.*

Table 23 shows these rates, while Figure 19 graphically shows how much worse reported LLTI rates are for hostel residents and rough sleepers.  LLTI rates for people in households, rather than the general population, are used as the comparator, as residents of communal establishments such as nursing homes are likely to have a high incidence of LLTI.

The LLTI rate for people in households rises with age as we would expect.  Young adults aged 15-24 in homeless hostels have nearly three times the rate of LLTI than people in households, while young rough sleepers have nearly five times.  The difference increases to nearly four times and nearly seven times respectively at ages 25-34, before gradually decreasing

More than half of rough sleepers over the age of 24 report limiting long-term illness, with over two fifths of those aged over 64 so affected. Admittedly the actual numbers are very small in this age band.  While hostel residents report lower levels of LLTI than rough sleepers, their rates are still very high, particularly at the lower end of the age range.

# 10. Conclusion

This research has investigated the mortality of homeless people in England for the period 2001-2009. It is the first to research that attempts to analyse homeless mortality at the national level for all causes of death, not just those deaths that have been referred to the coroner.

It must be remembered that this research is based on estimates.  Initially an informed estimate was made of which of the 4,573,667 deaths were of homeless people.  Because of the difficulties in disaggregating the postcode data, different scenarios were constructed. Because the informant registering a death can choose the postcode of residence, it is entirely plausible that many deaths of homeless young people are registered by their parents at their home address and so were not picked up in this study; hence the number of young deaths may well be an underestimate. Any homeless person's death that was not registered to a postcode containing homeless accommodation, or advice or day centre, would not be included in this research. Additionally the deaths of homeless people might have been registered at a previous address, in a hospital, or for a few, to no address. It is not possible to say from the death registration records whether the deceased was actually rough sleeping or resident in homeless accommodation.

This research does not include those who might have been rehoused by their local authority or who have found accommodation in the private rented sector; it is not possible from this type of research to ascertain what the long term effects of former homelessness might be on longevity. Nor does this research attempt to consider the effect of hidden homelessness on mortality.

The homeless population was also estimated, as was its demographic structure. Given the poor official estimates of rough sleepers over the last decade, the latest estimates which are

based on a better methodology were used; it is hoped that any future research will have better longitudinal data. The 2001 Census counts of rough sleepers and hostel residents also seemed implausibly low and therefore the latest estimates were used. A further caveat is that the homeless population is not static, with rough sleepers moving into homeless accommodation and some moving back onto the streets again and hence there is a risk of double-counting individuals. Many will finally achieve more permanent housing, particularly as they get older and possibly frailer or sicker, hence at older ages the numbers of homeless are much reduced and hence any analysis is less statistically robust.

The research reveals some shocking truths about the life chances of homeless people. They are more likely to die young, with an estimated average age of death ranging from 47 to 55 depending on scenario, with 47 or 48 being the most likely average. This is in stark contrast to average ages of death of the general population: 77 for people, 74 for men and 80 for women. This confirms the findings from previous research that homelessness kills, as well as the findings of a number of international studies into homeless mortality. The average age of death calculated here is similar to the age found across the different studies. It must be emphasised that this is not life expectancy, it is an estimate of the average age of death of those who die on the streets or while resident in homeless accommodation.

For causes of death, the striking factor is the proportion of deaths that are due to drugs and alcohol compared to the general population. This holds true even when younger aged subsets of deaths in the general population are considered.

It is equally shocking comparing homeless people's chance of dying compared to the general population. At the ages of 16-24, homeless people are at least twice, and possibly nearly three times (depending on scenario), as likely to die as their housed

contemporaries; for 25-34 year olds the ratio increases to four to five times, and at ages 35-44, to five to six times. Even though the ratio falls back as the population reaches middle age, 45-54 year olds are still three to four times more likely to die than the general population, and 55-64 year olds one and a half to nearly three times.

When considering individual causes of death, the picture is even starker. Homeless people have seven to nine times the chance of dying from alcohol related diseases and over 20 times the chance of dying from drugs. The risk of homeless people committing suicide is three and a half times to nearly five times the national average. HIV and hepatitis combined give a seven to nine times mortality ratio, chronic lower respiratory diseases, three to five.

Apart from Nielsen et al's study of homeless mortality in Denmark (2011), this is the only research that attempts to investigate homeless mortality at the national level, the other studies being confined to certain cities, and many confined to individual homeless shelters. Despite Denmark having a resident registration scheme, the authors were aware that they had probably not included all homeless people. Similarly here, it is unlikely that all deaths of homeless people have been captured; this will be a limitation of any study of this type that attempts to enumerate and analyse those on the margins of society, who almost by definition cannot be easily counted.

While this study has its limitations in that it does not cover all typologies of homelessness, and because of the difficulties in estimating homeless mortality, it adds significantly to previous research on British homeless mortality and adds to the international literature.

# Implications for public health and recommendations

The findings of this research highlight the shocking truth about how homeless people are being failed by the health system. The upcoming restructure and reform of the NHS provides an opportunity to tackle this and create a health service that truly works for homeless people.

The Health and Social Care Act will bring about a huge restructure of the NHS. Primary Care Trusts are being abolished, with commissioning budgets and responsibilities handed over to Clinical Commissioning Groups (CCGs) made up of GPs and hospital staff. Local Health and Wellbeing Boards will oversee healthcare provision in their areas and local authorities will hold a ringfenced public health budget. At a national level, the NHS Commissioning Board will oversee the delivery of the Government's outcomes framework across the whole system and the Secretary of State for Health will have a new legal duty to reduce health inequalities throughout the NHS.

The new structure presents both challenges and opportunities. There is a real risk that in the face of pressure to demonstrate outcomes and the proposed payment by results system, CCGs will find it difficult to provide services for homeless people. This could be exacerbated by an unprecedented budget squeeze on the NHS. Longstanding problems with the system remain, such as the lack of specialist drug and alcohol services, and a lack of coherence and consistency over integration, access and outcomes for homeless people both within the health service and in how it interacts with housing and other services.

However, localised commissioning does have the potential to make sure services are more responsive to the needs of their communities.

For this to work, analysis, planning and delivery must take account of the needs of the whole community, including marginalised, mobile and vulnerable groups like homeless people. Perhaps most significantly, the new duty will enshrine in law for the first time a commitment that health outcomes for the most vulnerable will be prioritised.

This research points to a series of recommendations to improve the healthcare that homeless people experience generally and in the context of the new NHS structure.

1. **The restructure of the NHS should ensure the health needs of homeless people are a priority**

The mortality rates faced by homeless people make the new duty to reduce health inequalities all the more important. The NHS national commissioning board should take a lead on commissioning specialist services. Health and Wellbeing Boards should include representatives from the housing and homelessness sectors who can advise on the links between health care and housing and homelessness. Homelessness should be considered as part of the Joint Strategic Needs assessment. The Care Quality Commission should review the standard of healthcare homeless people experience and make recommendations for improvement.

2. **The delivery of mainstream health services should be reformed to meet the needs of homeless people.**

Primary health services should be flexible and responsive to the needs of homeless people, including ensuring vulnerable groups and those without a permanent address are easily able to register with GPs and through providing out of hours or drop in services. Accident & Emergency departments and providers of secondary health services should ensure that homeless people receive appropriate care, building on the work of approaches such as that undertaken by

Pathway to ensure that they are linked in with homelessness services and that all patients are discharged properly and with secure accommodation to go to.

### 3. Specialist services should be protected and improved

There are some strong services in parts of the country, such as GP surgeries and the Find and Treat tuberculosis service, which have developed a specialism in working with homeless people. These and the funding they rely on should be protected in the reorganisation of the NHS. The experience they have developed should be built upon to commission further specialist services. In particular, there has long been a need for far more drug and alcohol and dual diagnosis services.

### 4. Services should reflect the demographics of homeless people

Services should be tailored to the demographic needs of the local homeless population. Socio-cultural beliefs can affect homeless people's approach to and behaviour regarding substance use so it is important to take account of cultural background, for example when delivering drug and alcohol services.

### 5. Prevent and resolve homelessness

The research is clear that homelessness quite literally kills. Accommodation needs to be provided alongside health services. More needs to be done to prevent people becoming homeless in the first place as well as supporting people to break out of homelessness. Local authorities and other homelessness services should take account of the specific needs of young homeless people, ensuring help and accommodation offered is age appropriate, and statutory duties to support and house 16 and 17 year olds and young care leavers are fulfilled. It remains a shocking fact that there is no

right to shelter in England. Crisis has long argued that the support offered to single homeless people should be improved, ideally through strengthening the duty to provide homelessness assistance, advice and accommodation for all homeless people, not just those currently considered in 'priority need' to ensure no-one turned can be away when they seek help.

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## About Crisis

Crisis is the national charity for single homeless people. We are dedicated to ending homelessness by delivering life-changing services and campaigning for change.

Our innovative education, employment, housing and well-being services address individual needs and help people to transform their lives.

We are determined campaigners, working to prevent people from becoming homeless and advocating solutions informed by research and our direct experience.

We have ambitious plans for the future and are committed to help more people in more places across the UK. We know we won't end homelessness overnight or on our own. But we take a lead, collaborate with others and, together, make change happen.

## Get in touch

# Homelessness ends here