A Design For Life

Integrating Health and Wellbeing Into Design and Development

ANNEX 1: OUTLINE MODELLING METHODOLOGY

Understanding the affected population

This report is about urban design – so we first calculated the number of people who live in predominantly urban areas, and therefore could be affected by improved design. Using ONS data we calculated the annual rate of change of over-16s living in urban areas between 2001 and 2015, then applied this to ONS population growth populations.

This suggested that some 66.3% of the UK population would be living in predominantly urban areas by 2030, or some 46.6m people – up from 44.1m people today. This group formed the total number of people that we estimated could plausibly be affected by improved design and development, although impacts would likely be larger as there are also people living and working in mixed rural/urban areas.

Understanding the incidence of mental health issues

Our estimates of the incidence of mental health issues come from NHS estimates of the rate of Common Mental Disorders (CMDs) [i]. These estimates were produced in 1993, 2000, 2007, and 2014, and provide data on the rate of CMDs in the working population. The 2014 figures suggest that for the total (adult) population, 17% had some form of CMD.

To account for changes since 2014, we took the average rate of growth in CMD incidence between 1993 and 2014 (approximately 0.95% per year) and assumed that this growth rate applied each year from 2014. Doing this lets us estimate that in 2018 approximately 17.8% of the population have a CMD, with the figure rising 19.8% in 2030.

Rates and effectiveness of redesign

By combining the urban population estimates and incidence CMDs, we can determine the total number of people with CMDs in urban areas – and who could be affected if all urban spaces were redeveloped in a given year.

This, of course, is unlikely to happen, and would be extremely expensive and disruptive. So we've accounted in our model for a 'development cycle', where areas are gradually redeveloped as they become derelict or in need of refurbishment. There's no clear data source or information that suggests how long this could take, so we have assumed that, starting in 2020, improvements to mental health and wellbeing follow a 30-year development cycle. This means our model assumes that approximately one thirtieth of the UK's urban space is redeveloped or regenerated each year.

This gives us the proportion of the UK population affected by regeneration each year, but we still need a sense of the relative effectiveness of that regeneration in reducing incidences of poor mental health. Studies have been cautious about assigning a specific percentage by which the external built

environment could affect general mental health and wellbeing. But some of the figures suggest that the effect would be in the region of a 5% to 20% reduction in cases of mental health issues[1].

Several of these studies may have been more targeted at understanding particular interventions designed to improve health. So we have been extremely conservative with our estimate of the extent to which better-designed urban environments could improve wellbeing and reduce mental health issues. And many of the interventions we would envisage would be lighter touch than completely redesigning the whole of an area. With this in mind, our central assumption is that redeveloped areas have 1% fewer cases of CMDs. We've also conducted sensitivity analysis with a lower and a higher assumption of the size of the effect (0.5% and 1.5% respectively).

Estimating the returns

These assumptions, taken together, provide an estimate for the number of people annually who would not suffer from a CMD as a consequence of design that puts wellbeing at its heart.

To then estimate the benefits that would arise from this, we draw on the Farmer/ Stevenson review, which estimates the potential economic benefits from a reduction in mental health issues. This includes benefits to employers, the economy as a whole, and reduced service spend by Government for specific groups (e.g. recipients of health-related benefits like Employment Support Allowance).

We assume that these groups make up a constant proportion of the total number of people with CMDs, and that the number of affected people in these groups increases with the rate of CMDs in the general population. We then use historic population data to calculate an 'average per person cost' by taking the national figure from the Farmer/Stevenson review and dividing it by the number of people with a mental health issue in the most recent year of data.

The estimated costs and benefits per individual are:

Table [x]: Cost and benefit assumptions (central scenario)

Government Cost Savings	Productivity Gains	Recovered Lost Output
£2,860	£4,285	£5,014

Source: WPI Economics modelling of Farmer/Stevenson Review data & NHS Adult Psychiatric Morbidity Survey

These savings are the savings for government and business - but of course the most acute impact of poor mental health is felt by the individuals themselves. To estimate individual wellbeing impacts, we draw on the headline values from the 2014 HACT wellbeing valuation approach. This estimates the

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[1] Reports focus on the effect of urban design features on certain factors which influence mental health (physical activity, crime rates, pollution levels, greenery, accessibility etc). For instance, reports suggest that features of the urban environment encourage greater take up of physical activity and for those with greater physical activity a 20-30% decreased risk of depression and dementia. https://www.sportengland.org/media/2928/dh_128210.pdf; https://www.sciencedirect.com/science/article/pii/S0091743508000479?via%3Dihub; http://www.nhm.ac.uk/content/dam/nhmwww/about-us/visitor-research/Disconnect%20with%20nature%20Lit%20review.pdf; and http://www.aapca3.org/resources/archival/060306/jpah.pdf
Other reports and surveys note the established relationships between design features and mental health and wellbeing with similar rates.
https://www.ipsos.com/sites/default/files/migrations/en-uk/files/Assets/Docs/Polls/poll_national-noise-survey-2008.pdf; https://ehp.niehs.nih.gov/wp-content/uploads/advpub/2016/4/ehp.1510363.acco.pdf;

equivalent amount of money needed to increase someone's wellbeing by the same amount as the given effect.[ii] This estimates that relief from depression or anxiety for an adult is valued at £36,766.

We've calculated these benefits both annually and cumulatively. The annual figure estimates the benefit in a given year of redevelopment has happened in any previous year. So, for example, the figure for Y3 includes the in-year benefit to people affected by redevelopment in each of Y1, Y2, and Y3.

The cumulative estimates provide the total value of all benefits that have accrued up to and including a given year. So in Y3, people affected by redevelopment in Y1 would be counted three times, as they would have benefited in each of Y1, Y2, and Y3. We assume that the effects of better design persist and stay consistent in each year following the development.

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[i] https://digital.nhs.uk/catalogue/PUB21748
[ii] Trotter et al 2014 – Measuring the social impact of community investment, a guide to using the wellbeing valuation approach