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Living in Aotearoa: Planning analyses of subjective wellbeing

Preliminary advice

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About

CEPREMAP

CEPREMAP was founded in 1967 with the merger of CEPREL and CERMAP, in order to shed light on French economic planning as a result of economic research.

Since January 1, 2005, CEPREMAP stands for CEntre Pour la Recherche EconoMique et ses APplications (Center for Economic Research and its Applications). It has been placed under the aegis of the Ministry of Research. CEPREMAP's mission is to provide an interface between economic research and public administration.

It is an agency that provides both economic research for the benefit of decision-makers and financing for projects that play an important role in the creation of public policy.

Website: http://www.cepremap.fr/en

Wellbeing Observatory

The Well-Being Observatory fosters and promotes research on subjective wellbeing in France. It gathers a network of researchers from many institutions, relying on quantitative approaches to subjective wellbeing, its measurement and factors such as health, education, relationships, trust, etc.

We especially strive to document and understand the changes in subjective wellbeing in France through time and economic cycles, as well as gaps between social groups or regions. We promote subjective wellbeing as a key tool for the design and evaluation of public policy, following the insights of the 2008 Stiglitz-Sen-Fitoussi Commission.

We disseminate research results through Notes intended for a broad audience of academics, professionals, people working in government agencies and in the private sector. To our network of researchers, we provide a service of curation through a newsletter and we establish points of contact between researchers and government agencies.

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Acknowledgements

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Key points

This report presents preliminary advice for the use of subjective wellbeing data from the Living in Aotearoa survey. Stats NZ will soon launch this survey, **the largest ever panel survey on income and living conditions** collected in New Zealand. It will provide a unique resource to measure and understand people's wellbeing and will offer useful evaluation estimates for wellbeing-based public policy. That should have a major impact on the Social Wellbeing Agency's work programme in a few years.

Cross-sectional surveys, such as the New Zealand General Social Survey, which sample a given person only once, often produce inflated assessments of the wellbeing impacts of an event or a policy because they cannot control for respondents' previous circumstances, history and initial happiness levels. By contrast, panel data follow the same individuals through time and provide **more robust estimates of impacts on wellbeing.** Across the world, researchers rely on similar panel survey data (SOEP in Germany, HILDA in Australia, the BHPS in the UK, or PSID in the US) to investigate the wellbeing impacts of a wide spectrum of circumstances, ranging from life events (e.g. marriage, birth of a child, loss of job, etc.) to natural disasters or public policies. Such panel-derived estimates are thus more useful guides for policy decisions. Comparisons across panel surveys also show that the impacts of the same circumstances often differ across countries with different cultural backgrounds and institutional setups. For policy-making purposes, country-specific estimates are thus strongly preferred.

The Living in Aotearoa survey will enable many policy-relevant analyses of subjective wellbeing that are not feasible now. This report highlights **a selection of relevant analyses** (housing, unemployment, natural disasters) which seem priorities for New Zealand. Existing and ongoing research has shown that housing conditions and access to homeownership have significant and long-lasting impacts on wellbeing. In 5-7 years the Living in Aotearoa survey can provide estimates of the size and duration of these effects in New Zealand. In most rich countries, unemployment is one of the most important drivers of unhappiness, with impacts varying in size depending on national unemployment schemes. Within a few years, the Living in Aotearoa survey will allow evaluation of the impact of unemployment in New Zealand and the design of wellbeing-efficient employment policies. The impact of natural disasters, some of which will become more frequent due to climate change, is another key area where this survey will provide actionable estimates in a relatively short period of time.

This report makes the case for measuring subjective wellbeing using several questions, not just the one key question included in the questionnaire already (overall life satisfaction). In our opinion, at least **four questions** – about life satisfaction, happiness, sense of purpose and anxiety – are required to measure key aspects of subjective wellbeing. According to current research, none of them alone can capture the whole concept of subjective wellbeing, but the combination of the four covers a large part of it. Their inclusion into the Living in Aotearoa survey with the possibility of linking these data to the Integrated Data Infrastructure, would allow researchers and policymakers to perform wellbeing analyses using best practice and ensure comparability of the results with other surveys. It would then become possible to evaluate policies in different areas using relevant subjective wellbeing metrics as a common language to inform policy makers about whether a policy change is desirable or not for people's subjective wellbeing.

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A big new panel survey relevant to wellbeing starts soon

New Zealand will soon start its largest ever household panel survey: Living in Aotearoa (earlier labelled the Longitudinal Survey of Income & Housing Costs). It aims to achieve a sample size of about 25,000 households each year (about 50,000 individuals).

The survey includes a subjective wellbeing question. Surveys collecting information on how people feel and experience their lives are increasingly being used to inform policy makers around the world. However, governments still face many challenges in moving from wellbeing research to policy applications.

This report outlines the added value to policy making of including subjective wellbeing measures in panel surveys (also known as longitudinal surveys).

Large scale panel surveys including subjective wellbeing data are already available internationally. The Living in Aotearoa survey will thus provide an important complement to overseas panel surveys: it will allow us to identify what matters most to people in New Zealand and how past policies have affected the country's wellbeing; it will also allow us to assess and design policies explicitly aimed at improving wellbeing in New Zealand. That should have a major impact on the Social Wellbeing Agency's work programme in a few years (which in turn could influence analysis priorities over the next couple of years too).

Potential strengths of Living in Aotearoa subjective wellbeing data

Panel data will enable more robust estimates of impacts on wellbeing

In contrast to the NZ General Social Survey (NZGSS), the Living in Aotearoa survey will be a rotating panel. This means that the same set of individuals will be followed over time. Compared to cross-sectional surveys such as the NZGSS, the panel design of the Living in Aotearoa data will enable production of more robust estimates of the effect of various factors on people's wellbeing.

Estimates using panel data identify how changes in one person's situation (e.g., becoming a homeowner, unemployed, etc.) are related to changes in the same person's wellbeing. By contrast, cross-sectional studies rely on between-individual comparisons. However, individuals may differ in their wellbeing assessments for a number of reasons that cannot be easily controlled for in the analysis (e.g., personality traits). Therefore, cross-sectional data do not allow us to perfectly identify what factor causes which effect and to distinguish between different drivers of wellbeing.

To make their decisions, policy makers prefer *causal estimates* of what matters most to people's wellbeing. Combined with randomized control trials, which are currently the gold standard in policy evaluations, panel data where individuals are observed before and after a change in situation, can help provide such causal evidence.

Such evidence helps different kinds of decisions. First, panel data are extremely useful to identify key drivers of people's wellbeing and provide ideas for policy interventions. Second, panel data are required for policy evaluation. The inclusion of subjective wellbeing data in the Living in Aotearoa survey will provide such actionable knowledge for New Zealand.

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Subjective wellbeing can inform better decisions in key policy areas

To design and target policy, policy makers need relevant evidence on which factors contribute most to the wellbeing of the population. Such analysis will be feasible using the Living in Aotearoa survey.

The large sample size and panel design of this survey will enable it to deliver analyses not previously feasible in New Zealand. Existing work with similar surveys overseas suggests several relevant analyses which seem priorities for New Zealand:

- **Housing.** Housing costs and living conditions are among the most important issues facing New Zealand in 2021. With extensive information on housing, the Living in Aotearoa survey will allow us to investigate for instance, which housing characteristics matter for life satisfaction and to what extent home ownership increases wellbeing. It will also be possible to analyze how housing affordability and increases in house prices can substantially affect satisfaction from housing in New Zealand.

- **Unemployment and poverty**. The panel design of the data will allow us to investigate the effects of key life events, such as becoming unemployed or entering poverty, and whether individuals adapt to these events. Such effects have already been studied in other contexts using European and Australian data, but some of these results may not translate well to New Zealand: they may depend on cultural influences, but also the institutions of the country people live in and the policies that are put in place.

- **Climate change and natural disasters.** Using linked Integrated Data Infrastructure (IDI) data on neighborhood and location of households, the Living in Aotearoa survey will also allow us to analyze how climate-related extreme events (droughts, heavy rainfalls, fires, etc.) affect residents' wellbeing. These events can have huge material impacts, but wellbeing metrics have shown that these events have impacts over and above their financial costs. It may also be useful for policymakers to look at the influence of other non-monetary factors such as access to nature and green infrastructure on wellbeing. These factors have proven to be difficult to evaluate using standard economic techniques such as contingent valuation or market-derived propensities to pay.

Better evaluation of the impact of policy and programmes via linked data

One important strength of the Living in Aotearoa survey will be the linking with the IDI. This will facilitate analysis of the causal impacts of interventions such as active labour market policies, placement in social housing, child support, and health policies.

This will be made possible by investigating the change in wellbeing before and after the implementation of a policy for the same individuals, which goes beyond existing studies using cross-sectional data, and complements more standard evaluations based on economic and social outcomes. The use of the IDI in combination with wellbeing panel data will be unique in this respect, and could make the Living in Aotearoa survey the go-to-source data for policy evaluations with a wellbeing lens.

Social housing. A prime example would be the effect of receiving a placement in social housing. In 2018 and 2019, the Social Investment Agency (now the Social Wellbeing Agency) evaluated the impact of placement in social housing by linking IDI placement data with the wellbeing measures collected in the NZGSS. However, because the NZGSS has cross-sectional data, the studies could

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not account for unobserved individual-specific effects on wellbeing the way panel data would allow and could not provide insights on the longer-term effects of placement. More robust estimates could be obtained from the Living in Aotearoa survey in four to five years. In a decade, long-term effects of placement could also be ascertained.

Which wellbeing measurements to collect for policy making?

Subjective wellbeing is often measured using an array of questions, which capture at least three types of wellbeing: (i) life evaluations which involve cognitive evaluation of the respondent's life as a whole; (ii) measures of affect, which capture the feeling experienced by the respondent at a particular point in time and (iii) an eudemonic aspect of wellbeing, which reflects people's sense of purpose and engagement.

Given the wide variety of policy interventions potentially assessed with the Living in Aotearoa survey, we strongly advise collecting several subjective wellbeing measures. The three types of wellbeing above can be covered by a core of four questions as collected, for example, by the British Office for National Statistics (ONS):

- **Life Satisfaction** (Overall, how satisfied are you with your life nowadays?)
- **Happiness** (Overall, how happy did you feel yesterday?)
- **Anxiety** (On a scale where 0 is 'not at all anxious' and 10 is 'completely anxious', overall, how anxious did you feel yesterday?)
- **Eudemonic wellbeing** (Overall, to what extent do you feel that the things you do in your life are worthwhile?)

For example, several panel studies and a few randomized controlled trials have shown that, for senior citizens, volunteering leads only to a moderate improvement in life satisfaction, but to a significant gain in their sense of purpose (measured by the *worthwhile* question).

From research to policy making

As is the case for most economic research, the link between wellbeing policy research and actual policy implementation is an indirect one most of the time. Wellbeing research has to date provided several major policy leads. We detail some examples in the report, including the Healthy Minds project in the UK. However, governments still face many challenges in moving from wellbeing research to policy application.

We argue that wellbeing appraisal should be conducted bottom-up, starting with areas where there is enough robust evidence (and data availability) and progressively extending towards other domains and a broader range of time horizons. In this respect, the wellbeing data in the Living in Aotearoa survey will serve two purposes. First, thanks to the IDI link, it will provide paths to measure policy effects on wellbeing in areas that are currently understudied, thus broadening the scope of wellbeing evaluation. Second, it can become a reference data source for policy evaluation in areas already studied overseas.

Introduction

Subjective wellbeing surveys - collecting information on how people feel and experience their lives - are increasingly being used to inform policy makers around the world. The OECD now advocates that we should "put people's wellbeing at the center of governments' efforts."[1]

New Zealand has become the first western country to make wellbeing its primary objective, and planned its entire budget, starting in 2019, based on wellbeing priorities. Other countries are moving in that direction. In the UK, the Office for National Statistics (ONS) has developed a framework of national wellbeing indicators that has been used since 2011 and the Treasury manual for policy evaluation has been rewritten in 2018 to include wellbeing as the objective of public policy. Among other governments, Finland, Iceland, Scotland and Wales have set up their own framework to steer public policies with a selection of indicators emphasizing wellbeing.[2]

All this is part of a worldwide movement to take a more holistic view of social progress and consider the social and economic factors that influence wellbeing as important for policy as economic growth. For some years, the United Nations has hosted the launch of the World Happiness Report, which is a landmark survey of the state of global happiness that ranks countries by how happy their citizens perceive themselves to be (New Zealand is ninth in the worldwide ranking). Since 2011, the OECD has produced the Better Life Index and the "How's life" report which describe some of the essential aspects of life that shape people's wellbeing in OECD and partner countries.[3]

However, "national governments still face many challenges in moving from wellbeing measurement to policy application".[4] Some people are arguing that the COVID-19 pandemic could provide the impetus needed to promote the use of subjective wellbeing in policy-making around the world. There exists a solid knowledge base of how measures of subjective wellbeing capture valid and meaningful information and how they can be used for designing and delivering policies. However, policy application will not succeed without (i) the implementation of large and representative surveys which allow us to collect subjective wellbeing data in a consistent way across different population groups and over time, (ii) an experimental mindset, (iii) gathering evidence on wellbeing policies that have worked, and (iv) strong political support to further incorporate wellbeing frameworks into policy settings.

New Zealand will soon start its largest ever household panel survey: Living in Aotearoa (earlier labelled the Longitudinal Survey of Income & Housing Costs). It aims to achieve a sample size of about 25,000 households each year (about 50,000 individuals). This new survey arises from Stats NZ splitting the long-running Household Economic Survey into two different surveys, one of which needs to be longitudinal to measure persistent child poverty. The draft questionnaire includes income, spending, housing, material wellbeing (e.g., whether lacks 2 pairs of shoes in

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[1] OECD. (2016). Strategic Orientations of the Secretary-General: For 2016 and beyond. Meeting of the OECD Council at Ministerial Level Paris, 1-2 June 2016. https://www.oecd.org/mcm/documents/strategic-orientations-of-the-secretary-general-2016.pdf.

[2] The WeGo initiative acts as a platform that gathers information on wellbeing use for policy orientation.

[3] See also the "Happiness and Life Satisfaction" page on Our World in Data for a summary. https://ourworldindata.org/happiness-and-life-satisfaction

[4] Martine Durand and Carrie Exton, 'Adopting a wellbeing Approach in Central Government: Policy Mechanisms and Practical Tools', in Global Happiness Council, Global Happiness and wellbeing Policy Report 2019, February 2019. See also Paul Frijters et al, "A Happy Choice: wellbeing as the Goal of Government", Behavioural Public Policy, vol. 4(2): 126-165, 2020.

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good condition because of cost), labour force status, disability, demographics, and subjective wellbeing (currently just one question, overall life satisfaction).

This survey will provide an important complement to overseas panel surveys (also known as longitudinal surveys) already used for monitoring countries' wellbeing and guiding policy making. Large scale longitudinal surveys including wellbeing data are already available in the United Kingdom (British Household Panel Survey - Understanding Society), in Germany (German Socio-Economic Panel), in Australia (Household Income and Labour Dynamics in Australia survey), in the United States (Panel of Study of Income Dynamics) and in Europe (the European Statistics on Income and Living Conditions (EU-SILC), of which the SRCV (Statistiques sur les Ressources et Conditions de Vie) panel is the French arm. However, because a variety of factors affect how people experience and think about their lives, and because cultural and linguistic differences are likely to play a role, findings from surveys in one country may not give full information about what matters for people's wellbeing in other countries. Since countries, cultures, and languages are unique, it is important to collect and examine information on subjective wellbeing from many different countries, and particularly important for policymakers to have access to data on their own citizens and stakeholders.

This report details the added value to policy-making of including subjective wellbeing measures in longitudinal surveys, and in particular how the Living in Aotearoa survey can be used to design policies aimed at improving wellbeing in New Zealand. It also aims to provide advice in collecting and analyzing measures of subjective wellbeing. A number of examples from existing studies are provided, which we hope will illustrate what can be learned from the Living in Aotearoa survey in the future.

1. What is the added-value of subjective wellbeing data for policy making?

Subjective wellbeing surveys collect data on how people evaluate and experience their lives as a whole (see Box. 1). Data from these surveys reveal what matters to people's lives beyond standard economic or socio-demographic indicators that have been traditionally used to set policy priorities. They can give insight into how people perceive their current situation, as well as the emotional reactions of people to various life circumstances (poverty, unemployment, moving house, illness, climate change, etc.). This has a number of benefits for policy-making:

Data at the individual level:

- Helps identify things that are important to people's life (beyond income and GDP) and redefine policy priorities based on what matters to people's subjective wellbeing (e.g., human relationships, health, vibrant community life, or access to nature).

- Can measure the impact of policy programmes on people's life (e.g., unemployment policies, active welfare programs, investments in social housing) and highlight the diversity of reactions across the population.

Aggregate data at the community and national levels:

- Provides a more complete picture of a community or country's wellbeing and allows us to monitor how the population faces challenging events (e.g., economic crises, natural disasters, pandemics, etc.)

- Makes it possible to compare policies' benefits using one single metric and identify policies which are the most cost-effective.

A. Understanding better what matters in people's lives

Measures of subjective wellbeing provide an alternative measure of societal progress that is based on how people experience their lives. They can provide a picture which differs in various ways from more standard metrics that focus on income and household resources. They also allow us to measure the influence of various aspects of life which are usually missing from standard economic analyses, such as social relationships, access to nature, or exposure to criminal acts and insecurity. Would policy priorities be different if the subjective wellbeing of the population were to be targeted rather than more standard economic outcomes?

Wellbeing informing policy priorities

Using UK, German and Australian household panel data, we have provided evidence on this question in a book called *The Origins of Happiness*, along with Andrew Clark, Richard Layard and other colleagues at the London School of Economics.[5] We have measured the relationship of life satisfaction to different factors such as household income per head,[6] years of education, whether

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[5] Clark, Fleche, Layard, Powdthavee and Ward. *The Origins of Happiness: The Science of wellbeing over the Life Course*, Princeton University Press, 2018.
[6] Strictly speaking, we have used the logarithm of household income per head in order to account for the decreasing returns to income on wellbeing.

Box 1. **Measuring subjective wellbeing**

Existing surveys measure subjective wellbeing through direct questions asking respondents to evaluate various aspects of their lives, for example: "On a scale from 0 to 10, where 0 is 'very unhappy' and 10 is 'very happy', how happy did you feel yesterday?", or "On a scale from 0 to 10, where 0 is 'very unsatisfied' and 10 is 'very satisfied', how satisfied are you with your life as a whole?". Initially developed in psychology laboratories and fielded in surveys since the 1950s, these questions are now broadly used. Although the exact wording may still differ from one survey to another, in the past decade there has been significant effort to use standardized and comparable question formulation. The 2013 OECD *Guidelines on Measuring Subjective wellbeing* now serve as a reference for public and private organizations.

Since subjective wellbeing is a multifaceted concept, most surveys do not rely on a single question but on several, which capture at least three types of wellbeing: (i) life evaluations which involve cognitive evaluation of the respondent's life as a whole; (ii) measures of affect, which capture the feeling experienced by the respondent at a particular point in time and (iii) an eudemonic aspect of wellbeing, which reflects a respondent's sense of purpose and engagement. The core element usually comprises four questions (see for instance the ONS4 collected by the Office for National Statistics in the UK)[7]:

- **Life satisfaction** (Overall, how satisfied are you with your life nowadays?)
- **Happiness** (Overall, how happy did you feel yesterday?)
- **Anxiety** (On a scale where 0 is "not at all anxious" and 10 is "completely anxious", overall, how anxious did you feel yesterday?)
- **Eudemonic wellbeing** (Overall, to what extent do you feel that the things you do in your life are worthwhile?)

Many surveys also include domain-specific questions, for example on job satisfaction, satisfaction with income, health, housing, family life, neighbourhood etc. For our quarterly dashboard of wellbeing in France, the INSEE (French ONS) fields 19 subjective wellbeing questions, plus one asking at which period of time the respondents would like to live.[8]

Using a selection of indicators, as opposed to following a simple headline figure, is referred to as a *dashboard* approach to wellbeing measurement and policy use. Such a dashboard view is the preferred approach for the OECD, as illustrated by their Better Life Initiative, wellbeing framework[9] and recently the launch of the Centre on Well-being, Inclusion, Sustainability and Equal Opportunity (WISE)[10]. It allows for use of context-sensitive aspects of wellbeing and recognizes that a given policy or event may affect some aspects of wellbeing more than others. For example, several panel studies and a few randomized controlled trials (the gold standard approach to demonstrate a causal link between a policy intervention and an outcome) have shown that for senior citizens, volunteering leads only to a moderate improvement in life satisfaction, but to a significant gain in their sense of purpose (measured by the *worthwhile* question).[11]

For those looking for a summary measure, however, life satisfaction is often used as the main metric to measure wellbeing. First, it is comprehensive - it refers to the whole of a person's life these days. Second, it is clear to the reader. Third, it is democratic - it allows people to evaluate their lives based on what *they* consider as important. Increasingly, policy makers feel comfortable using life satisfaction data to inform and design policies. Moreover, a number of studies have shown that a person's life satisfaction is well correlated with a range of relevant factors. It is also a good predictor of many outcomes - not only divorcing or leaving a job but also the likelihood of voting for the incumbent government.

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[7] Personal wellbeing user guidance, ONS, 2018.

[8] Le Bien-Être en France, Observatoire du bien-être du CEPREMAP.

[9] https://www.oecd.org/statistics/measuring-well-being-and-progress.htm

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or not unemployed, number of criminal convictions, whether partnered, number of physical health conditions and whether diagnosed as suffering from a depression or anxiety disorder.

People may think that income inequality and unemployment are the most important causes of low satisfaction. However, our results have revealed a more complicated picture. We find that unemployment is tough and reduces life satisfaction by about 0.46 points (out of 10) on average in Britain. But the effect of income is much smaller. Doubling income will increase happiness by 0.04 points, which is not a huge effect. Of course, the gain in happiness depends on how much a person earns in the first place: for the same increase in absolute income, a poor person's gain in happiness will be ten times as large as a rich person's gain in happiness.

Looking at other causes of happiness, we find that the main influences are human relationships (being partnered and in relationships with people you work with) and health (physical and mental health). The most striking influence is mental health, suggesting that investments in mental health policy (e.g., promotion of mental wellbeing, prevention of mental health disorders, and treatment of mental health disorders) could yield large benefits in happiness.

These results are based on two European household panel surveys and the Australian household data. Of course, while there are often similar patterns across countries in what matters most to people's wellbeing, findings from New Zealand are likely to provide a slightly different picture of key drivers of wellbeing. Repeating such an exercise with New Zealand data would then be quite valuable. As an illustration, unemployment effects slightly differ across countries: if it reduces life satisfaction by 0.46 points in Britain, it is rather less in Australia (0.18 points). Perhaps, because of geographical and cultural proximity, the relationship between unemployment and life satisfaction in New Zealand would be closer to the one seen in Australia, but this is worth exploring.[12]

Showing the importance of non-monetary outcomes on wellbeing

Subjective wellbeing data highlight the influence of non-monetary factors on people's wellbeing, such as healthy relationships, vibrant community life or access to nature. Those factors have proven to be difficult to evaluate using standard economic techniques such as contingent valuation or market-derived propensities to pay. The wellbeing-based approach allows us to capture the effect of non-monetary factors - both direct and indirect - on people's subjective wellbeing. It has been widely used, for instance, to assess the costs and benefits of a cleaner environment, of pro-environmental behaviours or the benefits of enjoying green infrastructures. These works are featured in the recent *Handbook on Wellbeing, Happiness and the Environment,*[13]

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[10] https://www.oecd.org/wise/. A core motive for the WISE centre is to bring together the OECD wellbeing framework and the Sustainable Development Goals (SDGs) into a single, unified framework of policy-making and policy assessment.

[11] J. Stuart, J., Kamerāde, D., Connolly, S., Ellis Paine, A., Nichols, G. and Grotz, J. (2020) *The Impacts of Volunteering on the Subjective Wellbeing of Volunteers: A Rapid Evidence Assessment*, What Works Centre for Wellbeing and Spirit of 2012.

[12] In our book, "*Les Français, le bonheur et l'argent*", Yann Algan, Elizabeth Beasley and Claudia Senik have shown that even though income is positively associated with life satisfaction in every country, there is a wide heterogeneity in the size of the income effects across countries: The relationship between life satisfaction and income is strongest in France. This is undoubtedly due to the French distrust of institutions: no longer able to rely on them to organize their collective destiny and protect them against the main risks of life, the French are turning to their personal resources.

[13] *Handbook on wellbeing, Happiness and the Environment*, David Maddison, Katrin Rehdanz and Heinz Welsch (eds.), Edward Elgar, 2020.

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illustrating their policy relevance. As an example, D. Fujiwara and his co-authors[14] use panel data collected through a smartphone app (Mappiness) to estimate a causal link between airport noise and key dimensions of wellbeing, allowing evaluation of the relative benefits of noise reduction policies and compensation policies.

Another example using more conventional survey panel data is the study conducted by C. Krekel and his co-authors.[15] Using the fact that many elements – starting with availability in a moderately illiquid market – influence the precise location where someone lives, they compute the impact on moving into an urban home located close to a green space. All other things being equal, members of the German Socio-Economic Panel moving into a dwelling located less than 1 km from a green space experience a small but significant increase of life satisfaction. Extended to all people living in this radius, the aggregate wellbeing gain of an urban green space is significant.

Delivering causal estimates: identifying what matters most

To design and target policy, policy makers need relevant evidence on which factors contribute most to the wellbeing of the population. However, to make their decision, governments must have *causal estimates* of what matters most to people's wellbeing, that is, they need to be able to identify what factor causes which effect and to distinguish between different sources.

This requires conducting a flood of experiments by individuals, firms, communities, and departments in all areas of life to better understand what improves wellbeing. These experiments are needed to set the policy priorities within and between different departments and to have a consistent process evaluating how much a policy increases wellbeing. In order to be practical, these experimental studies need to provide (i) point estimates of what the effect on wellbeing is, (ii) preferably rely on longitudinal household data where individuals are observed before and after a policy intervention (to be discussed below) and (iii) use experimental research designs where possible.

In a recent paper,[16] Paul Frijters, Andrew Clark, Christian Krekel and Richard Layard have offered a preliminary list of studies which employ natural experiments or some other best available sources of variation to measure wellbeing effects. They provide estimates of the wellbeing effects of a range of variables from work, finances and education to relationships, health, crime and environment. Box 2 gives one example that is described by Frijters et al. (the long-run effect of income) and explains how the study has been implemented.

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[14] Daniel Fujiwara, Ricky N. Lawton, George MacKerron, "Experience sampling in and around airports. Momentary subjective wellbeing, airports, and aviation noise in England," *Transportation Research Part D: Transport and Environment*, Volume 56, 2017, Pages 43-54.

[15] Christian Krekel, Jens Kolbe, Henry Wüstemann, "The greener, the happier? The effect of urban land use on residential wellbeing", Ecological Economics, Volume 121, 2016, Pages 117-127, ISSN 0921-8009, https://doi.org/10.1016/j.ecolecon.2015.11.005

[16] Frijters, P. *et al*, (2020). "A happy choice: Wellbeing as the goal of government". *Behavioural Public Policy, 4*(2), 126-165. doi:10.1017/bpp.2019.39

Box 2. The long-run wellbeing benefits of income - evidence from a Swedish lottery

One important question for the economics of wellbeing is whether money can buy happiness. The best evidence on that comes from studies using lottery winners such as Gardener and Oswald (2007) or more recently Lindqvist et al. (2020). Using lottery winners brings estimates as close as possible to a randomized controlled trial – with some players randomly receiving more money and others not. Lindqvist et al. (2020) are able to follow individuals at least four years after they had won the lottery, hence estimating the long-run effect of winning the lottery on individuals' wellbeing. The authors find a marked effect on life satisfaction, even after 20 years: a 10% increase in lifetime income increases life satisfaction by about 0.04 on a 0-10 scale for every remaining year of life. These effects may not sound like much; but they are twice as much as one usually finds for income effects using cross-sectional data.

This indicates that studies which do not rely on experimental research designs (such as lotteries with a random allocation of money across participants) and do not use longitudinal panel data (where people are observed before and after receiving money) suffer from serious statistical issues. A first important issue with non-experimental designs is that people who earn more money may have specific (unobserved) characteristics, which make them more likely to be richer and happier compared to other people who earn less. This is called selection bias. A second important issue with cross-sectional data is that because people are observed only once, we cannot tell whether rich people are happier than poorer people because they earn more money or if they were already happier than those who earn less to begin with. We will come back to these issues in Section 2.

B. Evaluating the impact of policy programs

Once key areas of people's wellbeing have been identified using subjective wellbeing data, a natural question is then how these data can be used to evaluate the impact of policy programmes and inform policy makers about whether a policy change is desirable or not. What follows is a brief description of how subjective wellbeing data have been used to inform policy makers about the efficiency of existing or upcoming programs.

The UK-based What Works Centre for Wellbeing[17] collects a broad evidence base of wellbeing-driven policy interventions. The detailed examples below complement their own thematic evidence briefings.

The IAPT program

A first example is the Improving Access to Psychological Therapies (IAPT) scheme by the National Health Service in the UK. According to evidence-based research, mental illness is one of the main causes of unhappiness. The evidence for this comes from longitudinal surveys where people are asked about their life satisfaction and aspects of their mental health (e.g., whether they have been diagnosed with depression or anxiety by a doctor last year, see for instance (Fleche and Layard, 2017). According to these longitudinal studies, treating mental illness should be a top priority for every government, as should the promotion of good mental health. Yet, most mentally ill people receive no treatment for their condition. In rich countries, only a quarter of those who are

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[17] https://whatworkswellbeing.org/

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mentally ill are in treatment and in the poorest countries the rate is as low as 6% (Layard et al., 2018).

Following this observation, the British government launched in 2008 a new service for adults called Improving Access to Psychological Therapies, which aimed at providing evidence-based treatments for common mental health conditions by primary care institutions to the general population. It was developed and introduced by the Labour Party as a result of economic evaluations by Richard Layard and promoted by the clinical psychologist David Clark. At that time, the implementation of this programme placed wellbeing in the public spotlight (Clark, 2018) and sparked debate about a more systematic use of wellbeing as a policy evaluation metric in the UK.[18] The programme now treats nearly half a million people a year and helps them to overcome depression and anxiety.

More specifically, two pilot studies were implemented in Doncaster and Newham in 2008. A session-by-session outcome monitoring system was put in place to collect pre- and post-treatment data for each treated individual. The IAPT programme was evaluated based on two mental health outcomes: depression and anxiety. Depression was assessed with the 9-item Patient Health Questionnaire Depression Scale (PHQ-9) which ranges from 0 to 27. Anxiety was assessed with the 7-item Patient Health Questionnaire Generalized Anxiety Disorder Scale (GAD-7) which ranges from 0 to 21. Employment was also assessed by a specifically developed self-report questionnaire covering type of employment (full-time, part-time, unemployed, student, retired, homemaker), receipt of statutory sick pay and state benefits. The results presented by Clark (2018) revealed significant improvements in all measures: "Most cases (83% in Newham, 66% in Doncaster) had been depressed or anxious for over 6 months and it seemed safe to conclude that treatment had provided added benefit to this group as the recovery rates (52% at each site) comfortably exceeded the 5-20% one might expect from natural recovery or minimal intervention". Moreover, a significant number of patients who were originally off work and on Statutory Sick Pay returned to work. The employment rate of treated individuals increased by 4 percentage points and absenteeism reduced by 3 days per year per worker (Layard et al., 2007).

More recently, Frijters and Krekel (2021) simulated the impacts of the IAPT programme on individuals' life satisfaction. They found a significant increase in life satisfaction of approximately 0.05-0.25 points among the treated population.

The success of the Doncaster and Newham pilot projects led to the development of a plan for a national roll out of the IAPT program, and the first IAPT services opened their doors to patients in September 2008. At least 10 other countries have now shown an interest in learning from this initiative. One of them is Norway where there are currently 13 local services following the IAPT model (Layard et al., 2018).[19]

Building children's emotional health

Another example of a policy where subjective wellbeing data have been used and which is now implemented widely in the UK is the *Healthy Mind Project*. Starting in 2013, a new standardized curriculum called *Healthy Minds* was implemented in 39 secondary schools and provided courses

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[18] Clark, D. M. (2018). Realizing the Mass Public Benefit of Evidence-Based Psychological Therapies: the IAPT Program, *Annual Review of Clinical Psychology*, 7: 159-183.
[19] Layard et al. (2018), "Mental Illness Destroys Happiness and is Costless to Treat", Global Happiness Policy Report.

on emotional health and behaviours to students. It is now well accepted that the emotional health and behaviour of children and teenagers have a large impact on their later lives: these characteristics predict university attendance, work, earnings outcomes in adulthood as well as people's long-run social and health outcomes (see Layard et al., 2014; Clark et al., 2018). Wellbeing education for young people has therefore become a focus of interest for the UK government.

The curriculum consisted of weekly one-hour lessons for students in school years 7 to 10 (ages 11 to 15) and aimed at enhancing specific aspects of a student's wellbeing and behaviour, including building resilience, navigating social media, looking after mental health, developing healthy relationships, etc. A pilot study has shown that the *Healthy Minds* curriculum improved students' life satisfaction, general health and behaviour (Lordan and McGuire, 2019). Focusing on life satisfaction, teaching the *Healthy Minds* curriculum improved life satisfaction by 0.7 points on a 0-10 scale and the total cost of the programme was only £94 per student.[20]

Based on these results, the UK government decided to make this type of education compulsory beginning in 2020.

Other examples

Other examples of policy evaluations using subjective wellbeing data include the effects of unemployment benefits (Di Tella, MacCulloch and Oswald, 2003; Bechetti, Castriota and Giuntella, 2010), workfare programmes (Crost, 2016; Knabe, Schöb and Weimann, 2017),[21] the regulation of working hours (Alesina, Glaeser and Sacerdote, 2005), employment protection (Dräger, 2015), and the effect of mandatory retirement (Charles, 2004). Research on subjective wellbeing has also produced various insights on taxation policies, housing conditions and environmental issues. See Odermatt and Stuzer (2017) and OECD (2019) for a full description of examples of policy evaluations based on subjective wellbeing.[22]

Housing is an important policy area in most developed countries, and in particular in New Zealand. Programmes of high-intensity support for the homeless have, for instance, been evaluated in Canada and in the UK using subjective wellbeing data (see for instance Stergiopoulos (2015)). The Canadian trial was large and involved an extensive group of agencies for measuring outcomes. Some 2,148 homeless individuals across Canada, with new cases starting from 2009 to 2011, were randomly assigned to intensive housing-and-social support help for 24 months until 2011 and 2013. Each six months, they were intensively interviewed. The key wellbeing outcome was life satisfaction on a 0-6 scale. The life satisfaction benefits of the programme were estimated to be 0.22 points in the first year and 0.18 points in the second year compared to the control group.

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[20] Lordan, G. and McGuire, A. (2019), "*Healthy Minds*: the positive impact of a new school curriculum", *CentrePiece*, http://eprints.lse.ac.uk/101236/1/Lordan_healthy_minds_the_positive_impact.pdf
[21] Based on panel data for Germany from 1992 to 2004, Crost (2016) studies whether workfare programs, as a key part of the active labour market policy in Germany, reduce the negative effect of unemployment on subjective wellbeing. The paper finds that workfare employment offsets part of the negative effect of unemployment on individual life satisfaction, at least in the short run.
[22] OECD (2019), "The economy of wellbeing". OECD working paper series. https://www.oecd-ilibrary.org/economics/the-economy-of-wellbeing_498e9bc7-en;jsessionid=EBwvJZvlzLR708LLjxrUEjp_.ip-10-240-5-76.

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Results from evaluations which involve subjective wellbeing data are useful for policy making if:

- wellbeing estimates are obtained from well-designed randomized controlled trials
- or if there are naturally occurring conditions which allow us to replicate randomization such as natural experiments, randomized encouragements, etc.
- or if appropriate quasi-experimental techniques are applied
- AND if the same individuals are followed through time before and after the policy change to get pre- and post-treatment data and allow us to compute how much changes in life satisfaction can be attributed to the policy (longitudinal surveys).

To go forward, we now need more evaluations of policy interventions based on experimental research designs and longitudinal surveys with high public impact that target population wellbeing explicitly and which can help generate the necessary public momentum to push governments towards using subjective wellbeing as a policy evaluation metric (see Box 3).

Box 3. Applications of wellbeing thinking to evaluations of six programmes from UK departments and institutions (Frijters and Krekel, 2021)

In their *Handbook for wellbeing policy-making*, Paul Frijters and Christian Krekel provide examples of 6 cases supplied by departments and institutions in the UK where wellbeing insights can complement existing evaluations and appraisal of policies:

(1) a country-wide traineeships programme aimed at reducing the share of young people who have NEET (Neither in Education, Employment or Training) status.
(2) an evaluation of the Human Henge intervention, which is a participatory mental health intervention exploiting the historical landscape in a participatory manner to reduce mental ill health.
(3) an impact evaluation of the 2017 Hull City of Culture from a wellbeing perspective.
(4) an employer survey, conducted by the Department for Work and Pensions, to study health and wellbeing at work.
(5) a study of commuting and its impact on wellbeing.
(6) a re-evaluation of the Heathrow extension appraisal done by the Airports Commission from a wellbeing perspective.

The results show how these policies in different areas can be compared on a single metric with the use of subjective wellbeing and provide evidence of the cost-effectiveness of these policies using subjective wellbeing data.

C. Monitoring subjective wellbeing over time

The third main use of subjective wellbeing data is to provide information on aggregate changes at the national level and alert policy makers to issues that other social and economic indicators may fail to identify. For example, Grimes, Oxley and Tarrant (2012), show that life satisfaction adds significant explanatory power to a model of migration flows across the OECD, over and above GDP per capita, indicating that life satisfaction captures information relevant to people's actual choices beyond traditional economic measures. One recent example where measures of subjective wellbeing clearly demonstrate their ability to capture important elements of wellbeing not captured by traditional measures is the COVID-19 pandemic.

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Impact of the COVID-19 crisis

In many countries, surveys have been set up to examine the impact of the COVID-19 pandemic on many dimensions of wellbeing (along with, of course, the most relevant dimensions of their physical health and material situation). These *ad hoc* surveys have been extremely helpful in providing timely indicators of the impact of the pandemic and the vast array of policies deployed to contain or mitigate it. While it is beyond the scope of this document to summarize the already vast literature on this topic, it currently paints a concerning picture. Many surveys underline a deterioration in key elements of overall wellbeing, such as higher levels of anxiety, depression or insomnia. While many studies have analyzed the effects of lockdowns and restriction policies on the economy, others have shown strong and significant effects of these policies on individuals' wellbeing. To be useful, these studies need to be able to compare current levels of subjective wellbeing with initial levels of wellbeing prior to the pandemic.

One interesting feature, however, of these studies is that national life satisfaction averages have remained remarkably stable in 2020 compared to the years before.[23] In France, our own dashboard illustrates a significant gap between contemporary and retrospective assessments. When asked about their experienced happiness in the quarterly 2020 waves of our survey, respondents' ratings increased after the end of the first lockdown, and eroded afterwards. When prompted to assess the *previous* year, however, 2020 respondents evaluated 2019 much more positively than the actual average happiness measured in 2019, suggesting that they remembered 2019 more favorably than how they experienced it at the time. Similarly, there is a large gap between observed 2020 experienced happiness levels (a mix of highs and lows) and the assessment of 2020 made by the respondents of the first two 2021 waves (2020 remembered unambiguously as an unhappy time). In other words, contemporary wellbeing evaluations may be a good guide on how people are coping faced with a difficult situation, but may understate the toll that this coping actually takes on their long-term wellbeing.
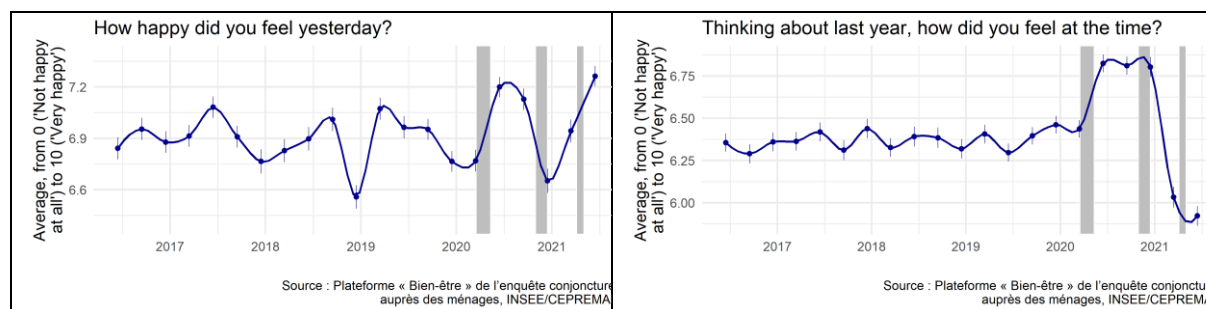
Figure 1: Contemporary (left) and retrospective (right) happiness in France.
Grey areas denote lockdowns in mainland France.

Over the next few years, additional panel data will provide a more consistent picture of the long-run impacts of the pandemic and especially the possible scarring effect of a year of reduced social contacts on people's wellbeing. They will also allow us to identify individuals who are more at risk of long-term mental health problems that outlast the pandemic and could not return "to normal", a rising concern according to public health experts.

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[23] This point is underlined and discussed in the 2020 edition of the World Happiness Report: Helliwell, John F., Richard Layard, Jeffrey Sachs, and Jan-Emmanuel De Neve, eds. 2021. *World Happiness Report 2021.* New York: Sustainable Development Solutions Network.

D. Subjective wellbeing as an input to economic appraisal

In practice, how could a policy maker decide whether a policy change is desirable based on subjective wellbeing data? Using one common metric such as life satisfaction enables the evaluation of different policies with a common yardstick. It is a useful tool for judging the trade-offs between different policies and deciding how to allocate government expenditures. In their *Handbook for wellbeing policy-making*, Paul Frijters and Christian Krekel provide a detailed discussion on how to use these wellbeing metrics for policy evaluation.

The use of QALYs (quality-adjusted life-years) in health has been widely adopted in the UK and other countries for 20-30 years. QALYs are based on surveys of respondents who have to evaluate hypothetical health states. Those measures have then become the basis for judging the effectiveness of new medicines and health procedures.

With colleagues at the London School of Economics, Richard Layard has developed a framework of WELLBYs (wellbeing adjusted life-years), as an extension to QALYs, to assess the desirability of policy interventions (see for instance Clark et al., 2018; Frijters et al., 2020; Layard et al., 2020). The idea is to compute the WELLBY change in the population for every policy, that is, how much life satisfaction would change for a person for one year, and compare it to the costs of the policy. In this wellbeing cost effectiveness analysis, a policy will be adopted only if the net discounted wellbeing benefits of the policy exceed the net discounted costs. If the budget is constrained, policy makers adopt only policies with the highest ratio of benefits to costs until the budget runs out.

One advantage of this methodology is that all effects of a policy on subjective wellbeing, both direct and indirect, are considered and compared to the costs. Another advantage is that we do not have to compare the value of money with the value of other non-financial benefits. This will complement more traditional cost-benefit analysis performed by governments. Of course, there are many policies where the main measurement benefits are in money, and it could be natural to use monetary units in the analysis. These policy areas may include education, industry, employment and transport. However, in all of these, there will be some elements of non-pecuniary effects where the original measurements are in units of wellbeing. One example where the wellbeing costs are likely to outweigh observable material consequences are climate-related extreme events (see Box 4).

Box 4. Climate change impacts: natural disasters

It is now well known that one of the most tangible signs of climate change will be an increased frequency of climate-related extreme events: droughts, heavy rainfalls, fires, etc. Of course, these events can have huge material impacts, but wellbeing metrics show that these events have impacts over and above their financial costs. At the aggregate level, cross-sectional research highlights asymmetric effects of economic shocks: wellbeing losses due to a macroeconomic downturn have a higher magnitude than the gain to a comparable period of economic growth.[24] UK panel data show that heavy rainfalls have an additional impact on life satisfaction even when considering all their observable material consequences.[25] Policy-wise, this means that climate change mitigation and disaster prevention should be given a higher priority than their mere economic consequences would warrant.[26] Recognition of the growing relevance of subjective wellbeing data in this area is reflected by two New Zealand researchers recently using the Australian HILDA panel to examine the life satisfaction impact of weather-related house damage.[27]

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[24] Patiño, D., Gómez-García, F. & Marín-Serrano, A. Subjective wellbeing and Aversion to Macroeconomic Losses: New Evidence. *J Happiness Stud* (2021). https://doi.org/10.1007/s10902-021-00401-5.

[25] Michael Berlemann, Judith Regner and Jascha Tutt, "Natural disasters and self-reported wellbeing: empirical evidence for rainfall extremes in the United Kingdom", in *Handbook on wellbeing, Happiness and the Environment*, Chap. 13, Edward Elgar, 2020.

[26] We are of course aware that the many active volcanoes on the North Island and the associated seismic activity (with the dramatic example of the 2011 Christchurch earthquake) makes New Zealand very active in the disaster prevention area.

[27] Gunby, Nicholas and Coupé, Tom, (2021), Weather-Related House Damage and Subjective wellbeing, Working Papers in Economics, University of Canterbury, Department of Economics and Finance.

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2. What are the major longitudinal surveys using subjective wellbeing data and what can we learn from them?

Surveys come into two broad categories. **Cross-sectional** surveys collect data on a representative sample of a given population (general population, young people, parents, car users). Each person is typically asked only once, subsequent waves of the survey drawing a new set of people. By contrast, **longitudinal (or panel)** surveys follow the same set of people over time. Compared to cross-sectional surveys with a similar number of respondents, panel surveys are more expensive. They must actively track people across relocations, changes in phone number or mail address, and convince a large enough number of them to actually answer the questions. They do not have the cross-sectional option of replacing an unreachable or reticent person with another one of comparable socio-demographic characteristics. However, as we will discuss below in detail, panel data can produce more robust wellbeing estimates of a policy change than cross-sectional data because they allow comparisons of the same individuals through time, before and after the policy change, instead of cross-individual comparisons.

A. General population panels

There are relatively few large-scale, reliable general population panels including subjective wellbeing data. As a result, most wellbeing analyses come from a handful of samples in a few countries. This raises questions about external validity and the robustness of these findings in other countries and societies.

Table 1: A selection of the main panels including subjective wellbeing questions

Name	Country	Sample size	Dates	Structure
Household, Income and Labour Dynamics in Australia HILDA	Australia	17 000 (persons)	2001 -	Full panel
German Socio-Economic Panel SOEP	Germany	11 000 (households)	1984 - (former W. Germany) 1990 - (former East Germany)	Full panel
British Household Panel Survey	United Kingdom	5000 - 10 000 (households)	1996 - 2009 1999 - 2009 (Scotland and Wales)	Full panel

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Name	Country	Sample size	Dates	Structure
			2001 - 2009 (N. Ireland	
Understanding Society	United Kingdom	40 000 (households)	1991 - (BHPS households) 2009 -	Full panel
Statistiques sur les Ressources et les Conditions de Vie SRCV	France	18 000 (households)	2010 - (WB questions)	Rotating panel 2009 - 2018: 9 years 2019 - : 4 years
Panel Study of Income Dynamics PSID	United States	9 500 (households)	2009 - (WB questions)	Full panel

Although all these panels are wide-ranging in their range of questions, some have a specific focus. For example, the French SRCV panel is largely devoted to the measurement and analysis of monetary and non-monetary policy. It includes detailed questions on incomes and transfers, cross-linked with fiscal data, and on consumption and savings patterns, such as the ability to pay bills on time, heat properly, buy new clothes or the ability to face an unexpected € 1000 expenditure. In this respect, it is very similar to the Living in Aotearoa survey in terms of objectives and in the range of questions. As part of the Europe-wide SILC program, it includes one-off and rotating modules on specific topics ranging from a detailed subjective wellbeing module (rotating) to loneliness or Internet use.

B. Specific population panels

Alongside general population panels, a few topic-specific panels include subjective wellbeing questions. Most notably, the Survey of Health, Ageing and Retirement in Europe (SHARE) panel now includes more than 140 000 persons aged 50 or older from Europe and Israel. To date, this panel has been the source of many scientific and policy publications about the wellbeing, health and economic situation of older European individuals. We mention this panel here because it underlines the importance of having comparable data across geographies and populations. For the Living in Aotearoa survey, this means that the wording of the wellbeing questions should be as similar as possible to that of reference surveys.

C. Cohort studies

Other surveys which include subjective wellbeing data are cohort studies. Cohort studies usually collect data on a group of people, often of the same age or birth year, for a long period of time. However, the majority of cohort datasets used to analyze wellbeing are fairly recent. Some exceptions are the Wisconsin Longitudinal Study (which collected data on people born in 1938/1939), the National Child Development Study (which started in 1958), the British Cohort Study (1970) and the Dunedin Study (1972). More recent cohort studies include the Christchurch Health and Development Study (1977), Growing up in New Zealand, the Millennium Cohort Study and the Avon Longitudinal Study for the UK, or the French Longitudinal Study of Children (ELFE). One advantage with cohort studies is that complete information on childhood is available which allows us to evaluate long-term correlates of wellbeing. Of course, one drawback with cohort studies is that individuals born in 1938 may be different to those born in 1958 or 1970. Longitudinal panel surveys allow us to deal with this issue by collecting information on different cohorts who reach comparable ages at different points in time.

D. Longitudinal surveys can deliver more robust estimates

Subjective wellbeing data are available in large cross-sectional surveys, like the US, European, or New Zealand General Social Surveys. However, cross-sectional studies suffer from important drawbacks, which can affect the analysis and limit the policy implications that can be drawn from such studies. Collecting panel data surveys that follow the same individuals through time to measure subjective wellbeing should be favored to inform policy debate about key drivers of wellbeing. The OECD High Level Expert Group on the Measurement of Economic Performance and Societal Progress, strongly argues for the use of longitudinal wellbeing data.[28]

Cross-sectional surveys can be problematic for several reasons:

> (i) **measurement errors and reporting bias** (e.g., the tendency of optimistic people to report higher level of wellbeing)

> (ii) **omitted variable bias** (i.e., important unobserved variables are not included in the regressions and could explain part of the differences observed across individuals)

> (ii) **reverse causality or simultaneity bias** (e.g., unemployment decreases subjective wellbeing, but unhappy people may be more likely to become unemployed in the first place)

All these biases prevent cross-sectional studies from delivering robust causal estimates of what matters for people's wellbeing and can only produce correlations. However, using subjective wellbeing analyses to inform policy makers requires solid evidence of *causal links* between one factor and its effects on people's wellbeing. Panel data allows statistical analysis that can reduce those biases and identify how changes in one person's situation (e.g., becoming unemployed, married, poor, etc.) are related to changes in one person's wellbeing. More precisely, we can compare the same individuals over time instead of different individuals across them. This allows elimination of reporting bias - assuming that personality traits such as optimism remain constant over time. It also reduces the omitted variable bias as time-invariant unobserved characteristics can be dealt with individual fixed effects and only changes in one person's wellbeing are

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[28] https://www.oecd.org/statistics/measuring-economic-social-progress/

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considered in the analysis. Finally, it allows for methods that grapple with reverse causality by analyzing how shocks or life events which occur at time *t* influence an individual's wellbeing in future years, that is in *t+1, t+2, t+3* considering the initial level of a person's wellbeing at time *t-1, t-2,* etc.

E. Insights from longitudinal well-being surveys

Reducing omitted variable bias

The results presented in the *Origins of Happiness* using the BHPS, SOEP and HILDA surveys illustrate this. In Table 2 we present results implementing a cross sectional analysis and a panel analysis. The coefficients estimated from the cross-sectional data implies that as income is multiplied by two, life satisfaction increases by 0.16 – 0.26 points on a 0 – 10 scale. Being unemployed decreases life satisfaction by 0.31 – 0.99 points compared to being full-time employed. And being partnered improves life satisfaction by 0.32 – 0.57 points compared to being single. This would imply fairly large effects of all these factors on one's individual wellbeing.

However, these cross-sectional estimates could be biased by omitted personal variables (i.e., variables not included in the regressions): for example, if more attractive people are more likely to find a partner and also to be happier. Omitted variables that do not change over time can be controlled for by including individual fixed-effects, provided that we have two or more observations on the same individual, as can be done using longitudinal data. As expected, when including those fixed effects, the estimated effects are reduced. We find that doubling income increases life satisfaction by 0.04 – 0.08 points, becoming unemployed decreases life satisfaction by 0.18 – 0.71 points, and finding a partner increases life satisfaction by 0.16 – 0.26 points. Therefore, the coefficients are often **two to four times smaller** than the ones from cross-sectional regressions. Of course, there could still be statistical problems here, but the truth is probably closer to these fixed-effect results than to the cross-sectional estimates.

Table 2: *How is life satisfaction affected by adult circumstances?*
(Household panel data)

	Britain (BHPS)		Germany (SOEP)		Australia (HILDA)	
	Cross-section	**Panel**	**Cross-section**	**Panel**	**Cross-section**	**Panel**
Log own income	0.161	0.039	0.256	0.077	0.162	0.059
	(0.012)	(0.012)	(0.012)	(0.011)	(0.012)	(0.010)
Years of education	0.025		0.049		-0.013	
	(0.003)		(0.003)		(0.004)	
Self-employed	0.058	-0.040	-0.078	-0.035	0.005	0.027
	(0.026)	(0.034)	(0.027)	(0.035)	(0.026)	(0.023)
Employed part time	0.026	-0.005	-0.027	-0.108	0.076	0.012
	(0.020)	(0.023)	(0.021)	(0.019)	(0.018)	(0.013)
Unemployed	-0.701	-0.458	-0.985	-0.708	-0.313	-0.177

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	Britain (BHPS)		Germany (SOEP)		Australia (HILDA)	
	Cross-section	**Panel**	**Cross-section**	**Panel**	**Cross-section**	**Panel**
	(0.036)	(0.038)	(0.031)	(0.027)	(0.032)	(0.024)
Not in labor force	-0.286	-0.135	-0.104	-0.143	-0.044	-0.040
	(0.023)	(0.027)	(0.018)	(0.016)	(0.024)	(0.019)
Partnered	0.567	0.263	0.317	0.157	0.404	0.244
	(0.023)	(0.035)	(0.025)	(0.029)	(0.024)	(0.020)
Separated	-0.182	-0.147	0.020	0.021	-0.208	-0.259
	(0.036)	(0.060)	(0.033)	(0.044)	(0.043)	(0.039)
Widowed	0.075	-0.042	0.065	-0.312	0.119	-0.218
	(0.078)	(0.117)	(0.071)	(0.137)	(0.098)	(0.124)
Parent	0.026	0.063	0.157	0.084	0.031	0.028
	(0.017)	(0.022)	(0.017)	(0.017)	(0.024)	(0.023)
Physical health	0.197	0.118	0.214	0.042	0.172	0.036
	(0.009)	(0.009)	(0.009)	(0.008)	(0.009)	(0.006)
Emotional health (one year lagged)	0.767	0.090	0.469	0.087	0.097	0.023
	(0.008)	(0.008)	(0.009)	(0.007)	(0.008)	(0.005)
Female	0.236		0.176		0.112	
	(0.023)		(0.017)		(0.019)	
Age	-0.122	-0.061	-0.075	-0.038	-0.117	-0.073
	(0.007)	(0.017)	(0.007)	(0.017)	(0.006)	(0.017)
Age squared	1.396	0.645	0.809	0.411	1.394	0.846
	(0.076)	(0.102)	(0.075)	(0.087)	(0.069)	(0.067)
Observations	155,333	169,057	140,821	148,238	118,979	121,040
R-squared	0.183	0.014	0.226	0.020	0.080	0.015

Source: The Origins of Happiness (2018)

Notes: Each column represents estimates from OLS or fixed-effects regressions of life satisfaction on a set of individual characteristics which include income per head, years of education, being self-employed, employed part-time, unemployed, not in the labor force (reference category: employment full-time), being partnered, separated, widowed (reference category: being single), having children, physical health, mental health (one year lagged), being female, age, and a quadratic in age. Standard errors are reported in parentheses.

More sophisticated analyses of events (e.g., unemployment, retirement)

The long shadow of unemployment

Using longitudinal surveys instead of cross-sectional data also allows for testing more sophisticated behavioural hypotheses. For instance, in the *Origins of Happiness*, using the BHPS,

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SOEP and HILDA surveys, it is possible to examine whether people adapt to unemployment after a while - such evaluation would not have been possible with cross-sectional data.

*Figure 2: Adaptation to unemployment? (Household Panel Data)*
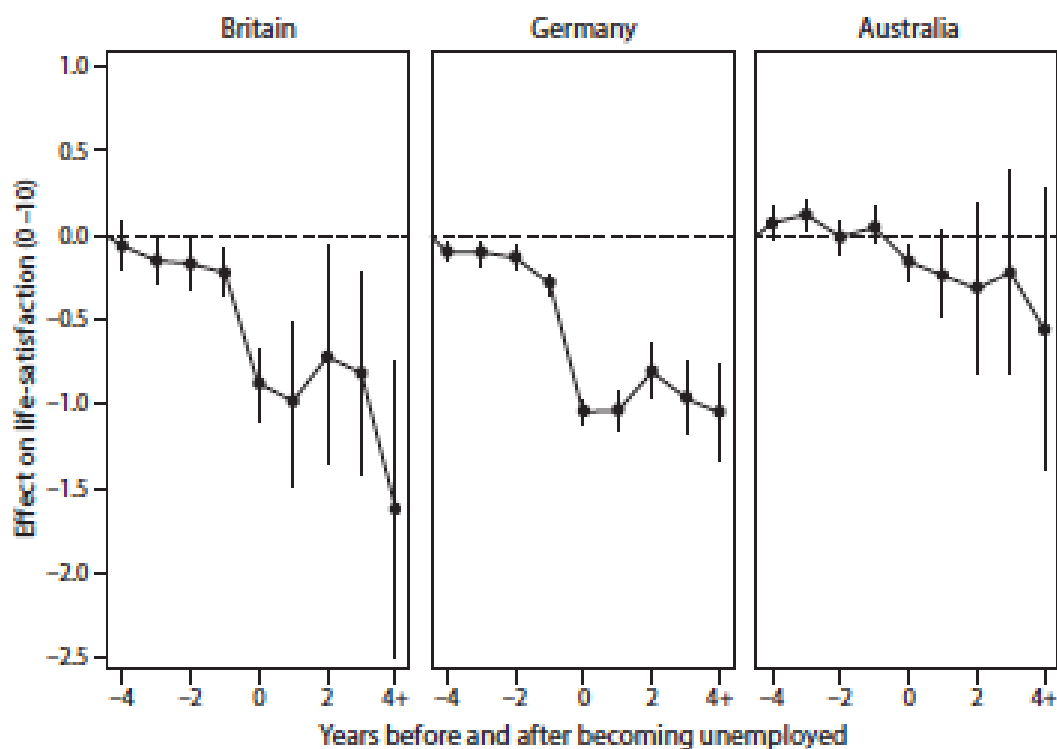
Source: The Origins of Happiness (2018)

And the answer is no. We study the same individuals in the first years before the first spell of unemployment began and in subsequent years for those who were still unemployed. The results reveal that unemployment reduces life-satisfaction by nearly 1 point in the first year of unemployment in Britain and Germany, and life-satisfaction remains at least this low so long as the person remains unemployed. These findings have important implications; this means that unemployment causes pain not only at the time but also to a lesser extent over the years of unemployment that follow.

The real impact of retirement

Another example of the utility of longitudinal wellbeing data is estimating whether people experience lower, higher or the same level of wellbeing when they become retired. We know that life satisfaction follows a U-shape along the lifecycle according to cross-sectional surveys - that is, life satisfaction is highest in early adulthood and declines with time, bottoming out sometime in middle age, until it increases again around 60 years of age (and eventually declining again). The sometimes-steep increase of average life satisfaction around the age of 60 suggests that retiring may have strong wellbeing benefits. This empirical finding is illustrated on French data in Figure 2, where we use the SRCV survey as a cross-sectional survey. It would be then tempting to conclude from that finding that an increase of the retirement age entails significant and widespread wellbeing costs.

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Figure 3: Average life satisfaction by age in France (SRCV)
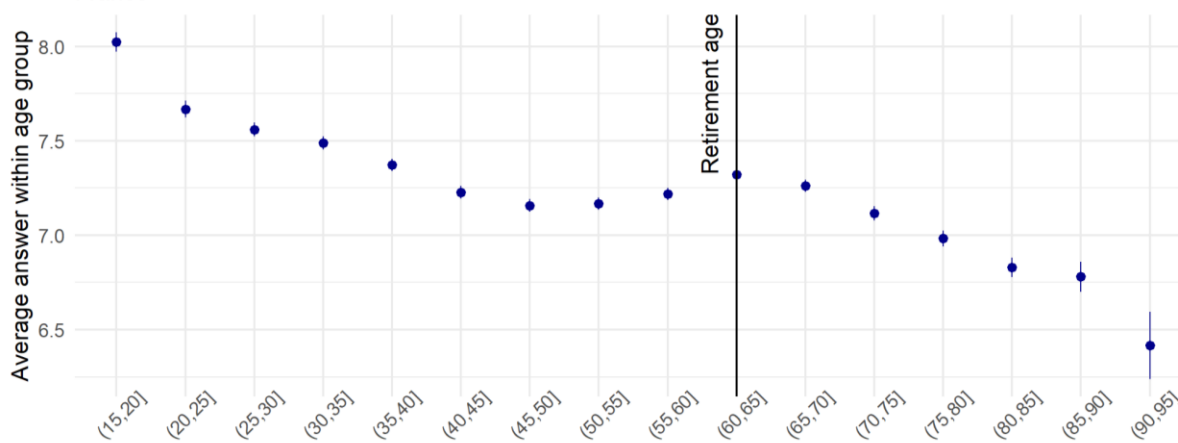
SRCV 2010-2019, Insee

However, in the case of France, such inference would be misleading, but panel data is required to show it. Using the SRCV survey over 10 years, we were able to monitor a thousand individual transitions to retirement. The analysis shows a wide heterogeneity, but also policy-actionable findings. For most people, especially for those going from employment to retirement, the transition is mostly neutral in terms of life satisfaction: their average life satisfaction remains comparable from five years before to five years after their first retirement years. However, those who transition from *unemployment* to retirement experience a major boost in life satisfaction, a boost that remains significant up to four years after retirement.

Figure 4: Life satisfaction, before and after retirement, in France (SRCV)
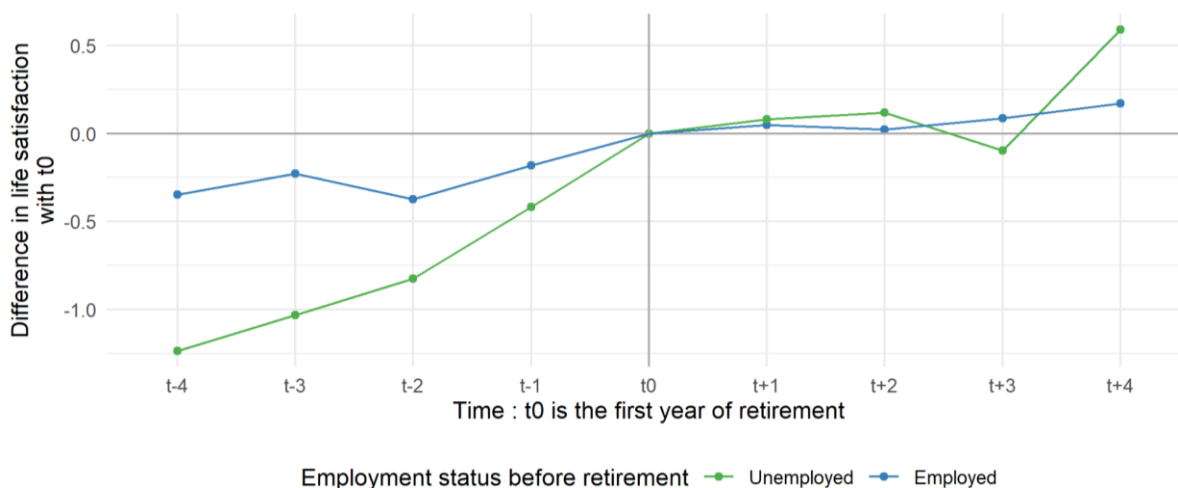
SRCV, 2010-2017, Insee.
Obs : 6 649

Since unemployment is a major issue for older workers in France, the share of people transitioning from unemployment to retirement and the magnitude of the wellbeing boost means that this group influences the average life satisfaction, giving, at the aggregate level, the illusion of an overall life satisfaction increases with retirement. Policy-wise, this means that the retirement age may matter less for this age class than an increase in the employment share of older workers. This entails obviously different policy implications, such as a focus on lifelong training and learning. This study also showed that among people who were employed just before retirement,

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blue-collar workers also experienced a life satisfaction boost, albeit more modest than unemployed people, adding weight to the idea of occupation-specific retirement schemes.

Other examples of uses of longitudinal panel data include studies of the effect of poverty on subjective wellbeing and in particular whether people adapt to poverty (Clark et al., 2016).[29] Odermatt and Stutzer (2020) and Clark and Diaz-Serrano (2021) have also investigated whether homeownership makes people happier. Using German panel data, they provide evidence that moving into a purchased dwelling is associated with higher life satisfaction. However, using people's forecasts of their life satisfaction in five years' time, they also show that people tend to systematically overestimate the long-term satisfaction gains from home ownership.[30]

Mitigating selection bias in programme evaluation

Finally, using cross-sectional data to evaluate the impact of programmes - for example, comparing people who benefited from a programme like the IAPT programme or the *Healthy Minds Project* to people who did not - is problematic because such evaluations suffer from the fact that people receiving the programme are likely to be different from those who do not receive the program, even before they started using the programme (selection bias). If panel data are available for individuals before and after the implementation of the program, analysts can be more confident that people were similar before the programme began, or control for pre-programme differences. In this way, panel data can help disentangle the treatment effect from other factors that could affect individuals' wellbeing.

F. Working with rotating panel data

The Living in Aotearoa survey has a rotating panel design, with households staying in the panel for a maximum of six years. Compared with conventional panels, rotating panels come with specific challenges and limitations. By construction, they do not allow assessment of the impacts of an event at longer time horizons than the time each household stays in the panel. With the current Living in Aotearoa survey design, this means that six years will be the maximum available assessment horizon. This prevents investigation on long-term factors of wellbeing, for example the impacts of child poverty on young adults' wellbeing.

This limitation comes with a silver lining however. The entry of new households in the panel means more frequent observations of events that happen once or a few times in a lifetime, such as retirement, the arrival of a child, bereavement, marriage, etc.[31] A rotating panel will thus

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[29] Clark et al. (2016) investigate the link between poverty and subjective wellbeing using data from the German Socio-Economic Panel. They find that life satisfaction falls both with the incidence and intensity of contemporaneous poverty. They also show that there is little evidence of adaptation within a poverty spell: poverty starts bad and stays bad in terms of subjective wellbeing.

[30] Odermatt, O. and Stutzer, A., "Does the Dream of Home Ownership Rest upon Biased Beliefs? A Test Based on Predicted and Realized Life Satisfaction", I IZA Discussion Paper No. 13510, https://www.iza.org/publications/dp/13510/does-the-dream-of-home-ownership-rest-upon-biased-beliefs-a-test-based-on-predicted-and-realized-life-satisfaction

[31] For instance, most people marry first in the 20s- early 30s. With a regular panel, we won't observe many first marriages as the cohort ages. With a rotating panel, we may expect young couples to enter each year, with some odds of marrying while in the panel.

provide more occurrences of such events than a comparably-sized regular panel. It can then be easier to study, let's say, the impact of retirement on wellbeing in a rotating panel.[32]

Finally, another advantage of the rotating structure is that it provides a built-in solution to attrition. Due to life events and the difficulties of following people across places, conventional panels typically suffer from increasing attrition issues. With a rotating panel, attrition is limited to a relatively short span and people dropping out of the survey are replaced when their subpanel exits.

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[32] By construction, it is not possible to have outcomes for people who have left the panel. With a 6-year rotating panel structure, the longest possible horizon is five years, and estimates at that horizon will depend on the subpopulation entering the panel, e.g., people retiring during their first year in the panel and after data collection.

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3. Prospective research avenues for the Living in Aotearoa subjective wellbeing data

In the sections above we highlighted how longitudinal subjective wellbeing data can provide useful insights for several policy challenges of the coming decades. While *qualitatively* useful to define broad policy avenues, practical policy-making requires a reliable, fine-grained measurement of the wellbeing impacts of various factors in the specific national or local context. The inclusion of subjective wellbeing questions in the Living in Aotearoa survey will provide such actionable knowledge for New Zealand. In the following section, we provide some examples of areas in which such information can provide useful insights in a reasonable time horizon.

RCTs and panel data evaluations

First, we would like to highlight the complementarity that exists between randomized controlled trials (RCTs) and panel data evaluations. RCTs are currently the gold standard for demonstrating the causal impact of a given intervention on a set of pre-defined outcomes. By construction, RCTs function only when people can be randomly assigned to a treatment and control group,[33] They work best when there are few spillovers to non-participants and when the impacts are short- to medium-term.

Panel data are weaker when it comes to ascertaining the pure causality between an intervention and an outcome since most of the time, people are not assigned randomly to a policy effect. They however have an advantage over RCTs, as they are simpler and cheaper to collect than RCTs, which need to be tailored to the expected population and area of effect.

In a research-policy workflow, the two approaches would be useful at different points of the process. Initially, panel data are essential to identify areas of low wellbeing, misery-generating events and the life path that lead people to a better or worse life. That is, providing ideas for policy interventions. RCTs can then be used to demonstrate the validity (or not) of these policy ideas and refine the policy implementation of them. Panel data then come back for the evaluation of the policy once it is implemented.

Based on existing research and the Living in Aotearoa design, we outline below some examples of how the Living in Aotearoa survey could be used to assess the impact of various events/policies and complement existing knowledge.

A. One-time events: from natural disasters to the Olympics

Once the baseline measurement of subjective wellbeing is in place, the impact of one-time, reasonably large events can be readily measured (e.g., natural disasters, pandemics, green infrastructures, local elections, Olympic games, sport competitions, etc.). In most instances, the issue of self-selection is low for such events: some risk-averse households may choose to locate in less quake-prone areas of the country, a few sports enthusiasts may move to be closer to the stage of a big international competition, but in general, the low frequency of these events makes them

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[33] You must be able to *exclude* people from the policy at some point. This makes it impossible to evaluate the provision of goods or services that have a nationwide reach, for example the Olympic games, with a RCT.

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irrelevant for most choices. Hence, event impact can be reliably estimated with wellbeing measurement of the same persons before and after the event.

With a large sample size relative to the population and geocoded data,[34] the Living in Aotearoa survey can provide usable estimates for events or infrastructures affecting one of the main population centers or large enough areas that might occur three to four years after data collection begins. However, the rotating nature of the panel could be an issue for very localized events. In this case, we suggest setting up an emergency procedure to collect data on households not normally in the data collection process that year, but affected by important events. For example, if a new earthquake were to occur in the Christchurch area, it could be worthwhile to consider extra waves of data collection on households that were included in previous waves of the panel and lived in the affected area.

B. Life events

With detailed information on income, housing costs, household composition, individual employment history and location choices, the impact on subjective wellbeing of key life events can be measured using the Living in Aotearoa survey. The effects of these events and whether individuals adapt to them may depend on cultural influences, including factors such as psychological resilience in the face of adversity or social networks, but also the institutions of the country they live in and the policies that are put in place. Although some results described above from other countries are likely to apply to New Zealand, other findings may not translate well.

For instance, the life satisfaction penalty of being unemployed has been observed in many countries, with some variations (the penalty tends to be higher in countries with more generous unemployment benefits, for example). We thus expect that the transition from unemployment to retirement will lead in most countries to a significant life satisfaction boost. Other findings may not translate well. For most people, retiring means a simultaneous drop in income and increase in leisure. The overall effects on life satisfaction will thus depend on the size of the income loss, which varies according to the local public and private retirement schemes and retirement savings. Furthermore, we have shown in previous work[35] that the implicit weight of income in life satisfaction is different even between European countries. Estimating each of the components of a tradeoff like this requires local data, and so longitudinal data from New Zealand is what is needed to examine policy impact in New Zealand.

One caveat is that, even with a large sample size, the number of key life events (marriage and civil unions, birth, bereavements, job losses, retirements, relocations, etc.) may be initially limited among members of the panel. Moreover, both the frequency and the impact of these events can be affected by context-specific or cohort-specific elements. For example, the COVID crisis probably led to the postponement of many weddings (especially among couples with some family living overseas) and (at least in France) led to a sharp reduction of births in 2020. A horizon of seven to ten years of panel data collection looks like a reasonable estimate before the Living in Aotearoa survey can be used for these purposes.

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[34] Some papers have already linked geospatial data with NZ surveys. See for instance Hobbs et al. (2021) (https://www.sciencedirect.com/science/article/abs/pii/S0091743520304473); Nutsford et al. (2016) (https://www.sciencedirect.com/science/article/abs/pii/S1353829216300119)
[35] Algan et al., Les Français, le bonheur et l'argent, 2018.

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C. Policy interventions

One important strength of the Living in Aotearoa survey with respect to these longitudinal analyses will be the possibility of assessing the causal impacts of interventions such as active labour market policies, placement in social housing, child support, retirement age and pension reform[36] through the Integrated Data Infrastructure. This will be possible by investigating the change in wellbeing before and after the implementation of a policy for the same individuals, which goes beyond existing studies using cross-sectional data, and complement more standard evaluations based on economic and social outcomes. The use of the Integrated Data Infrastructure in combination with longitudinal wellbeing data will be unique in this respect, and could make the Living in Aotearoa survey the go-to-source data for policy evaluations worldwide. Such estimates would, however, require a credible counterfactual. While not approaching the certainty of RCTs, quasi-experimental methods exist to construct such counterfactuals, including difference in differences, matching, or regression discontinuity designs.

A prime example would be the effect of receiving a placement in social housing. In 2018 and 2019, the Social Investment Agency evaluated the impact of placement in social housing by linking IDI placement data with the wellbeing elements collected in the (cross-sectional) NZGSS.[37] While the methodology used is innovative and provides interesting results, it cannot account for unobserved individual-specific effects the way panel data would allow, and cannot provide insights on the longer-term effects of placement. Depending on the pace of social housing placement, more robust estimates could be obtained from the much larger Living in Aotearoa survey in four to five years. In a decade, long-term effects of placement could also be ascertained.

D. Family environment, education and long-term factors of wellbeing

The impact of family environment and early life events on child wellbeing could be measured using the Living in Aotearoa survey. In most cases, cohort studies are used to assess such effects. The Living in Aotearoa survey will capture information on parents' income, labour force status, housing and health conditions. A module on children will collect data about their material conditions, whether they have health difficulties, their behaviours and their emotional health. This matched information on parent characteristics and child wellbeing will make the Living in Aotearoa survey especially valuable in evaluating the impact of family environment, housing conditions and early life events on current and future children's wellbeing. In addition to measuring impact, the survey can provide new estimates of the multidimensional wellbeing of

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[36] While the New Zealand Superannuation scheme is fairly simple, many pension systems have much more complicated structures, depending on years in employment, employment sector, past earnings, age at retirement, and actuarial solvency constraints. Faced with an ageing population and dismal growth, many European countries have been tweaking the various parameters of their pensions systems for years. Wellbeing provides a unique perspective to weigh the trade-off between earlier retirement and more generous pensions.

[37] Social Investment Agency 2018. Measuring the wellbeing impacts of public policy: social housing. Using linked administrative and survey data to evaluate the wellbeing impacts of receiving social housing. Wellington, New Zealand and Social Investment Agency 2019. Measuring the impact of social housing placement on wellbeing.

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children in New Zealand (enabling policy makers to sound the alarm if needed), and may help identify indicators that are predictive of high as well as low wellbeing in adulthood.

Of course, long-term data collection will be necessary to obtain estimates of how childhood circumstances may affect future adult wellbeing. This would be feasible in a horizon of fifteen to twenty years (though understanding factors behind current child wellbeing is itself sufficient motivation for the survey). In order to fully maximize the potential to examine long-term wellbeing dynamics, a complementary module would be necessary where children included in the Living in Aotearoa survey in earlier years could be followed when they become teenagers or adults.

Other key areas are discussed in Box 5.

E. Cultural identity

Finally, the Living in Aotearoa survey could provide additional information on cultural identity and improve our understanding of cultural interpretations of wellbeing. Te Kupenga, a survey of Māori wellbeing undertaken in 2013 and 2018, already provides particular insights into cultural dimensions of Māori wellbeing. The Living in Aotearoa survey could provide further information on what matters most to Māori wellbeing which might differ from other ethnic groups. This would also allow us to investigate the heterogeneous impacts of policy interventions across the population. Of course, this will be possible only if enough data on Māori people are collected throughout the survey.

Box 5. Key areas of investigation using the Living in Aotearoa subjective wellbeing data

One major strength of the Living in Aotearoa survey is the possibility of linking the data with the Integrated Data Infrastructure (IDI). This would make it a unique source of information on subjective wellbeing, complementing other existing international data and providing further evidence on how such longitudinal data can be used for policy making. Key areas of investigation using the Living in Aotearoa subjective wellbeing data are:

Housing and cost of living

Housing costs and living conditions are one of the most important issues facing New Zealand in 2021. Existing studies have already examined the relationship between home ownership and life satisfaction (see Odermatt and Stutzer, 2020 for a review). Others have focused on housing environmental quality (Kahlmeier et al., 2001) or housing types or characteristics (Azimi and Esmaeilzadeh, 2017). Nakazato et al. (2011) examine the influence of changes in housing on overall satisfaction. Using the extensive information on housing in the Living in Aotearoa survey would contribute to this literature by investigating:

- How do housing characteristics (e.g., number of bedrooms, social housing, etc.) influence life satisfaction and to what extent does home ownership matter for New Zealanders' wellbeing?
- Is housing affordability, which could differ across locations, important for individuals' wellbeing? How does an increase in house prices affect people's satisfaction with housing?
- Using the IDI data on neighborhood and location of households would also allow us to look at whether housing environmental quality (e.g., neighbours, local insecurity, green infrastructures, commute times) has an influence on people's satisfaction with housing.

Targeting mental illness and building resilience through life

We know that mental health treatments are highly beneficial to life satisfaction. To support measures to prevent anxiety disorders and depression, it seems crucial to evaluate how mental health services perform and to assess whether new policies targeting mental health are effective. This could be done by making use of the Programme for Integration of Mental Health Data (PRIMHD) and the Living in Aotearoa survey altogether, although the PRIMHD data tend to be limited to specialists and supporting services so far.[38] In this respect, including data from GP visits in the IDI data would be extremely valuable.

There is a crucial need to support good mental health beginning in early childhood. Several existing programmes are currently implemented in New Zealand, such as the Early Start Project and Family Start, and similar projects have been implemented in other countries. However, investigations about parents' life satisfaction and child wellbeing, both in general and in relation to these programs, are limited. Such investigations can be key to maintaining political support for such programmes, and would be possible with the Living in Aotearoa survey.

Reducing poverty and active welfare programs

The relationship between an individual's income and subjective wellbeing has been widely studied. Surprisingly, however, there are fewer studies on adaptation to income shocks and poverty. One study using German panel data, by Clark et al. (2016), has investigated how entry into poverty affects individuals' life satisfaction and finds little evidence of adaptation to poverty, that is, individuals do not "get used" to being poor but suffer lower life satisfaction for as long as they live in poverty.

The Living in Aotearoa survey could provide further insights on this issue with detailed information on income, but also material conditions and household spending. Such information is somewhat more limited in existing panel surveys. For instance, the Living in Aotearoa survey

would include questions on whether individuals are forced to keep costs down, or whether, when buying clothes or shoes, they feel limited by the money they have available. Such multidimensional information would allow deeper investigation into the understanding of how income and material conditions affect an individual's wellbeing and would allow us to test whether (and how) active welfare programmes help mitigate the negative effects of poverty on individuals' life satisfaction.

Community wellbeing

The spaces and places that we live in, and the people with whom we share those spaces and places, have a significant impact on our wellbeing. Factors that matter to subjective wellbeing include knowing one's neighbors, shorter commutes and access to green spaces and water. Social trust – feeling that most people can be trusted, in a general sense – is a consistent correlate of higher subjective wellbeing. The environment can also influence our wellbeing as a result of exposure to environmental stressors such as noise or pollution.

There are relatively few intervention studies that give policy makers reliable evidence on how to increase social trust and positive social relationships. Intuitively supporting communities' facilities and spaces that make it easier for people to socially interact – plazas, restaurants, bars, public libraries, etc. – seem likely to improve wellbeing. Geocoded data and information on local neighborhoods from the IDI merged with the Living in Aotearoa survey could provide further insights on these topics, and panel data could once again increase confidence in the causality of the relationship.

Other studies have demonstrated the influence of noise, pollutants or volume of traffic on subjective wellbeing. Parks and green spaces in cities are valuable tools to increase people's wellbeing. Again, geocoded data and information on local neighborhoods from the IDI merged with the Living in Aotearoa survey could provide evidence to policy makers of how the physical environment affects wellbeing into the design of cities, buildings and communities - an important endeavor when arguing for such spaces to be preserved in the face of constrained budgets.

Finally, a critical issue that few studies have addressed is the importance of crime exposure and feeling of safety on subjective wellbeing. The justice data from the IDI which collects information on court charges, experiences of crime, details of offences, and incidents reported by the police, would be of great value to provide further insights on these issues. The Living in Aotearoa Survey could provide some insights on the extent to which:

- People proceeded against by police or appearing in court report lower levels of wellbeing
- Crime victims report lower levels of wellbeing after an offence
- People more often exposed to crimes report lower levels of wellbeing.

More wellbeing at work

Job satisfaction has significantly decreased over time in most advanced countries. Is it the case for New Zealand as well? And is it the case in all occupations? Do we see any difference across firms or sectors?

Many studies have now been able to investigate the determinants of job satisfaction (e.g., the influence of autonomy, job security, flexible working hours, etc.). Even though the Living in Aotearoa survey does not collect extensive information on job characteristics compared to other existing surveys, links with enterprise-level data from the IDI could allow major contributions in understanding how firm-level characteristics (e.g., the distribution of earnings, work organization, the percentage of men and women within firms, firm location) affect individuals' wellbeing at work.

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[38] https://swa.govt.nz/assets/Publications/reports/MHA_technical_report_v11.pdf

4. Challenges and ways forward

A. Which subjective wellbeing measurements to collect for policy-making?

People discovering the field of wellbeing research are often puzzled by the coexistence of various approaches to subjective wellbeing measurement when it comes to policy-making (e.g., life satisfaction, happiness, affective states, whether life is worthwhile). Many surveys also include domain satisfaction questions (e.g., job satisfaction, housing satisfaction, income satisfaction, etc.). For our quarterly dashboard of wellbeing in France, the INSEE fields 19 questions. For their Better Life Index, the OECD has integrated wellbeing metrics in the more general Sustainable Development Goals framework, exploring other dimensions such as housing, income, jobs, community, education, environment, civic engagement, health, safety and work-life balance. However, for people looking for a summary measure, life satisfaction is often used as the main metric to measure wellbeing. So which approach should be used to pick up wellbeing effects: the headline life satisfaction approach or the dashboard view?

With a wide variety of policy interventions potentially assessed with the Living in Aotearoa survey, we strongly advise collecting several wellbeing metrics. The core set would be the four main dimensions collected, for example, by the British ONS: Life satisfaction, Positive affect (Happiness), Sense of purpose (Worthwhile) and Negative affect (Anxiety/Depression).[39] This would provide researchers and policy makers with the essential metrics.

When those measures exist in the same survey, they are somewhat correlated with each other: individuals who report higher scores on one wellbeing measure tend to do so on the others. In addition, the data patterns in regression analyses of the different wellbeing measures are often quite similar: the variables that predict higher levels of life satisfaction often also predict greater affect and higher sense of purpose. Some examples of this kind of research are Clark and Senik (2011) and Clark (2016). However, in some other cases, different measures of subjective wellbeing provide different perspectives and result in different conclusions policy-wise:

- For example, volunteering leads only to a moderate improvement in life satisfaction for senior citizens, but it increases the sense of purpose substantially.
- Similarly, while having children is not always associated with higher life satisfaction, it consistently increases people's sense of purpose.
- While unemployment is significantly associated with lower levels of life satisfaction, unemployed people do not systematically experience lower affective state during the day (see Krueger and Mueller, 2012; Fleche and Smith, 2017).

Of course, the life satisfaction scale has the advantage of reducing policy trade-offs to a single number, much like the usual financial cost-benefit analysis. It is thus easier to explain and apply across government agencies and provides a useful summary measurement when assessing policies that have little in common, for example free school lunches and pollution reduction.

However, focusing only on life satisfaction can fall short when it comes to assessing the impact of some policies. For example, *The Origins of Happiness* highlighted how bad mental health is a key

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[39] We acknowledge the fact that the existing questionnaire already includes some questions on anxiety and depression.

driver of low subjective wellbeing. Policies prioritizing the reduction of the lowest levels of wellbeing thus need to be able to pinpoint groups of people affected by low mental health. Their assessment should rely on the same metric: assessing the impact of this kind of policy with life satisfaction alone would conflate the true effect, because people with low life satisfaction due to mental health issues would be grouped with those who have low life satisfaction for other reasons, thus underestimating the intervention impact. Similarly, it is well-documented that loneliness or a lack of purpose are key drivers of misery among senior people, at the same time as poor physical health. Evaluating the impact of a policy designed to restore social connections with the elderly needs to disentangle the effects of a better social environment on their eudemonic wellbeing (e.g., whether life is worthwhile) from those of changes in health, thus requiring all metrics.

Other useful additions/changes to the questionnaire

Job satisfaction is already integrated in the survey. We would advise however using a 0-10 scale in order to make it more comparable to other wellbeing metrics and other data sources.

A useful addition would be future-oriented metrics, such as "How do you feel about your future for the next 5-10 years?" and "How do you feel about the prospects of the next generation in New Zealand?". In the US researcher Carol Graham has shown that low responses on these questions are associated with a dearth of investment in people and communities: retraining, devoting time and resources for children's schoolwork and further studies, etc.[40] She showed that this kind of outlook was instrumental in separating communities affected by material deprivation but confident of the possibility of improving their lot – who will benefit from retraining schemes or scholarships – and people who lack their confidence, where uptake of the same policies will be low.

B. From research to policy-making

As we explained at the beginning of the section on research avenues, the research use of the Living in Aotearoa survey would be twofold. First, *exploratory* use would identify how previous policies have affected the wellbeing of people, which might lead to the conception of new policy instruments, or identifying groups of people with unusually low wellbeing who have not fully benefited from previous policies. Second, *confirmatory* evaluative use would allow the assessment of policies explicitly designed with a wellbeing goal in mind. This second use will be best geared to identify the short-to-medium-term effects of policies. (It cannot be easily used to evaluate long-term effects due to the rotating panel structure, which limits the observation period for any individual to six years).

Since the Living in Aotearoa survey is conducted at a national scale, it will also allow measuring the effect of policies that affect people at that scale, that is universal policies. However, the Living in Aotearoa survey is remarkable for its large sample size (about 25,000 households). In combination with the planning oversampling of Māori, this will likely allow the assessment of policies that have a smaller geographical or socio-demographic scope. In this respect, we strongly advise making sure that the survey is representative at the regional level as well, not just at the national level, to be able to identify key regional drivers of wellbeing.

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[40] Carol Graham, *Happiness for All: Unequal Hopes and Lives in Pursuit of the American Dream*. Princeton: Princeton University Press, 2017.

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The Living in Aotearoa survey would have several significant advantages in that policy evaluation role:

- With a rotating panel and a large sample, it can become the go-to source of data for policy evaluations, making them more comparable than assessment relying on a heterogeneous array of datasets. The same reasons will make knowledge of this data source a transferable asset between government agencies and between academia (including graduate school projects) and government agencies.
- The use of the same set of metrics (life satisfaction, happiness, anxiety, sense of purpose, etc.) will enable the evaluation of different policies with a common yardstick, making it a prime vector to expand wellbeing-based evaluations to less familiar government agencies and policy areas. It would also allow comparison with other countries using the same set of reference metrics.

Policy-oriented research is already very active in New Zealand, both in academia and in government agencies. For example, the Ministry of Social Development has already a very significant activity in programme evaluation, and other research has pioneered using high-quality geospatial data. The addition of subjective wellbeing elements would build on existing analytical capabilities, in many instances replacing proxies of wellbeing by more direct measures.

As is the case for most economic research, the link between wellbeing policy research and actual policy implementation is an indirect one most of the time. Wellbeing research has to date provided several major policy leads (see *Can We Be Happier?*[41] for an accessible overview). The *Healthy Minds* programme is probably the policy whose design has been most closely shaped by wellbeing research, both from the results of cohort studies underlining the importance of teenage mental health for lifelong life satisfaction, and from the results of positive psychology. Another example stemming from a similar body of work would be the *Action for Happiness* program, which has been recently evaluated by the Centre for Economic Performance at the London School of Economics.

In most cases however, insights obtained from wellbeing research will be one piece of evidence in broader policy trade-offs. To take an example, it is well-documented that the loss of a job entails a loss of life satisfaction comparable to a bereavement, that loss of income explains only part of the impact, and that the effects barely fade over time. While not defining a labour policy *per se*, this finding will prompt a wellbeing-aware policymaker to favor labour policies that have a shorter return to work horizon, such as active unemployment policies, over ones that lead to longer unemployment spells, such as long retraining schemes.

The French "Loi Sas": a counter-example of policy appraisal

Following the works of the Stiglitz Commission, the French parliament passed a law in 2015, dubbed "Loi Sas", [42] that included a yearly appraisal of the government's policies using wellbeing metrics. This law and its implementation provide an example of some pitfalls of wellbeing-based policy appraisal.[43] In practice, the reports received little to no media coverage, were published

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[41] R. Layard, *Can We Be Happier? Evidence and Ethics*, Pelican Books, 2020, 978-0241429990
[42] Loi no. 2015-411 du 13 avril 2015 visant à la prise en compte des nouveaux indicateurs de richesse dans la définition des politiques publiques.
[43] Cédric Audenis, one of the senior civil servants who worked on that law, shared a critical assessment of its design and implementation in the 2019 OECD conference "Putting Wellbeing Metrics into Policy Action": video recording (October 3rd, afternoon, starting 40') and slides.

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with increasing delay (to date, the 2019 report is still unavailable), and the appraisal sections were never really included.

A first failure, the closest to the object of this report, was to designate the SRCV panel as the reference data source for the core life satisfaction metric. Such a large panel requires a large amount of work both pre-data collection, including tracking respondents who have moved, changed phone number, etc., and post-data collection, to compute reliable sampling weight based on the share and profiles of people not answering each of the many questions. As a consequence, definitive results are, despite significant investment in human resources, available only 18-24 month after data collection – much too late for a yearly report, which needs fresh data. A first lesson is thus that in most cases panel data will not be suitable for short-run policy appraisal and monitoring, and more generally for any application where quick data availability is important.

The second failure lay in the provision that the report should include an impact assessment of the main policy actions conducted the previous year and an appraisal of the likely consequences of the main ones slated for the next year. This proved unworkable on several levels. At a general level, most administrations were unfamiliar with several of the expected metrics, including life satisfaction. Thus, relevant data were not collected on a regular basis. The one-year impact horizon was also ill-fitting for a wide range of policies with a long-term horizon such as reforms of schools or the justice system. Similar issues plagued the forward-looking part: while the wellbeing impact of some policies can now be assessed using reliable benchmarks and models, this is not true of the whole spectrum of public policy, especially structural policies. The key lesson here is that wellbeing appraisal should be conducted bottom-up, starting with areas where there is enough robust evidence (and data availability), and progressively extending towards other domains and a broader range of time horizons. In this respect, the Living in Aotearoa survey will serve two purposes. First, thanks to the IDI link, it will provide paths to measure policy effects in areas that are currently understudied, thus broadening the scope of wellbeing evaluation. Second, it can become a reference data source for regular policy assessment in areas already studied overseas.

The third failure laid in the institutional setup. The report presented to Parliament was entrusted to the Prime Minister services, with *de facto* the government evaluating its own past action and its own projects. A lack of training meant that key staff were unable to fully engage with or challenge the material presented. We contend that policy evaluation should be conducted through relatively independent institutions.

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References

Algan, Y., Beasley, E., Senik, C. (2018), *Les Français, le bonheur et l'argent*, Rue d'Ulm/Cepremap, https://www.cepremap.fr/publications/les-francais-le-bonheur-et-largent/

Alesina, A., Glaeser,E., &Sacerdote,B. (2005). "Work and Leisure in the United States and Europe: Why So Different?" in: M.Gertler &K.Rogoff (Eds.). *NBER Macroeconomics Annual 2005*, 1–64. Cambridge, MA: MIT Press

Azimi, N. and Esmaeilzadeh, Y. (2017). "Assessing the relationship between house types and residential satisfaction in Tabriz, Iran," *International Journal of Urban Sciences*, Taylor & Francis Journals, vol. 21(2): 185-203. https://ideas.repec.org/a/taf/rjusxx/v21y2017i2p185-203.html

Becchetti, L., Castriota,S., & Giuntella,O. (2010). "The Effects of Age and Job Protection on the Welfare Costs of Inflation and Unemployment." *European Journal of Political Economy* 26(1): 137-146. https://www.sciencedirect.com/science/article/abs/pii/S017626800900069X

Berlemann, M., Regner, J. and Tutt, J. (2020), "Natural disasters and self-reported wellbeing: empirical evidence for rainfall extremes in the United Kingdom", in *Handbook on wellbeing, Happiness and the Environment*, Chap. 13, Edward Elgar.

Charles, K. K. (2004). "Is Retirement Depressing? Labor Force Inactivity and Psychological Well-Being in Later Life." In: S. W. Polachek (Eds.). *Accounting for Worker Well-Being* (Research in Labor Economics 23), pp. 269 –299. Bingley: Emerald Publishing Limited.

Clark, A.E. and Senik, C. (2011), "Is Happiness Different from Flourishing? Cross-Country Evidence from the ESS", *Revue d'Economie Politique*, vol. 121: 17-34.

Clark, A.E. (2016), "SWB as a Measure of Individual Wellbeing", in Adler, M, and Fleurbey, M. (eds), *Oxford Handbook of Wellbeing and Public Policy*, Oxford University Press.

Clark, A.E., D'Ambrosio, C. and S. Ghislandi (2016), "Adaptation to Poverty in Long-Run Panel Data", *The Review of Economics and Statistics*, vol. 98(3), 591-600.

Clark, A., Fleche, S., Layard, R., Powdthavee, N. and Ward, G (2018). *The Origins of Happiness: The Science of wellbeing over the Life Course*, Princeton University Press.

Clark, A.E. and Diaz-Serrano, L., (2021) "The Long-run Effects of Housing on Well-Being", *PSE Working Papers*, https://econpapers.repec.org/paper/halwpaper/halshs-03230851.htm

Clark, D. M. (2018). "Realizing the Mass Public Benefit of Evidence-Based Psychological Therapies: the IAPT Program", *Annual Review of Clinical Psychology*, vol. 7: 159-183. https://pubmed.ncbi.nlm.nih.gov/29350997/

Crost, B. (2016). "Can Workfare Programs Offset the Negative Effect of Unemployment on Subjective Well-Being?" *Economics Letters* vol. 140: 42-47. https://www.sciencedirect.com/science/article/abs/pii/S0165176515005169

Di Tella, R., MacCulloch, R. J., & Oswald,A. J. (2003). "The Macroeconomics of Happiness." *Review of Economics and Statistics*, vol. 85(4): 809-827. https://direct.mit.edu/rest/article/85/4/809/57422/The-Macroeconomics-of-Happiness

Dräger, V. (2015). "Do Employment Protection Reforms Affect Well-Being?" *IZA Discussion Paper* No. 9114. Bonn: IZA. https://www.iza.org/publications/dp/9114

Durand, M., Exton, C. (2019), "Adopting a wellbeing Approach in Central Government: Policy Mechanisms and Practical Tools", in Global Happiness Council, *Global Happiness and wellbeing Policy Report 2019*. https://www.happinesscouncil.org/

Flèche, S. and C. Smith (2017), "Time use surveys and experienced well-being in France and the United States", *OECD Statistics Working Papers*, n° 2017/07, Éditions OCDE, Paris, https://doi.org/10.1787/be97d4e6-en.

Flèche S, Layard R. (2017), "Do More of Those in Misery Suffer from Poverty, Unemployment or Mental Illness?" *Kyklos* , vol. 70(1):27-41. doi: 10.1111/kykl.12129.

Frijters, P. *et al*, (2020). "A happy choice: Wellbeing as the goal of government". *Behavioural Public Policy,* vol. *4*(2): 126-165. doi:10.1017/bpp.2019.39

Frijters, P., Krekel, C. (2021), *A Handbook for Wellbeing Policy-Making: History, Theory, Measurement, Implementation, and Examples*, Oxford University Press.

Fujiwara, D., Lawton, R. N., MacKerron; G. (2017), "Experience sampling in and around airports. Momentary subjective wellbeing, airports, and aviation noise in England," *Transportation Research Part D: Transport and Environment*, vol. 56: 43-54

Gardner, J. and Oswald, A.J. (2007) "Money and Mental Wellbeing: A Longitudinal Study of Medium-Sized Lottery Wins." *Journal of Health Economics*, vol. 26: 49-60. http://dx.doi.org/10.1016/j.jhealeco.2006.08.004

Graham, C., *Happiness for All: Unequal Hopes and Lives in Pursuit of the American Dream*. Princeton: Princeton University Press, 2017.

Grimes, A. , Oxley L. and Tarrant,, N. (2012). "Does Money Buy Me Love? Testing Alternative Measures of National Wellbeing," Working Papers 12_09, Motu Economic and Public Policy Research. https://ideas.repec.org/p/mtu/wpaper/12_09.html

Gunby, N. and Coupé, T., (2021), "Weather-Related House Damage and Subjective wellbeing", *Working Papers in Economics*, University of Canterbury, Department of Economics and Finance. https://econpapers.repec.org/paper/cbteconwp/21_2f06.htm

Helliwell, J. F., Layard, R., Sachs, J., and De Neve, J.-E., (2021). *World Happiness Report 2021*. New York: Sustainable Development Solutions Network. https://worldhappiness.report/ed/2021/

Hobbs, M., Kingham, S., Wiki, J., Marek, L., Campbell, M. (2021), "Unhealthy environments are associated with adverse mental health and psychological distress: Cross-sectional evidence from nationally representative data in New Zealand", *Preventive Medicine*, Vol. 145, 106416. https://www.sciencedirect.com/science/article/abs/pii/S0091743520304473

Kahlmeier, S., Schindler, C., Grize, L., & Braun-Fahrländer, C. (2001). "Perceived environmental housing quality and wellbeing of movers". *Journal of Epidemiology and Community Health*, vol. *55*(10): 708–715. https://doi.org/10.1136/jech.55.10.708

Knabe, A., Schöb,R., & Weimann,J. (2017). "The Subjective Well-Being of Workfare Participants: Insights from a Day Reconstruction Survey." *Applied Economics* vol. 49(13): 1311-1325. https://www.tandfonline.com/doi/abs/10.1080/00036846.2016.1217309

Krekel, C., Kolbe, J. and Wüstemann, J. (2016). "The greener, the happier? The effect of urban land use on residential wellbeing", *Ecological Economics*, vol. 121: 117-127. https://doi.org/10.1016/j.ecolecon.2015.11.005

Krueger, A. and Miller, A.I. (2012), "*Time Use, Emotional Wellbeing and Unemployment: Evidence from Longitudinal Data*", American Economic Review, vol. 102: 594-99. https://www.aeaweb.org/articles?id=10.1257/aer.102.3.594

Layard, R., Clark, D., Knapp, M. and G. Mayraz (2007), "Cost-Benefit Analysis of Psychological Therary", Centre for Economic Performance Discussion Paper, N° 829.

Layard, R., Clark, A.E., Cornaglia, F. Powdthavee N. and J. Vernoit (2014), "What Predicts a Successful Life? A Life-Course Model of Wellbeing", the Economic Journal, vol. 124(580), F720-F738.

Layard et al. (2018), "Mental Illness Destroys Happiness and is Costless to Treat", Global Happiness Policy Report. https://www.happinesscouncil.org/report/2018/

Layard, R. (2020), *Can We Be Happier? Evidence and Ethics*, Pelican Books.

Layard, R. Clark, A.E., De Neve J-E., Krekel, C., Faincourt D., Hey N. and G. O'Donnel (2020), "When To Release the Lockdown? A Wellbeing Framework for Analysing Costs and Benefits", IZA Discussion Paper, N° 13186.

https://www.iza.org/publications/dp/13186/when-to-release-the-lockdown-a-wellbeing-framework-for-analysing-costs-and-benefits

Lindqvist, E., Östling, R., Cesarini, D. (2020), "Long-Run Effects of Lottery Wealth on Psychological Well-Being," *The Review of Economic Studies*, Vol. 87 (6): 2703–2726. https://doi.org/10.1093/restud/rdaa006

Lordan, G. and McGuire, A. (2019), "*Healthy Minds*: the positive impact of a new school curriculum", *CentrePiece*, http://eprints.lse.ac.uk/101236/1/Lordan_healthy_minds_the_positive_impact.pdf

Maddison, D., Rehdanz, K. and Welsch, H. (2020), *Handbook on wellbeing, Happiness and the Environment*, Edward Elgar.

Nakazato, N., Schimmack, U. and Oishi, S. (2011), "Effects of Changes in Living Conditions on Wellbeing: A Prospective Top-Down Bottom-Up Model", *Social Indicators Research*, vol. 100(1), 115-135. DOI:10.1007/s11205-010-9607-6

Nutsford, D., Pearson A. L., Kingham, S., Reitsma, F. (2016) "Residential exposure to visible blue space (but not green space) associated with lower psychological distress in a capital city", *Health and Place*, Vol. 39: 70-78. https://www.sciencedirect.com/science/article/abs/pii/S1353829216300119

Odermatt, R. and Stutzer, A. (2017), "Subjective Well-Being and Public Policy", IZA Discussion Paper, N° 11102. https://www.iza.org/publications/dp/11102/subjective-well-being-and-public-policy

Odermatt, R. and Stutzer, A. (2020), "Does the Dream of Home Ownership Rest Upon Biased Beliefs? A Test Based on Predicted and Realized Life Satisfaction." IZA Discussion Paper No. 13510. https://www.iza.org/publications/dp/13510/does-the-dream-of-home-ownership-rest-upon-biased-beliefs-a-test-based-on-predicted-and-realized-life-satisfaction

OECD. (2016). Strategic Orientations of the Secretary-General: For 2016 and beyond. Meeting of the OECD Council at Ministerial Level Paris, 1-2 June 2016. https://www.oecd.org/mcm/documents/strategic-orientations-of-the-secretary-general-2016.pdf

OECD (2019), "The economy of wellbeing". OECD working paper series. https://www.oecd-ilibrary.org/economics/the-economy-of-wellbeing_498e9bc7-en;jsessionid=EBwvJZvlzLR708LLjxrUEjp_.ip-10-240-5-76.

OECD. (2021) Measuring Well-being and Progress: Well-being Research, https://www.oecd.org/statistics/measuring-well-being-and-progress.htm

ONS. (2018) Personal well-being user guidance, https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/methodologies/personalwellbeingsurveyuserguide

Ortiz-Ospina, E. and Roser, M. (2013) - "Happiness and Life Satisfaction". *Published online at OurWorldInData.org.* https://ourworldindata.org/happiness-and-life-satisfaction

Patiño, D., Gómez-García, F. & Marín-Serrano, A. (2021), "Subjective wellbeing and Aversion to Macroeconomic Losses: New Evidence". *Journal of Happiness Studies* https://doi.org/10.1007/s10902-021-00401-5.

Social Investment Agency (2018). "Measuring the wellbeing impacts of public policy: social housing". https://swa.govt.nz/assets/Uploads/Measuring-the-wellbeing-impacts-of-public-policy-social-housing.pdf

Social Investment Agency (2019). "Measuring the impact of social housing placement on wellbeing". https://swa.govt.nz/assets/Publications/reports/Measuring-the-Impact-of-Social-Housing.pdf

Social Investment Agency (2019). "Using integrated data to understand mental health and addiction conditions" https://swa.govt.nz/assets/Publications/reports/MHA_technical_report_v11.pdf

Stergiopoulos V, Cusi A, Bekele T, Skosireva A, Latimer E, Schütz C, Fernando I, Rourke SB, (2015). "Neurocognitive impairment in a large sample of homeless adults with mental illness" *Acta Psychiatr Scand.* 131(4): 256-68. https://pubmed.ncbi.nlm.nih.gov/25604122/

Stuart, J., Kamerāde, D., Connolly, S., Ellis Paine, A., Nichols, G. and Grotz, J. (2020) *The Impacts of Volunteering on the Subjective Wellbeing of Volunteers: A Rapid Evidence Assessment*, What Works Centre for Wellbeing and Spirit of 2012