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The Wellbeing Value of Tackling Homelessness

Identifying the impact on life satisfaction using the Journeys Home dataset

September 2015

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Jim Vine

Supported by Affinity Sutton, Family Mosaic and Midland Heart.

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Foreword

Midland Heart, Family Mosaic and Affinity Sutton joined together to commission this ground breaking research, through our shared passion to support vulnerable individuals.

Our teams work hard every day to help people have a place to call home. Seeing the impacts of homelessness first hand, we know that it is vital to understand the value of safe and secure housing.

Previous research has focused on the cost to public services of homelessness, but this doesn't show the full picture. Only through exploring the cost to individuals, can we recognise the wider value of the housing and support services we provide.

We are proud to support this innovative research, which uses statistical methods and life satisfaction data, to establish the cost to an individual of being without a secure home. In doing so, the figures presented in this report illustrate the significant human cost of homelessness.

Helping people to move on from homelessness and providing affordable housing across our communities, will always be at the heart of our organisations. While there are challenging times ahead for us and the people we support, our work is more important now than ever.

-Midland Heart, Affinity Sutton, Family Mosaic

Executive summary

This research breaks new ground in exploring key issues around homelessness using rigorous statistical methods to place monetary values on the impact of tackling homelessness. A new large longitudinal dataset – Journeys Home – was used, enabling us to assess the impact of moving between different housing statuses on life satisfaction and the effect of accessing support services on housing status.

The analysis found that the average impact of moving from rough sleeping to temporary accommodation has a value of **£16,448 per person**. The impact of a move from temporary accommodation to settled housing is valued at **£8,019 per person**. The total value of a move from rough sleeping to settled housing is **£24,467 per person**.

The use of various housing and welfare support services were found to have small but statistically significant associations with an increased probability of achieving these moves in housing situation. These increased probabilities permit the estimate of average values of service usage, which range from **£98 to £245 per person**.

The methods used in generating these values are in line with HM Treasury and Organisation for Economic Co-operation (OECD) guidelines and are consistent with HACT and Simetrica's earlier work generating social impact values for the housing sector. Consequently, the values are suitable for use in a variety of decision-making and reporting processes, and can be considered alongside values contained in the existing Social Value Bank.

1. Background

The Social Value Bank, developed by HACT and Simetrica, has been well received in the social housing sector and beyond as a tool to enable a greater understanding of the impact and value of community investment activities. The outcomes covered by the Social Value Bank are focused on those that are experienced by people living in secure housing, as the datasets underlying the analyses are collected exclusively from those in households.

Naturally, housing providers' activities extend far beyond community investment activity with settled households. Through consistent application of the Wellbeing Valuation Approach, it is in principle possible to establish and place a value on the wellbeing impact of almost any aspect of housing providers' work, if suitable datasets can be identified or collected.

One such important area of work for some housing providers – including Affinity Sutton, Family Mosaic and Midland Heart, who have co-funded this work – is supporting vulnerably-housed people into secure housing. This piece of research was devised following identification of the Journeys Home dataset, which examines the life situations of people experiencing homelessness. Through analysing this dataset, this work will enable housing providers and others to assess and measure the impact of experiencing homelessness, and to place a value on tackling it. Results and values in this paper are consistent with, and therefore directly comparable to, the values in the Social Value Bank.

2. Methodology

2.1. Data

The data analysed in this project comes from the Journeys Home survey run by the Melbourne Institute of Applied Economic and Social Research at the University of Melbourne and commissioned by the Australian Government Department of Social Services. Journeys Home is a longitudinal panel survey, which interviews around 1,700 adult individuals once every six months. The data does not permit analysis of the impact of housing conditions on children. We use the first four waves of data, collected over the period of September 2011 to May 2013. The survey is conducted mostly through face-to-face interviews, although some interviews are conducted by telephone if respondents are unavailable. Respondents are paid a small amount to complete the survey.

All other things being equal, our preference in conducting valuation exercises of this nature is to analyse datasets that are as close in context to the situation in which they are intended to be deployed. In this case, in the absence of a UK-based dataset of this nature, the Australian context provides a good proxy. The main drivers of wellbeing (life satisfaction) are consistent across OECD countries with only some minor differences across countries.[1] The relationship between income and wellbeing has also been shown to be very consistent across 50 countries and time periods between 1972 and 2005.[2] Consequently it is reasonable to use findings calculated from an Australian dataset where no closer one exists.

The survey questions in Journeys Home focus on the living and housing challenges that respondents are facing. Specifically it gathers data on:

- Housing and living arrangements
- Health and wellbeing

[1] Fleche, S., Smith, C., & Sorsa, P. (2011). Exploring Determinants of Subjective Wellbeing in OECD Countries: Evidence from the World Value Survey (OECD Economics Department Working Paper No. 921). OECD Publishing. https://ideas.repec.org/p/oec/ecoaaa/921-en.html. Accessed 6 August 2015
Helliwell, J. F. (2003). How's life? Combining individual and national variables to explain subjective well-being. Economic Modelling, 20(2), 331–360. doi:10.1016/S0264-9993(02)00057-3

[2] Layard, R., Mayraz, G., & Nickell, S. (2008). The marginal utility of income. Journal of Public Economics, 92(8–9), 1846–1857. doi:10.1016/j.jpubeco.2008.01.007

- Income and financial stress
- Use of support services

The sample was initially drawn from the Australian Department of Employment's Research Evaluation Database, which contained indicators about people's housing conditions. The sample was then clustered around 36 geographical areas across Australia where there was sufficient sample within a certain radius of a major city, in order to make it feasible for interviewers to carry out repeated sampling of the same individuals. The sample is concentrated on people in vulnerable housing conditions: in the survey 35% of the respondents are homeless, 37% are classified as 'at-risk' of homelessness and 28% are classified as 'vulnerable' as defined by the Centrelink's Homelessness Indicator'.[3]

2.2. Statistical methodology

A frequent approach to analysing the determinants of wellbeing in both the academic and policy literature has been through use of statistical methods such as regression analysis with large national datasets. We have used regression analysis to estimate the impact that our variables of interest (housing circumstances and housing services) have on a range of outcomes such as life satisfaction. Regression allows us to control for other important determinants of life satisfaction (and of the other outcomes) in the model so that we can make better informed claims about the direction of cause and effect.

As we discuss below, we have used a number of methods to exploit the longitudinal aspect of the data to increase our confidence in the results. Although this still does not allow us to control for *all* possible confounding factors, we use best-practice statistical methodology here in line with the approach taken in most academic journal papers on this subject.

There are three parts to the analysis:

[3] The Homelessness Indicator is a service delivery tool to ensure that those who are homeless or at risk of homelessness receive the support they need. The population for Journeys Home was selected using this Homelessness Indicator and comprises recipients of an income support payment that had been flagged by Centrelink as either "homeless" or "at-risk of homelessness". A third group, those "vulnerable to homelessness", was also included in the population. This group has been selected using statistical techniques that identify persons that have not been flagged as homeless but nevertheless have characteristics similar to those that have been. https://www.melbourneinstitute.com/journeys_home/assets/JourneysHome_User_Manual_201310_1.pdf

i. **Life satisfaction models**, looking at the relationship between housing circumstances and life satisfaction.
ii. **Housing and welfare services**, looking at the role of services in moving into secure housing.
iii. **The effect of services on maintaining secure housing**, looking at the association between staying in secure housing on the one hand and use of housing services and a wide range of socio-demographic factors on the other.

We have also undertaken differentiation analysis on the life satisfaction models to assess whether individual and household level characteristics affect the relationship between housing status and life satisfaction.

2.2.1. Life satisfaction models

The following housing status variables are assessed:

- Rough-sleeping
- Temporary accommodation
- Secure housing

The housing status variables were derived by combining answers from a long list of options offered to respondents in the Journeys Home survey. These have been aggregated into the three broad categories above.

In addition, the same analytical techniques were used assess the association between life satisfaction and the following variable:

- Satisfaction with managing housing situation

The full definitions of all the variables used in the statistical analysis are provided in the technical appendix.

We used models called **fixed effects regression models** to analyse the effects of the various housing outcomes on life satisfaction. These models allow us to use the fact that the Journeys Home dataset is a panel dataset, i.e. it repeatedly collects information on the same people over time. This form of analysis examines the impact of movements in and out of different states and conditions for the individual (controlling for other confounding factors) rather than comparing two different individuals at one point in time. With fixed effects models we control for unobservable time-invariant factors

such as personality traits and any other factor that did not change (or changes very little) between the waves of the survey. This generally leads to better estimates of cause and effect.

The outputs of these models are coefficients that represent the association between a person achieving the outcome in question and the increase, on average, in their reported level of life satisfaction. These are expressed in terms of the associated amount by which the person would be higher up on a 0-10 scale of life satisfaction (where 0 = 'Totally dissatisfied' and 10 = 'Totally satisfied').

The coefficient values are converted to monetary values using the Wellbeing Valuation Approach, based on the method used in the development of the Social Value Bank.[4] The estimated impact on life satisfaction due to a change in housing circumstances is monetised by estimating the amount of money that would have the equivalent impact on wellbeing. This is based on the income model that was derived to estimate the values of outcomes in the Social Value Bank.

2.2.2. Housing and welfare services models

The analysis focused on the effect of the following services:

- Housing services – general support around finding, maintaining and securing a home
- Tenancy services – services to support those with an issue with their current landlord
- Emergency relief services – support for those affected by an emergency or crisis
- Financial support services – support around financial issues and money management
- Family violence services – support for those experiencing violent behaviour from a relative

The housing and welfare services models examine the association between accessing different types of services and obtaining secure housing. The models were estimated applying a form of analysis called **logistic regression**. We exploit the longitudinal aspect of the data to increase the likelihood that any relationships identified in the data represent cause and effect, rather than the factors being correlated for other reasons. This is achieved by looking at whether use of the housing and welfare services in the *previous* period impacts on the likelihood of moving into secure housing in the *following* period after controlling for a wide range of other factors that influence likelihood of obtaining secure housing. Whilst this does not guarantee that associations are causal, it does ensure

[4] http://www.hact.org.uk/social-value-bank

that the factor assumed to be causing the outcome did at least come before it in time (ruling out a problem known as reverse causality), and we also account for other factors that may be driving the trends.

The outputs of these models show the association between using the service and achieving a housing outcome of interest. These are expressed as an increase in probability of achieving the outcome.

The monetary value of the wellbeing impact of using these services is estimated by multiplying the probabilities by the overall value of the housing outcome in question, which we will have derived as part of the analysis described in 2.2.1. For example, a service that for each user has 2% chance of achieving an outcome worth £15,000 would be valued at 2% of £15,000, or £300, per person who uses the service. These types of values are known as expected values and are commonly used in all forms of policy evaluation in the public sector where interventions lead to probabilistic or proportionate changes in the outcomes of interest.

2.2.3. Secure housing models

A **logistic regression** model was also used to assess the secure housing models, looking for associations between individuals maintaining secure housing status over two consecutive periods and their use of any of the health and welfare services described above. These were calculated to be expressed as an increase in probability of remaining in secure housing following usage of the service in question.

3. Results

In this section we present the summary results from the analyses. The full regression results are presented in the technical appendices.

3.1. Life satisfaction models results

Table 1 sets out the summary set of results of the valuation aspect from the life satisfaction models. In the statistical analysis all of these variables were statistically significant with a positive effect. The monetary value estimates are derived using the Wellbeing Valuation Approach, both for the overall average effect across the sample and differentiated by household characteristics (whether the individual has children or not).

Table 1. Life satisfaction regression results

Outcome	Value of outcome		
	Overall average	For adults without dependent children	For adults with dependent children
Rough-sleeping → secure housing	£24,467	£21,401	£30,338
Temporary accommodation → secure housing	£8,019	£8,019	£8,036
Rough-sleeping → temporary accommodation	£16,448	£13,382	£22,302

3.2. Housing and welfare services models results

Tables 2 and 3 present the results of the secure housing models. We find that three of the services variables (housing services, tenancy services, emergency relief services) are statistically associated with an **increased likelihood** of moving into secure housing. None of the other outcomes and services of interest had an impact on secure housing.

We have been able to attribute a value to this probability change impact by estimating the expected value of the services, as shown in the tables. For example, the expected value of tenancy services for people who are sleeping rough (in terms of the increased likelihood of finding secure housing) equals 1% of £24,467 = £244.67. This is reported in the final three columns of the tables. These values represent the value that using these services creates in terms of increasing the user's likelihood of finding a secure home.

Table 2. Value of using services (people in rough sleeping)

Services for people rough sleeping	Increase in likelihood of finding secure housing	Expected value of service (overall average)	Expected value of service (adults without dependent children)	Expected value of service (adults with dependent children)
Tenancy services (services that provide advice and advocacy for renters)	1.0%	£245	£214	£303
Emergency relief services (services that provide assistance and food, clothing or vouchers)	0.4%	£98	£96	£121

Table 3. Value of using services (people in temporary accommodation)

Services for people in temporary accommodation	Increase in likelihood of finding secure housing	Expected value of service (overall average)	Expected value of service (adults without dependent children)	Expected value of service (adults with dependent children)
Housing services (services that provide assistance to secure or maintain housing)	2.4%	£192	£192	£193
Tenancy services (services that provide advice and advocacy for renters)	2.2%	£176	£176	£177

3.3. Secure housing maintenance results

We find that all of the housing and welfare services were insignificant except for one (emergency relief services) and so are not associated with an impact on people remaining in secure housing. The coefficients on all services variables were negative, which is likely to reflect the fact that people who are at risk of falling out of secure housing are more likely to use the services rather than being an indication that use of these services causally makes people less likely to stay in secure housing.

Higher income, **being employed**, **having friends to lean on**; and **good health** all have a positive association with maintaining secure housing status, whilst having a **drug or alcohol problem** was negatively associated.

4. Application of results

The methods used in producing the results above are in line with HM Treasury guidelines and consistent with HACT and Simetrica's earlier work generating social impact values for the housing sector. Consequently, the values could be used in a variety of decision-making and reporting processes, and can be considered alongside values contained in the existing Social Value Bank.

It is anticipated that organisations may wish to make use of the results presented within this paper to calculate the value of the wellbeing impact that their services create. The key to doing this robustly is to take steps to avoid over-counting. One of the most important considerations in avoiding over-counting is the identification of the most appropriate counterfactual; the counterfactual is an estimate of what would have happened in the absence of your activity.

Whilst the most robust assessments of values will require further primary research within the specific context and services of an organisation, we present below guidance that will permit organisations to apply these values if they are unable to undertake primary research.

4.1. Provision of housing

Some services deliver their impact by actually housing individuals, i.e., taking in people who were rough sleeping and providing them with temporary accommodation or secure housing; or taking people in temporary accommodation and providing them with secure housing.

For these services, the relevant counterfactual will be to consider what housing situation the service users would have achieved in the absence of your housing. In areas of high levels of housing need and demand, it may be appropriate to say that if your housing did not exist the people in your accommodation would have remained in the situation that they were in before moving into your homes. (Or, at least in aggregate, if you provide homes to 100 rough sleepers, if your service did not exist then you would expect that there would be 100 more people sleeping rough.) This means that, for a service that directly provides homes in areas of high housing need, it may be appropriate to apply the values for housing status shifts calculated above without adjustment.[5]

[5] As it becomes clear how the values are being used in context, future guidance will address best practice in establishing how to identify whether to treat an area as high demand and how to apply the value in areas that are lower demand.

4.2. Provision of support services

Other services deliver their impact by providing support of one kind or another, with the intention that the support will improve people's likelihoods of obtaining and maintaining accommodation. For these services it is particularly important to recognise that a proportion of the people supported would have achieved the positive outcome anyway – this is known as the 'deadweight'.

If the support service you are providing maps onto the tenancy services, housing services or emergency relief services categories used in the Journeys Home dataset, you can apply the expected values for these, as calculated above (see Tables 2 and 3). These values have, in effect, already accounted for the deadweight by measuring the **increase** in the probability that a person's housing situation will improve following use of the service.

It is important to note that the values we have calculated are based on an average effectiveness of the services identified in Journeys Home, and if your service is likely to be more or less effective than those then it will inevitably under- or over-count your value. One important limitation of the data is that the variables related to services do not provide any information about frequency of use of the services or the quality of the services. However, in the absence of more specific data in relation to your service, this represents a proportionate approach to placing a value on a support service.

Alternatively, it would be possible to undertake research to seek to better understand the effectiveness of your specific service. A robust evaluation of your service's effectiveness would account for the proportion of your service users who would gain the housing improvements anyway. This would give you a tailored probability that you could apply in combination with the values for the improvements in housing status.

4.3. Double counting

As with the existing values in the Social Value Bank, some combinations of values may be counted together for the same individual whilst others would represent double-counting.

- It **is acceptable** to count both a move from rough sleeping to temporary accommodation and a move from temporary accommodation to settled housing for the same individual, but other combinations should not be used.
- It **is acceptable** to add the effectiveness and expected values of two or more services together.

- A person will either have children or not; it is therefore naturally **not appropriate** to count an 'adult with children' move and an 'adult without children' move in relation to the same move by an individual.
- It is **not acceptable** to count both the shift in housing situation (e.g. rough sleeping to secure housing) outcome values and the support service values for the same individual. Furthermore, as noted above, if you are supporting people to improve their housing situation by providing a support service, you should not apply the raw housing situation outcome values for any individuals whose housing situation changes as this will not account for the deadweight. You should normally use the relevant service usage value or apply the deadweight value we have provided above to figures from your own service.

Note also that if a household has achieved a tenure move it **is acceptable** to count the relevant values for **all** adults in the household.

Technical appendices

A.1. Details of variables

A.1.1. Housing status variables

The housing status variables were derived from question H1 of the Journeys Home survey. The question reads as follows:

> The following questions are about your current housing and living arrangements. As of today, in what kind of place do you live? [If not living anywhere add: or stayed in last night?].

Survey respondents are allowed to select one option in response to the question, either unprompted or with the options read out if necessary. For this study we have aggregated the response options as follows:

Aggregated as “secure housing”:

- A house / townhouse (1)
- An apartment / unit / flat (includes granny flats and bed-sitters) (2)
- Caravan / mobile home / cabin / houseboat (3)

Aggregated as “temporary accommodation”:

- Boarding house / rooming house / hostel (4)
- Hotel or motel room (5)
- Crisis accommodation or refuge (6)
- Health, treatment, or rehabilitation centre / facility (10)
- Prison or other form of detention (11)

Aggregated as “rough sleeping”:

- Sleeping rough (for example, street, park, tent, train station, improvised shelter) (7)
- A car or other vehicle (but not a mobile home) (8)
- A squat / abandoned building (9)

A.1.2. Service variables

The service usage variables were obtained from questions shousrv, stensrv, semsrv, sfinsrv, sfvisrv in the Journey's Home survey, which read:

- Have you used any of the following welfare services in the last 6 months? Housing services? That is, services that provide assistance to secure or maintain your housing.
- In the last 6 months have you used tenancy services? That is services that provide advice and advocacy for renters.
- In the last 6 months have you used emergency relief services? That is, services that provide assistance and food, clothing or vouchers.
- In the last 6 months have you used financial support services? That is, free services that help you budget, manage debts and/or understand your financial situations and options.
- In the last 6 months have you used family violence services? That is, services that provide assistance to people experiencing violence in their homes.

A.1.3. Other variables

Table A1 sets out the descriptions of the variables used in the analyses.

Table A1: Full list of variables used in the analysis

Variable	Description
Life satisfaction	0 = 'Totally dissatisfied'; 10 = 'Totally satisfied'
Log Income	Logarithm of gross weekly income
Age	Age of respondent
Male	1= Male, 0=Otherwise
White	1= White, 0=Otherwise
Degree	1= Has a degree, 0=Otherwise
Good Health	1= Good/Very Good Health, 0= Otherwise
Children	1= Has children, 0= Otherwise

Variable	Description
Employed	1= Employed, 0=Otherwise
Self-Employed	1= Self-employed, 0=Otherwise
Friends to lean on	1= Has friends to lean on, 0=Otherwise
Number of days in contact with friends in last week	Frequency of seeing friends (1-7 scale)
Physical health	1= Diagnosed with physical health problem, 0=Otherwise
Mental health	1= Diagnosed with mental health problem, 0=Otherwise
Drug/Alcohol Problem	1= Self-assessed drug or alcohol problem, 0=Otherwise
New South Wales	1= Lives in New South Wales, 0=Otherwise
Victoria	1= Lives in Victoria, 0=Otherwise
Queensland	1= Lives in Queensland, 0=Otherwise
South Australia	1= Lives in South Australia, 0=Otherwise
Western Australia	1= Lives in Western Australia, 0=Otherwise
Tasmania	1= Lives in Tasmania, 0=Otherwise
Northern Territories	1= Lives in Northern Territories, 0=Otherwise
Lag Housing	1= Used housing services in previous period, 0=Otherwise
Lag Tenancy	1= Used tenancy services in previous period, 0=Otherwise
Lag Emergency Services	1= Used emergency relief services in previous period, 0=Otherwise
Lag Family Violence	1= Used family violence support services in previous period, 0=Otherwise
Lag Financial Support	1= Used financial support services in previous period, 0=Otherwise

Variable	Description
Housing Services	1= Used housing services in current period, 0=Otherwise
Tenancy Services	1= Used tenancy services in current period, 0=Otherwise
Emergency Relief Services	1= Used emergency relief services in current period, 0=Otherwise
Financial Support Services	1= Used financial support services in current period, 0=Otherwise
Family Violence Support	1= Used family violence support services in current period, 0=Otherwise
Secure_secure	1= Lives in secure housing currently and in previous period, 0=Otherwise
Secure_Temp	1= Lives in secure housing currently, temporary in previous period, 0=Otherwise
Secure_Rough	1= Lives in secure housing currently, rough in previous period, 0=Otherwise
Temp_Rough	1= Lives in temporary housing currently, rough in previous period, 0=Otherwise
Temp_Temp	1= Lives in temporary housing currently, temporary in previous period, 0=Otherwise
Health_Limit	1= Belief that health limits activity, 0=Otherwise
Helpful_Friends	1= Has helpful friends, 0=Otherwise
Financial situation	Satisfaction with financial situation on 1-10 scale (10=totally satisfied)
Housing situation	Satisfaction with housing situation on 1-10 scale (10=totally satisfied)
Experienced physical violence	1= Experienced physical violence in last 6 months, 0=Otherwise
Satisfaction with future prospects	Satisfaction with future prospects on 1-10 scale (10=totally satisfied)

A.2. Description of models

A.2.1 Life satisfaction model

We used econometric methods specific to panel data – **fixed effects regression models** – to produce better estimates of cause and effect. We ran the following fixed effects model for the housing variables of interest:

$$LS_{it} = \alpha + \beta_1 \ln(M_{it}) + \beta_2 H_{it} + \beta_3 X_{it} + \varepsilon_{it} \qquad (1)$$

Where LS_{it} = life satisfaction for individual i at time t; M_{it} = income; H_{it} is a vector of housing related variables; and X_{it} is a vector of other main determinants of life satisfaction (Fujiwara and Campbell, 2011), which includes:

- Household income
- Education
- Health status
- Employment status
- Marital status
- Age
- Social relationships
- Parental status
- Geographic region

Note that other important determinants of life satisfaction such as gender and religious affiliation are controlled for 'automatically' as fixed effects in this analysis.

The fixed effects assumption is that the error term in equation (1) contains a constant (time-invariant) element to it:

$$\varepsilon_{it} = \delta_i + \mu_{it} \qquad (2)$$

The values were calculated directly from the model for movements from rough sleeping to secure housing and from temporary accommodation to secure housing. The values for movements from rough sleeping to temporary accommodation were calculated as the difference between the other two moves, such that the value for moving from rough sleeping to secure housing is the sum of the

values from moving from rough sleeping to temporary accommodation and moving from temporary accommodation to secure housing.

The life satisfaction model set out in equation (1) was assessed for heterogeneous effects by parental status. This analysis was undertaken by using interactive terms between all variables and parental status in equation (1).

Values are estimated from the income model that was derived in the Social Value Bank, which estimates a causal relationship between income and life satisfaction of 1.1 for a log point change in income. We use the same average income as the Social Value Bank in these calculations and therefore, the methodology and values derived in this study are comparable and commensurate with the values contained in the Social Value Bank. Please refer to *Measuring the Social Impact of Community Investment: The Methodology Paper*[6] for further details of the wellbeing valuation methodology. The monetary values for the housing-related outcomes are estimated as willingness to accept (WTA) values (i.e., compensation values) for moving from secure housing to a worse housing condition.

A.2.2 Housing and welfare services models

The following conceptual model was used for the logistic regression related to the housing and welfare services models:

$$Secure_{it} = f(HS_{it-1}, X_{it}) \qquad (3)$$

Where $Secure_{it}$ = a move from rough or temporary accommodation (previous period) into secure housing (this period) for individual i at time t; HS_{it-1} = a vector indicating whether the individual used any of the health and welfare services in the previous period; and X_{it} = a vector of control variables. Note that one limitation of the data is that the variables related to services do not provide any information about frequency of use of the services or the quality of the services.

We conducted a literature review to understand the factors that are associated with living in secure housing and, based on this literature review, use the following variables as controls in equation (3):

[6] Fujiwara, Daniel. Measuring the Social Impact of Community Investment: The Methodology Paper. http://www.hact.org.uk/sites/default/files/uploads/Archives/2014/3/HACT%20Methodology%20Paper%20FINAL.pdf

- Household income
- Age
- Gender
- Employment status
- Social relationships
- Education
- Health status
- Geographic region
- Whether the individual has drug/alcohol problems

In order to understand changes in the probability of moving into secure housing due to use of housing and welfare services we do not use fixed effects in equation (3), since with fixed effects it is impossible to derive probability estimates from coefficients related to log odds ratios in the regression model.

A.2.3 Secure housing models

We estimated the following logistic regression model. This model assessed whether accessing services has any effect on people remaining in secure housing.

$$SHousing_{it} = f(HS_{it}, X_{it}) \qquad (4)$$

Where $SHousing_{it}$ = whether the individual has maintained secure housing status over two consecutive periods; HS_{it} = a vector indicating whether the individual has used any of the housing and welfare services; and X_{it} = a vector of control variables.

A.3. Confidence intervals

Upper and lower bound valuation estimates were calculated based on the 95% confidence interval for the variable. These are presented in table A2.

Table A2. Life satisfaction regression results

Outcome	Main value	Lower bound estimate	Upper bound estimate
Rough-sleeping to secure housing	£24,467	£13,170	£39,350
Temporary accommodation to secure housing	£8,019	£3,312	£13,600
Rough-sleeping to temporary accommodation	£16,448	£9,858	£25,750
Rough-sleeping to secure housing (adults with dependent children)	£30,338	£12,197	£57,864
Temporary accommodation to secure housing (adults with dependent children)	£8,036	£3,312	£13,600
Rough-sleeping to temporary accommodation (adults with dependent children)	£22,302	£8,884	£44,264
Rough-sleeping to secure housing (adults without dependent children)	£21,401	£8,160	£40,206
Temporary accommodation to secure housing (adults without dependent children)	£8,019	£3,312	£13,600
Rough-sleeping to temporary accommodation (adults without dependent children)	£13,382	£4,847	£26,607

Note that due to rounding of regression model results the main value does not sit exactly in the middle of the upper and lower bounds in Table A2.