

SIMETRICA

Subjective wellbeing analysis of the Superfast Broadband programme

Annex C

Executive Summary

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1 Introduction

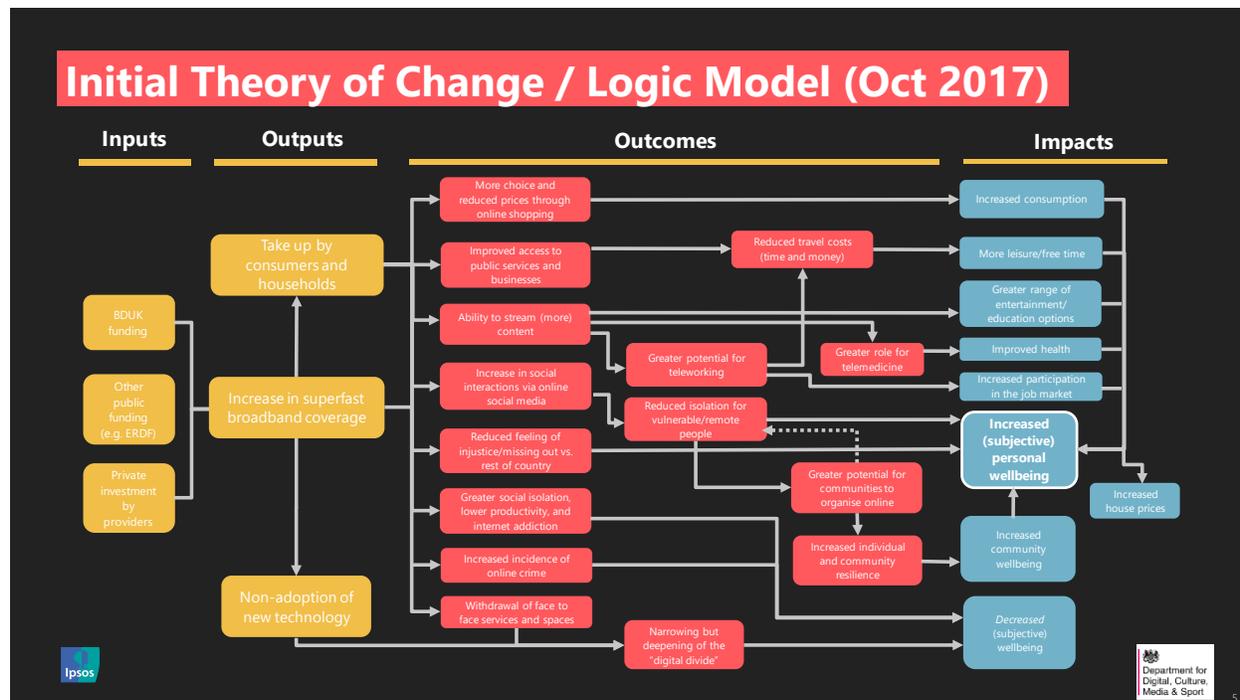
This research brief summarises some of the main findings from Annex C of the Superfast Broadband evaluation. The main aim of the evaluation is to estimate the economic impacts and public value of the BDUK Superfast Broadband programme. The objective of this research¹ is to assess the impact of the BDUK Superfast Broadband Programme on the subjective wellbeing (SWB) of households with subsidised superfast broadband and to value this usage in monetary terms, helping to measure wellbeing impacts in a ‘common currency’ with financial costs and benefits. This research is innovative in that it is the first time that this method has been applied to understanding the wellbeing impacts of subsidised superfast broadband access in the UK.

This research complements the other strands of the evaluation which explore the economic impacts and public value of superfast broadband, as part of the first externally commissioned evaluation of the programme. By analysing individuals rather than businesses, the research seeks to measure the wellbeing impact of superfast broadband over and above benefits measured in the economic impacts analysis. It is vital to understand the impact of the policy on individuals and consumers, as the main focus of the programme was to deliver superfast broadband to residential properties.

The initial theory of change prepared for the evaluation indicates that there are many channels through which Superfast Broadband may influence levels of subjective wellbeing, in both a positive and negative direction. For instance, access to the technology may offer benefits in terms of increasing the range of entertainment options available to households, but also may also facilitate rises in internet addiction. As a result, it was necessary to provide quantitative evidence which shed light on the theory of change to understand the extent of impacts realised to date.

¹ This work contains statistical data from ONS which is Crown Copyright. The use of the ONS statistical data in this work does not imply the endorsement of the ONS in relation to the interpretation or analysis of the statistical data. This work uses research datasets which may not reproduce National Statistics aggregates.

Figure 1. Initial Theory of Change



Source: Evaluation of the Economic Impact and Public Value of the Superfast Broadband Programme, Annex D

The use of subjective wellbeing (SWB) to measure and value impact in the telecommunications industry reflects the increasing importance of this approach in policy-making and business more generally, examples of which include:

- The establishment of the UK National Wellbeing Programme in 2010.²
- Endorsement of SWB approaches in HM Treasury’s Green Book guidance on cost-benefit analysis (HM Treasury 2018) and use of these techniques in various valuation studies in the UK.³⁴
- The central role that SWB occupies in OECD wellbeing metrics and guidelines⁵
- Trends elsewhere in the world towards greater usage of SWB, such as usage of the wellbeing valuation (WV) method by governments in Australia⁶ and New Zealand⁷.

² <https://www.gov.uk/government/collections/national-wellbeing>

³ <https://www.gov.uk/government/publications/valuation-techniques-for-social-cost-benefit-analysis>

⁴ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/372165/11-Quality_of_life--quality-of-life-assessment.pdf

⁵ <http://www.oecd.org/statistics/oecd-guidelines-on-measuring-subjective-well-being-9789264191655-en.htm>

⁶ http://arp.nsw.gov.au/sites/default/files/TPP17-03_NSW_Government_Guide_to_Cost-Benefit_Analysis_0.pdf

⁷ <https://asvb.com.au/2017/08/01/new-zealand-treasury-signs-asvb/>

2 Background to the programme

The Superfast Broadband programme was announced in 2010/11 by Broadband Delivery UK (BDUK)⁸ in response to concerns that the commercial deployment of superfast broadband would fail to reach many parts of the UK. The primary aim of the programme was to increase the coverage of superfast broadband (defined as download speeds of 24 Mbit/s) in the UK.

On the expectation that extension of superfast broadband coverage to these areas would produce economic, social and environmental benefits, the Government established the programme to provide £530m of public resources to fund further deployment with the aim of reaching 90 percent of UK premises by early 2016. The programme was extended in 2015, with a further £250m made available to extend coverage to 95 percent of premises by the end of 2017.

3 Key findings

The most robust finding indicates that residing in a postcode which has experienced a subsidised upgrade to superfast broadband is associated with a wellbeing uplift equivalent to £222.25 per year for the average premise to which the programme made available a subsidised connection. This can be interpreted as the average estimated benefit experienced by households with an upgraded connection available to them (an average of those who connect to the available service and those who do not). However, we would expect this benefit to increase over time as consumer demand for superfast broadband increases, which could be driven by the potential growth in remote service delivery, such as telemedicine.

After adjusting for the current take-up rate (estimated to be 40% in Annex A - Reducing the Digital Divide), the wellbeing value of the upgrade is estimated to be £46⁹ per month per premise which adopts the technology. This value is over and above the price that households pay for the internet, and the extent to which households pay for superfast broadband access through housing. It also includes economic benefits to the self-employed, which were not captured by the economic assessment of the programme.

The analysis showed considerable variation between age groups, with the youngest age group – those growing up in the ‘internet age’ – seeming to draw the most wellbeing benefits from subsidised superfast broadband. This could reflect differing levels of interest and preference for

⁸ A directorate of the Department for Digital, Culture, Media and sport (DCMS).

⁹ The value is calculated by multiplying the per targeted premise per calendar month value of £222.25 / 12 = £18.52 by 2.5 (inverse of the 40% current take-up rate).

connectivity between age groups and/or adjustment costs to new technology, which could be felt more keenly by older than younger households.

On the other hand, there is a consistent negative association between life satisfaction and superfast broadband for middle-aged respondents (aged 36-64). This finding could be explained by temporary disruption effects from introducing new technology, e.g. adjustment costs of adapting to new technology, which could be felt more keenly by the over 35s than the under 35s. Another possible explanation is that those in the 36-64 age group purchased the technology for their families but did not derive many benefits from the upgrade *themselves*.

The wellbeing association with being upgraded to superfast broadband is stronger for frequent internet users. Other categories of people who cannot/do not use the internet or use it less frequently, do not for the most part have a positive association between superfast broadband and wellbeing. This evidence suggests that the wellbeing benefits of the programme may grow over time, if take-up and internet use increases.

A limitation of the analysis is that it has not been possible to be certain that superfast broadband subsidy is responsible for this wellbeing increase. Despite the rigorous statistical techniques employed it is possible that the estimates are influenced by hidden factors. Further research could employ other statistical techniques, depending on data availability, to shed more light on impacts.

Also, it was not possible to take account of the prices households pay for broadband and as a result, the findings only pick up the benefits of subsidised broadband to the extent that customers do not pay for these through higher prices.

Similarly, it was not possible to adjust the estimates to account for the ways in which superfast broadband access influences the housing market. As a result, the wellbeing values estimated are net of the extent to which: (i) homeowners have benefited from an increase in house prices, (ii) new buyers in subsidised areas have paid a premium for superfast access and (iii) existing and new renters have paid higher rent in subsidised areas.

4 Methodology

The WV approach gauges people's experience of broadband in practice, using life satisfaction measures of wellbeing that have been tested and found to be robust in a large number of published academic and government studies¹⁰.

The estimated impact of superfast broadband access on SWB is identified using regression analysis and then converted to monetary values using a robust WV technique¹¹ outlined in supplementary guidance to the HMT Green Book¹². The values derived show the increase in income that would be required to produce the same wellbeing improvement as is associated with receiving superfast broadband.

A key benefit of applying WV to broadband-related outcomes is that it is possible to derive values without relying on market data which may be limited in its availability. Instead, wellbeing values are based on how people *actually experience* an outcome. This is key in relation to superfast broadband where people may struggle to envisage the hypothetical impact a subsidised scheme might have on their lives.

5 Data sources

Several sources of data were drawn upon in order to combine subjective wellbeing and broadband / internet connectivity data. The data can be categorised as follows:

1. Subjective wellbeing data.

For this study, two large nationally representative UK household surveys are used:

- i) **The Annual Population Survey (APS) (April 2011 - March 2016)** is a continuous household survey which provides information on important social and socio-economic indicators such as employment, ethnicity, health and education. Within the APS, the location of the respondent's household can be pinned down at the postcode level.
- ii) **Understanding Society (USoc) (2009-2015)** tracks households and individuals over time, including 292,688 responses across the six years in total. Geographical identification of households is less precise, with only grouped postcode data available.

¹⁰ Krueger and Schkade 2008; ONS 2012; Kimball and Willis 2006

¹¹ Fujiwara 2013

¹² Fujiwara and Campbell 2011

The study places greater weight of the findings from the APS for the following reasons:

- The geographical information provided by USoc is much less granular and increases the risk of statistical error.
- The APS covers more recent data, ensuring that more recent impacts are measured.

2. Data on broadband and internet connectivity.

The OfCom Connected Nations dataset is used, covering the years 2012-16. This dataset is collected by Ofcom from the network providers, aggregated and made publicly available. The variables of interest are download speed and Next Generation Access (NGA) internet availability. Information is also used from the BDUK C3 quarterly reports on the date of a BDUK-funded upgrade of the first and last cabinet servicing each postcode (where such an upgrade happened).

6 Conclusions for the evaluation

As set out in Section 3, the provision of subsidised superfast broadband is associated with a wellbeing uplift per year for the average targeted premise. This impact appears to persist for at least one year after an upgrade in connectivity, but it has not been possible to test how far beyond the initial year the effect lasts, given the recent nature of investment.

The headline wellbeing value of the upgrade (£46 per premise per month) is larger than the current average cost of superfast broadband (£30-£40 for residential customers for BT Infinity). This value may be influenced by household mobility, for example households which relocated to areas to benefit from upgraded broadband may have had greater wellbeing *before* the relocation. It is also plausible that broadband providers may have offered superfast broadband at low prices early in the roll-out process, but that these prices did not persist in the longer term for loyal customers.

The positive association between wellbeing and provision of superfast broadband for frequent users suggests that the benefits of the programme are likely to grow over time, if take-up and internet use increases. However, it should be noted that the transformative potential of high speed networks is expected to arise from the enabling of remote service delivery (such as remote medical diagnostics). The development and roll-out of transformative technologies relying on greater bandwidth were only at a nascent stage in 2016, and the quality of life benefits from the programme may largely arise in the future. As a result, it may be fruitful to update this analysis in the medium term (e.g. in 2019) to understand how impacts have evolved.

7 References

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