11 Building an Epidemiology of Happiness

JOHN F. HELLIWELL, DAVID GYARMATI, CRAIG JOYCE, AND HEATHER ORPANA

Introduction

The title of this chapter, and the pre-2020 examples, were chosen before COVID-19 changed the world. Starting with the assumption that improving well-being is a central consideration for public policies, we aim to show how subjective well-being research can help, and already is helping, to choose public policies based on their consequences for all aspects of life. The arrival of COVID-19, and the attendant attempts to slow or stop its pace, made even more obvious the need for a broader epidemiology – one that considers not just the sources and physical consequences of disease but of all the sources and consequences of healthy and happy lives. When deciding how and when to establish lockdowns and other mitigation strategies, and how to plan low-risk ways to restore mobility, governments all over the world aimed to save lives and maintain essential services while minimizing the costs to the economy and the social fabric. The three main pillars of happier lives – physical and mental health, jobs and incomes, and a supportive social structure (Helliwell el al. 2020) – were all hit by COVID-19, requiring policy choices that consider all three types of consequence comparably. Our focus on well-being rather than illness involves a deliberate shift in the caring sciences from a problem-solving to a building mode, from the investigation and curing of disease to the creation of happier and healthier physical and social environments.

Epidemiology, the "study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to the control of health problems" (Last et al. 2001, 62) has its origins in infectious diseases. In the mid-twentieth century, epidemiology expanded its focus to include chronic diseases and risk factors, followed by injuries and violence, and more recently the social determinants of health (Berkman et al. 2014; Pickett and Wilkinson 2015; and Kawachi and Subramanian 2018) and

CC-BY-NC-ND
This work is published subject to a Creative Commons Attribution Non-commercial No Derivative License. For permission to publish commercial versions please contact University of Toronto Press

even loneliness (Holt-Lunstad 2017). Most recently, epidemiology has begun to include positive states of health (VanderWeele et al. 2020), and to supplement risk factors with protective and salutogenic factors (Orpana et al. 2016).

Happiness, which we are using here to cover life evaluations (cognitive measures of how happy people are with their lives as a whole) as well as positive and negative emotions, monitors how well things are going and not just whether disease and other problems are absent. The techniques of epidemiology are as well suited to study the origins and consequences of happiness as they are to trace the sources of disease. Such extended applications of epidemiology can be seen as a natural step in implementing a broader definition of health to include not just the absence of hardship and disease but also the creation of better lives from any starting point. This larger mandate was already in the founding constitution of the World Health Organization (1948), viz: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."

Over the past forty years there has been increasing interest in refocusing government policies with the explicit aim of increasing equitable and sustainable human well-being. This change in policy perspective has been decades in the making, built on a growing dissatisfaction with using GDP per capita as a sufficient measure of human progress (Stiglitz, Sen, and Fitoussi 2009), inspired by the Bhutanese choice more than forty years ago to make happiness a national objective and fuelled by decades of research aimed at creating a transdisciplinary science of happiness. The High Level Meeting on Well-Being and Happiness, convened by Jigme Y. Thinley, prime minister of Bhutan, at the United Nations on 2 April 2012, was supported by the first *World Happiness Report* (Helliwell, Layard, and Sachs 2012), which assembled the available global data on national happiness and reviewed the related evidence from the emerging science of happiness. That evidence, which built on many other reviews of the science of well-being, provided strong support for the conclusion that the quality of people's lives can be coherently and reliably assessed by a variety of subjective well-being measures, collectively referred to in this chapter as "happiness." It also built upon, as did the UN meeting itself, the UK launch of a well-being initiative in November 2010, still unique in combining engagement at the highest level from the political, administrative, and data-gathering pillars of government. The initial constellation of these three supporting pillars was probably crucial in establishing widespread data-gathering and discussions in the United Kingdom (Allin 2021). Once started, these data and discussions fuelled a broad swath of innovations in firms and communities, and a variety of within-government and cross-pillar organizations, that have continued to deliver research and applications even without being a central feature of the political environment (Bache, this volume).

CC-BY-NC-ND
This work is published subject to a Creative Commons Attribution Non-commercial No Derivative License. For permission to publish commercial versions please contact University of Toronto Press

Progress before 2020

This chapter, which is part of a volume largely focused on a variety of ways of moving beyond GDP as a measure of national and community well-being, was intended to show that government researchers and policymakers have already moved beyond general discussions about alternative measures of human progress to a stage where the science of well-being can now be harnessed (as argued in Helliwell 2021 and Barrington-Leigh in this volume) to enable research based on subjective well-being to be used to design and rank policy options.

There is a growing range of government policies intended to improve happiness in many policy areas. At the broadest level, the Organisation for Economic Co-operation and Development (OECD) has recommended that countries adopt a whole-of-government approach to improving well-being, supported by broader and more systematic collection of well-being data, and the development and application of policy tools that use subjective well-being as the objective and as the means for comparing monetary and non-monetary costs and outcomes (Durand and Exton 2019). Within health care, using the happiness lens to evaluate different treatment alternatives has been advocated as a means of producing better health and more happiness with less drain on scarce resources (Peasgood, Foster, and Dolan 2019). Within Canada, the increasing importance attached to this sort of analysis was apparent in the prime minister's mandate letter of late 2019 directing the new associate minister of finance to "lead work within the Department of Finance (and in other ministries) … to better incorporate quality of life measurements into government decision-making and budgeting, drawing on lessons from other jurisdictions such as New Zealand and Scotland."[1]

There have been two global happiness and well-being policy reports (Global Happiness Council 2018 and 2019), each intended to draw together best practice examples from around the world in several key policy areas, including health, education, cities, workplaces, and the community. Subsequently, in October 2019 the OECD held an international workshop on putting well-being metrics into policy action, drawing participants from many local and national governments. Both New Zealand and Scotland, mentioned above, had high-level delegations, and there was widespread interest in using well-being metrics in the policymaking process. Both Scotland and New Zealand had gone further than most national governments in making well-being the official focus for policy design. New Zealand has had since 2015 an extended cost benefit tool (The Treasury 2019) to explicitly attach monetary values to intangible social outcomes, while the United Kingdom has gone furthest in the development and application of policy assessment tools that explicitly use subjective

CC-BY-NC-ND
This work is published subject to a Creative Commons Attribution Non-commercial No Derivative License. For permission to publish commercial versions please contact University of Toronto Press

well-being research to support policy choices (Layard and O'Donnell 2015; Frijters and Krekel 2019).

There was no representation from Canadian federal policymaking departments at the 2019 OECD workshop, probably reflecting the fact that until recently there has been little explicit use of well-being as a central organizing principle in as public a way as has been the case for New Zealand and Scotland. Thus there is perhaps less recognition in Canada that subjective well-being research has in fact been used for several years to support cost–benefit analysis of just the sort that has been advocated for use by governments (Layard and O'Donnell 2015; Frijters et al. 2020) who wish to make well-being a central focus for their policy choices. Doing cost–benefit analysis using the lens of subjective well-being requires a large base of data and research to enable the estimation of the relative importance of various policy outcomes. Fortunately, Statistics Canada has been in the forefront internationally, being the first among the OECD countries (as reported by Durand and Smith 2013) to measure subjective well-being in mainline surveys. Life satisfaction is now measured regularly in the General Social Survey, the Canadian Community Health Survey (CCHS), and other household surveys, making possible the use of combined samples from different surveys (Bonikowska et al. 2014). This has permitted a large range of studies estimating the relative well-being effects, in the Canadian context, of many aspects of life, including income, unemployment, social trust (Helliwell and Wang 2011), and workplace trust (Helliwell and Huang 2011). These large geo-coded samples have also enabled comparisons of life satisfaction in cities and neighbourhoods (Helliwell, Shiplett, and Barrington-Leigh 2019), to assess why some places are happier than others and to show that immigrant life satisfaction converges to the average in the region where they live (Helliwell, Shiplett, and Bonikowska 2020).

The above studies are generally based on the use of other data in the same surveys in which the life satisfaction is measured. This permits analysis using individual-level observations, essential for discovering the relative importance of different sources of well-being. It has also been possible for health researchers to obtain agreement from individual respondents to the CCHS to link their life satisfaction with their use of health resources over the following six years (Goel et al. 2019) and to estimate a dose-response relation between life satisfaction and subsequent morbidity and mortality, even after adjusting for a large array of life circumstances and pre-existing medical conditions (Rosella et al. 2018). This type of study only becomes possible when there are large representative samples of individual life satisfaction observations to use as a basis for linkage with other records.

Another important component for increasing the pace and range of policy applications is the widespread understanding that life satisfaction, and other measures of how well life is going, are important health statistics, adding

CC-BY-NC-ND
This work is published subject to a Creative Commons Attribution Non-commercial No Derivative License. For permission to publish commercial versions please contact University of Toronto Press

substance to the 1948 WHO declaration that good health is about the creation of positive states of health and mind, and not just the absence of disease and infirmity. Since measurement is a pre-condition for evidence-based policy analysis, the adoption of life satisfaction as a key national health statistic has the potential to bring the positive focus more fully into policy evaluations. The Public Health Agency of Canada has adopted a positive mental health surveillance framework in which life satisfaction is one of five key outcomes now part of regular, national health surveillance and reporting (Orpana et al. 2016). This framework has helped inform both subnational (Ontario Ministry of Health and Long-Term Care 2018) and international (BMC Proceedings 2020) surveillance activities, expanding the inclusion of well-being into surveillance in other jurisdictions. This important innovation marks Canada as one of the few countries to establish life satisfaction as a key national health statistic. Because life satisfaction, along with other measures of well-being, are monitored on a regular basis, this provides additional incentive to study the epidemiology of happiness, tracing its impacts on other aspects of physical health, as in the studies described above, and also to search for better understanding of how life satisfaction is created and spread.

The existence of a solid base of life satisfaction research enables policy evaluations to bring important intangible items directly into the analysis, making use of their estimated contributions to overall life evaluations. Bringing these intangibles up from the footnotes into central positions in project proposals changes the whole nature of policy evaluation, often leading to important differences in the ranking of alternative policies. It also becomes easier to compare policies coming to central agencies from departments with differing objectives and often competing claims on public financial resources. Within applied policy domains, there are signs that subjective well-being research has already begun to influence how policy evaluation is done. Two federal department studies have used well-being research to better understand the value of investments in health promotion and encouraging participation in sport and cultural activities. Both uncovered significant well-being impacts. In the health promotion example, the authors monetized a set of health behaviours often targeted by federally funded programs, valuing increased physical activity at $631 per week, increased fruit and vegetable consumption at $115 per week, and smoking cessation at $563 per week. These figures are intended to allow a comparison of the results of health promoting programs to the program costs themselves and demonstrate value for money in an area of policy where it is not always obvious (Shi et al. 2019). In the case of the study on participation in sport and cultural activities, the monetized value of the well-being outcomes exceeded the costs of the programs used to achieve them (Lemyre, Mader, and Ambarde 2018).

There has been a general strengthening over the past twenty-five years in the demand for better evidence to support policy decisions and to evaluate policy

CC-BY-NC-ND
This work is published subject to a Creative Commons Attribution Non-commercial No Derivative License. For permission to publish commercial versions please contact University of Toronto Press

outcomes. The Social Research and Demonstration Corporation (SRDC) was founded in 1991 as an independent non-profit research organization created specifically by the federal government to develop, field test, and rigorously evaluate new policies and programs. SRDC conducts its research at a scale sufficient to provide significant results, often employing field experiments to test programs in real-world settings. The initial years saw the implementation of several large-scale social policy experiments on behalf of the federal government. Over the past twenty years the range of clients has grown to include many provincial governments, industry associations, foundations, and community partners as well as covering a much broader set of policy areas beyond employment and workforce development, including education and health. Over these same years, the range of outcomes considered in much of SRDC's research has expanded to include a rich set of psychosocial variables, including trust, social capital, and life satisfaction. In particular, subjective well-being research has been undertaken more frequently not only as part of impact analysis but also to enhance cost-benefit studies by monetizing many intangible impacts of policy interventions that were previously excluded. On many levels, this has been transformative for comparative policy analysis, as it allows for the valuation of a full range of economic and social impacts and for the comparison of these across policy interventions.

One such example, the Community Employment Innovation Project (CEIP), was a jointly sponsored initiative of Human Resources and Social Development Canada (HRSDC) and the Nova Scotia Department of Community Services. It tested an active re-employment strategy for unemployed individuals who volunteered to work on locally developed community projects in areas hit by chronic unemployment. In exchange for foregoing their Employment Insurance (EI) or Social Assistance (SA) benefits, CEIP offered participants wages to work on community projects for up to three years, giving them a significant period of stable income as well as an opportunity to gain work experience, acquire new skills, and expand their network of contacts. Beyond fulfilling the need for immediate employment, CEIP hoped to influence participants' longer-term employability by helping them preserve and possibly improve their human and social capital. At the same time, CEIP aimed to facilitate community development by supporting the "third sector" and encouraging activities that are meaningful for both the participant and the community.

SRDC was responsible for the design and implementation of the project, which started in 1999 and released its final report in 2008 (Gyarmati et al. 2008). This policy evaluation was the first of its kind to rigorously measure how community-designed and -managed projects could positively impact the levels of social capital and trust among not only participants but also in their communities, and to use subjective well-being to estimate the monetary value of these social impacts. This was one of the earliest and most comprehensive

CC-BY-NC-ND
This work is published subject to a Creative Commons Attribution Non-commercial No Derivative License. For permission to publish commercial versions please contact University of Toronto Press

applications of subjective well-being in experimental policy analysis. Indeed, these were substantial, significantly improving the resulting analysis of the program's cost effectiveness. For instance, when only considering financial impacts of the program on outcomes such as earnings, the analysis showed that for every dollar in net cost to the government there were combined net benefits for society of $1.39. However, by incorporating subjective well-being into the analysis and monetizing even a small number of the intangible benefits of the program (e.g., social capital and trust), this improved the cost effectiveness substantially to $1.61 in combined net benefits for every dollar in cost to the government (Gyarmati et. al. 2008, 117–18). Without the inclusion of measures of subjective well-being, cost–benefit analyses such as these will significantly under-estimate the cost-effectiveness of programs.

A second example from SRDC's research is a more recent study, UPSKILL, a large-scale demonstration project that measured the impacts of literacy and essential skills (LES) training in the workplace (Gyarmati et al. 2014). The project used a random assignment design to provide the most reliable measures of the impacts of workplace training on skills, job performance, and a range of other social and financial outcomes of workers and firms. Over 100 firms and 1,500 workers in the accommodations sector participated across the country in 8 provinces.

The project involved the direct collaboration of many institutional and industry partners in the design and delivery of the program, and measures of social capital, trust, and life satisfaction were central to the analysis. The depth of collaboration increased the power and relevance of the findings. Although the skills being built and assessed were of basic literacy and numeracy, and hence were transferable, not tied to a particular job, the results were assessed using measures of success actually employed in the accommodations sector. This included industry-developed certification assessments to measure worker performance and a number of business indicators related to guest satisfaction, revenues, and productivity measures. The results could thus be assessed from the perspective of hotel operators, employees, customers, and society as a whole.

The findings indicated that workplace literacy training does, indeed, have large positive impacts on workers' skills and job performance, plus a wide range of social and financial outcomes of workers and firms. The cost–benefit analysis also revealed a significant positive return on investment for all stakeholders – including employers – of 23 per cent in the first year alone. Importantly, the study also used subjective well-being to monetize the positive impacts on social and psychological capital, permitting their inclusion in an extended cost–benefit analysis. Strikingly, results illustrate that the inclusion of a modest number of social impacts increases the cost-effectiveness of the program by over 80 per cent (Gyarmati et al. 2014, 117–20).

CC-BY-NC-ND
This work is published subject to a Creative Commons Attribution Non-commercial No Derivative License. For permission to publish commercial versions please contact University of Toronto Press

Furthermore, the measurement of trust and life satisfaction before, during, and after the project provided key insights not initially foreseen, thereby deepening understanding of how and when workplace training will generate positive impacts. For example, while the overall results were found to be significant for the sample as a whole, a more detailed subgroup analysis showed that many of the gains were concentrated in hotels with high levels of mutual trust (Gyarmati et al. 2014, 133). High levels of workplace trust have been shown to deliver happier lives for employees (Helliwell and Huang 2011), but this result goes further, showing that innovations in workplace practices and employee training are more effective for all participants where trust levels are high.

These examples all show the importance of having large samples of population-representative data on subjective well-being, of undertaking research using these data to obtain estimates of the relative values of tangible and intangible outcomes, and of using policy experiments to monitor the impacts on subjective well-being and its key determinants. To put these essential components to work in the service of a broader epidemiology of happiness requires that policy analysts are convinced of the need to monitor diverse sources and outcomes in a consistent manner. They also need enough exposure and training to put these pieces together, and a policy environment that welcomes evaluations of this breadth. This is likely to be accelerated where there is a whole-of-government commitment to well-being-based policymaking (Durand and Exton 2019). There are also some advantages, as shown by examples from both Canada and the UK, in having a solid background of data and research, along with a cadre of trained analysts able to deliver useful results when the demand for them arises.

The Epidemiology of Happiness in the COVID-19 Pandemic

Although the case for a broader epidemiology of happiness has existed for decades, its necessity is made even more urgent by COVID-19. The scope and scale of the COVID-19 pandemic and the response by governments around the world have been of proportions not seen in the past century. Policies that stop population movements and close down most activities that bring people physically close have been adopted to varying degrees in almost all countries. While serving a primary purpose of reducing the amount of sickness and death, they have also been intended to slow transmission by enough to avoid overloading health care systems by minimizing the number of COVID-19 patients requiring hospitalization, ICU admission, and ventilator support, while waiting for the development of a vaccine or effective treatments. Conventional epidemiology has been brought to the centre of the policy stage by identifying cases, tracking contacts, and modelling transmission rates under alternative mitigation policies, all while what is known about the novel virus evolves rapidly.

CC-BY-NC-ND
This work is published subject to a Creative Commons Attribution Non-commercial No Derivative License. For permission to publish commercial versions please contact University of Toronto Press

The centre-stage role taken by public health officers has been critical in helping to convince populations that severe disruption of their lives, on a scale never experienced before, can save enough lives and suffering to justify the measures taken. Given the risks of health care systems being overwhelmed, as shown by the early experiences in Wuhan and Lombardy, dedicated critical-care capacity was increased in a variety of ways, including delaying many other forms of medical diagnosis and treatment. As infection curves became flatter in many countries, and the pressures on critical care capacity became less likely, the need for a broader epidemiology became more obvious. What strategies provide the most well-being benefits relative to their contributions to keeping infections low while waiting for a vaccine or treatments? Mainline epidemiology remains in a central position in any broader analysis, since identifying cases, tracking contacts, learning in more detail about the transmission process, establishing the current and past prevalence of infection, and estimating the degree of population or herd immunity are all key requirements for subsequent stages of pandemic management. To be effective, these studies need to be set in the particular circumstances of regions, communities, living arrangements, institutions, and occupations.

One broader form of epidemiology, although not as broad as we propose, uses life-years saved as the key objective to help set priorities for the pace and scale of resuming other forms of medical treatment. For example, survival chances for patients with many forms of cancer depend on timely surgery, and many such surgeries were postponed or cancelled during the first stages of pandemic response. It has been possible to model life-years saved by restarting different types of cancer surgery (Sud et al. 2020), thereby inviting a broader analysis of the costs and benefits of alternative use patterns for existing medical resources during the second and later stages of pandemic management.

A further broadening, still using life years as the objective, might include the effects on self-harm and violence, and transport injuries, ranking eleventh and twelfth respectively in terms of global number of deaths in 2017 (http://ihmeuw.org/4srx). Lockdowns and physical-distancing measures kept people off the roads and at home, in some cases alone and possibly lonely. This simple description would suggest a decrease in traffic fatalities and an increase in suicides. Reality might be more complicated, as people drive faster on empty roads, and speed kills. As for suicide, Japan had suicide rates in April 2020, during lockdown, that were significantly lower than normal.[2] Durkheim's (1897) still magisterial early statistical analysis found that suicide rates were lower among population groups facing other risks to their existence and that suicide rates in countries farther from the equator have peaks in the summer, when people are having active social lives, leaving those left out more likely to have their hopes turn into hopelessness. Aggregate data for excess deaths, such as those provided by EuroMOMO (https://www.euromomo.eu) and Statistics

CC-BY-NC-ND
This work is published subject to a Creative Commons Attribution Non-commercial No Derivative License. For permission to publish commercial versions please contact University of Toronto Press

Canada (2020) can help, as they accumulate over the years, to show the number of excess deaths that include the combined effects of COVID-19, delayed surgeries, traffic fatalities, suicide, and other stress-related deaths. For some, lockdown meant a reduction of commuting and office stress, permitting more family time, some in person and the rest virtual. For them, life at home with the family became calmer and happier as it became less frenetic. Others were not so fortunate.

Social connections with family and friends have been found to be crucial supports for happiness, especially contacts with face-to-face rather than online friends (Helliwell and Huang 2013). The COVID-19 physical-distancing measures combined with lockdowns in many countries to remove most possibilities for close encounters with friends and family, so the existing evidence would suggest a very large hit to well-being. But in the absence of face-to-face possibilities, people shifted from in-person to electronic visits with friends and colleagues near and far. The extent to which this enabled individuals and families to maintain supportive and nurturing relationships, and hence happiness, under physical distancing is still being assessed.

How broad must epidemiology be to enable a proper balancing of the costs and benefits of alternative strategies for pandemic management? Useful examples are provided by two recent studies in the United Kingdom, one assessing the well-being costs of the pandemic, and the second, more ambitiously, providing an illustrative calculation of the costs and benefits of alternative dates for exiting from general lockdown. The costs study (Fujiwara et al. 2020) uses survey data from during the pandemic to estimate the well-being costs of lockdown, using matched samples of official national data for April 2019 as a baseline. They estimate a 13 per cent loss in life satisfaction implicitly due to COVID-19 and attribute more than half of this to the costs of social distancing. No account is taken of the costs of COVID-related deaths beyond bereavement effects. What is needed for an overall well-being assessment of COVID-19?

The Happiness Research Institute (2020) and Layard et al. (2020) both advocate using Well-being Adjusted Life Years (denoted WALYs in the former case and WELLBYs in the latter). In both cases, this involved an extension to the more usual well-being focus, which concentrates on the well-being of those still living, which has been shown to depend importantly on the average length of healthy life. But when a disease or other fatality-causing event takes place, and there are alternative ways of mitigating its effects, it is essential to attach a well-being benefit to life-years saved. Layard et al. (2020) apply this to the COVID-19 situation, using pre-COVID-19 research to set values for life-years saved, as well as the well-being consequences of the COVID-19-related effects on unemployment, income, mental health, confidence in government, schooling, road fatalities, COVID-19 deaths, commuting time, carbon dioxide emissions, and air quality. They calculate these effects for alternative dates of lockdown release. Approximate data are used to estimate the lives saved by a

CC-BY-NC-ND
This work is published subject to a Creative Commons Attribution Non-commercial No Derivative License. For permission to publish commercial versions please contact University of Toronto Press

longer lockdown, with assumed monthly savings diminishing over time and eventually overshadowed by the reductions in income and employment and reductions in mental health, all of which are assumed to grow with a longer lockdown. Confidence in government handling is assumed to fall as the length of the lockdown increases. Setting the declining benefits against the rising costs leads to their conclusion that the net gain from lockdown diminishes as time passes. The authors were careful to say that they were illustrating the importance of bringing these diverse factors into play, rather than arguing that their calculations were supported by strong evidence. More complete application of well-being analysis requires more explicit analysis of different ways to release restrictive measures and broaden the range of safer activities, while keeping infection rates to zero (within COVID-19-free bubbles) and at minimal and carefully tracked and traced levels where transmission is more likely.

Looking Ahead

The pandemic has changed the policy environment in many ways. At a fundamental level, it has exposed the need for flexibility and resilience. The pandemic has shown the benefits of greater diversity of supply lines, adding another element to be included when choosing among policy options. But at a deeper human level individuals, families, and firms have been seeing life in new ways, some painful and others so positive as to incite pledges to maintain the social closeness created as a by-product of physical distancing, including the cooking, games, and laughter within the physically distanced family plus extended electronic social networks not previously used to such good purpose. The opportunities and preferences for different forms of work, entertainment, family life, and vacations may have changed not just during the stages of the pandemic but also for the longer term.

COVID-19 also dramatically altered the distribution of well-being. The direct costs of the disease have been much higher for those in exposed occupations or in elder-care or other forms of housing where outbreaks have occurred or where physical distancing is harder to achieve. The concentration of infection among the homeless and those with insecure housing, food, and employment, and the digital divide combine to suggest that the net effect is likely an increase in the inequality of well-being, which itself has been shown to decrease average well-being by more than does income inequality (Goff et al, 2018; Helliwell et al. 2020). This is exemplified by evidence of higher COVID-19 incidence and severity among those who were already disadvantaged, whether by race, health, income, or housing.[3]

Trust also deserves special mention. Differences among countries and communities in the extent to which people trust each other, and the related extent to which they reach out to help each other, have big effects on the well-being consequences of COVID-19, just as they have been shown to do in the face of other

CC-BY-NC-ND
This work is published subject to a Creative Commons Attribution Non-commercial No Derivative License. For permission to publish commercial versions please contact University of Toronto Press

crises (Helliwell, Huang, and Wang 2014). Similarly, the extent to which people have confidence in their political and health systems are likely to influence how highly people evaluate their own lives under COVID-19 and how fully and happily they follow the advice or directives they receive. Research has already shown that individuals who live where they have trust in each other and in their shared public institutions are substantially buffered against the well-being costs of adversities including unemployment, fear, discrimination, low income, and ill health (Helliwell et al. 2020). Since COVID-19 has, to varying degrees, inflicted all these negative effects on at least some members of all societies, those living in high-trust communities and nations are likely in consequence to have life evaluations that fell less and recovered faster during the first stages of COVID-19. Research is increasingly showing that a virus-suppression strategy, with zero community transmission as the benchmark, has been the best, and perhaps only, way to avoid direct and indirect COVID-19 deaths while minimizing collateral damage to social cohesion, population health, incomes, and employment. High levels of social and institutional trust have been shown to increase the chances of this strategy being chosen, both within and among nations (Helliwell et al. 2021).

An epidemiology that aims to support the overall self-assessed quality of life will take all these factors into account, both during and after the pandemic. Never have the opportunities and need for such an overarching analysis been greater. The same sea changes affecting all walks and ways of life have by the same token made the analysis more difficult. In the pursuit of this overarching goal in a rapidly changing environment, the best should not be made the enemy of the good; responses need to be sure-footed but rapid. These circumstances require that policies be tailored to local circumstances and risks. The attendant uncertainties invite responses that are measured, examined carefully for their lessons, and altered in response to what is being learned. The same flexibility and diversity that has been seen as an asset to families, firms, and communities coping with COVID-19 are also likely to be features of the policies most likely to support well-being.

We have argued in this chapter that public policies should be designed to consider their overall effects on well-being and evaluated with this goal in mind. Research in subjective well-being has come far enough over the past quarter-century to have tangible implications for the setting and ranking of policy priorities, evaluating the results of policy interventions, and enhancing the manner in which cost–benefit analysis is done to understand policy impacts in a more holistic way than previously possible. We have illustrated the general case by specific examples from epidemiology, which has gradually been broadening its scope and techniques to consider positive measures of overall well-being. The arrival of COVID-19 has strengthened the need for such broadening, since the policy decisions being faced by governments dealing with the pandemic required an approach much broader than provided by

CC-BY-NC-ND
This work is published subject to a Creative Commons Attribution Non-commercial No Derivative License. For permission to publish commercial versions please contact University of Toronto Press

more typical policy evaluations in all disciplines. We have described how such a broader approach to policy design and choice is fully consistent with the underlying aims of epidemiology. We could equally well argue that well-being analysis of the sort we propose offers similar gains in other policy disciplines. In particular, it could restore to economics the breadth of purpose and methods it had two centuries ago, when happiness was considered the appropriate goal for private actions and public policies.

Acknowledgments

The authors are grateful for helpful comments and suggestions from Aneta Bonikowska, Ceo Gaudet, Anders Hayden, Bev Holmes, Aziz Mulay-Shah, Grant Schellenberg, Meik Wiking, and Jeff Wilson.

NOTES

1 https://pm.gc.ca/en/mandate-letters/minister-middle-class-prosperity-and-associate-minister-finance-mandate-letter.
2 https://www.theguardian.com/world/2020/may/14/japan-suicides-fall-sharply-as-covid-19-lockdown-causes-shift-in-stress-factors.
3 This has been exemplified by outbreaks and deaths in elder-care facilities, prisons, and camps for migrant workers. On differing incidence by race in the United States, see Hooper, Nápoles, and Pérez-Stable (2020).

REFERENCES

Allin, Paul. 2021. "Reflections on the Introduction and Use of Official Measures of Subjective Well-Being in the UK." In *Measuring Well-Being: Interdisciplinary Perspectives from the Social Sciences and the Humanities*, edited by Matthew Lee, Laura Kubzansky, and Tyler VanderWeele. New York: Oxford University.

Berkman, Lisa F., Ichirō Kawachi, and M. Maria Glymour, eds. 2014. *Social Epidemiology*. Oxford: Oxford University Press.

BMC Proceedings. 2020. "Proceedings of the International Workshop 'Integration of International Expertise in the Development of a Mental Health Surveillance System in Germany.'" *BMC Proc* 14, 4. https://doi.org/10.1186/s12919-020-00186-0.

Bonikowska, Aneta, John F. Helliwell, Frank Hou, and Grant Schellenberg. 2014. "An Assessment of Life Satisfaction Responses on Recent Statistics Canada Surveys." *Social Indicators Research* 118, no. 2: 617–43.

Durand, Martine, and Carrie Exton. 2019. "Adopting a Well-being Approach in Central Government: Policy Mechanisms and Practical Tools." In *Global Happiness and Wellbeing Policy Report 2019*, 140–62. New York: Global Happiness Council.

CC-BY-NC-ND
This work is published subject to a Creative Commons Attribution Non-commercial No Derivative License. For permission to publish commercial versions please contact University of Toronto Press

Durand, Martine, and Conal Smith. 2013. "The OECD Approach to Measuring Subjective Well-Being." In *World Happiness Report 2013*, edited by John F. Helliwell, Richard Layard, and Jeffrey D. Sachs, 112–37. New York: UN Sustainable Development Solutions Network.

Durkheim, Émile. 1897. *Le suicide: étude de sociologie*. Paris: Alcan.

Frijters, Paul, Andrew Clark, Chris Krekel, and Richard Layard. 2020. "A Happy Choice: Wellbeing as the Goal of Government." *Behavioural Public Policy*, 4, no. 2: 126–65. doi:10.1017/bpp.2019.39.

Frijters, Paul, and Chris Krekel. 2019. *A Handbook for Wellbeing Policy-Making in the UK: History, Measurement, Theory, Implementation, and Examples*. Oxford: Oxford University Press.

Fujiwara, Daniel, Paul Dolan, Ricky Lawton, Fatemeh Behzadnejad, Augustin Lagarde, Cem Maxwell, and Sebastien Peytrignet. 2020. *The Well-Being Costs of COVID-19 in the UK*. https://www.jacobs.com/sites/default/files/2020-05/jacobs-wellbeing-costs-of-covid-19-uk.pdf.

Global Happiness Council. 2018. *Global Happiness and Wellbeing Policy Report 2018*. New York: Sustainable Development Solutions Network.

– 2019. *Global Happiness and Wellbeing Policy Report 2019*. New York: Sustainable Development Solutions Network.

Goel, Vivek, Laura C. Rosella, Longdi Fu, and Amanda Alberga. 2018. "The Relationship between Life Satisfaction and Healthcare Utilization: A Longitudinal Study." *AmericanJournal of Preventive Medicine* 55, no. 2: 142–50.

Goff, Leonard, John F. Helliwell, and Guy Mayraz. 2018. "Inequality of Subjective Well-Being as a Comprehensive Measure of Inequality." *Economic Inquiry* 56, no. 4: 2177–94.

Gyarmati, David, Shawn de Raaf, Boris Palameta, Claudia Nicholson, and Taylor Shek-Wai Hui. 2008. *Encouraging Work and Supporting Communities: Final Results of the Community Employment Innovation Project*. Ottawa: Social Research and Demonstration Corporation. http://www.srdc.org/media/8508/CEIP_finalrpt_ENG.pdf.

Gyarmati, David, Norm Leckie, Michael Dowie, Boris Palameta, Taylor Shek-Wai Hui, Elizabeth Dunn, and Sophie Hébert. 2014. *UPSKILL: A Credible Test of Workplace Literacy and Essential Skills Training*. Ottawa: Social Research and Demonstration Corporation. http://www.srdc.org/media/199774/upskill-technical-report-en.pdf.

Happiness Institute and Leaps by Bayer. 2020. *Wellbeing Adjusted Life Years: A Universal Metric to Quantify the Happiness Return on Investment*. Berlin: Happiness Institute and Leaps by Bayer.

Helliwell, John F. 2019. "How to Open Doors to Happiness." *Global Happiness and Wellbeing Policy Report 2019*, 8–25. New York: Global Happiness Council. https://s3.amazonaws.com/ghwbpr-2019/UAE/GH19_Ch2.pdf.

CC-BY-NC-ND
This work is published subject to a Creative Commons Attribution Non-commercial No Derivative License. For permission to publish commercial versions please contact University of Toronto Press

– 2021. "Measuring and Using Happiness to Support Public Policies." In *Measuring Well-Being: Interdisciplinary Perspectives from the Social Sciences and the Humanities*, edited by Matthew Lee, Laura Kubzansky, and Tyler VanderWeele. New York: Oxford University. Previously (No. w26529). National Bureau of Economic Research Working Paper 26529.

Helliwell, John F., and Lara B. Aknin. 2018. "Expanding the Social Science of Happiness." *Nature Human Behaviour* 2, no. 4: 248–52.

Helliwell, John F., and Haifang Huang. 2011. "Well-Being and Trust in the Workplace." *Journal of Happiness Studies* 12, no. 5: 747–67.

– 2013. "Comparing the Happiness Effects of Real and On-Line Friends." *PLoS ONE* 8, no. 9: e72754.

Helliwell, John F., Haifang Huang, and Shun Wang. 2014. "Social Capital and Well-Being in Times of Crisis." *Journal of Happiness Studies* 15, no. 1: 145–62.

Helliwell, John F., Haifang Huang, Shun Wang, and Max Norton. 2020. "Social Environments for World Happiness." In *World Happiness Report 2020*, edited by John F. Helliwell, Richard Layard, Jeffrey D. Sachs, and Jan-Emmanuel De Neve. New York: UN Sustainable Development Solutions Network.

– 2021. "Happiness, Trust and Deaths under COVID-19." In *World Happiness Report 2021*, edited by John F. Helliwell, Richard Layard, Jeffrey D. Sachs, Jan-Emmanuel De Neve, Lara Aknin and Shun Wang. New York: UN Sustainable Development Solutions Network.

Helliwell, John F., Richard Layard, and Jeffrey Sachs. 2012. *World Happiness Report*. New York: UN Sustainable Development Solutions Network. http://worldhappiness.report/download/.

Helliwell, John F., Hugh Shiplett, and Christopher P. Barrington-Leigh. 2019. "How Happy Are Your Neighbours? Variation in Life Satisfaction among 1200 Canadian Neighbourhoods and Communities." *PloS ONE* 14, no. 1. https://doi.org/10.1371/journal.pone.0210091.

Helliwell, John F., Hugh Shiplett, and Aneta Bonikowska. 2020. "Migration as a Test of the Happiness Set Point Hypothesis: Evidence from Immigration to Canada and the United Kingdom." *Canadian Journal of Economics* 53, no. 4: 1618–41. https://onlinelibrary.wiley.com/doi/pdf/10.1111/caje.12474.

Helliwell, John F., and Shun Wang. 2011. "Trust and Wellbeing." *International Journal of Wellbeing* 1, no. 1. doi:10.5502/ijw.v1i1.3.

Holt-Lunstad, Julianne. 2017. "The Potential Public Health Relevance of Social Isolation and Loneliness: Prevalence, Epidemiology, and Risk Factors." *Public Policy & Aging Report* 27, no. 4: 127–30.

Hooper, Monica Webb, Anna María Nápoles, and Eliseo J. Pérez-Stable. 2020. "COVID-19 and Racial/Ethnic Disparities." *JAMA* 323, no. 24: 2466–67. https://doi.org/10.1001/jama.2020.8598.

Kawachi, Ichiro, and S.V. Subramanian. 2018. "Social Epidemiology for the 21st Century." *Social Science & Medicine* 196: 240–5.

CC-BY-NC-ND
This work is published subject to a Creative Commons Attribution Non-commercial No Derivative License. For permission to publish commercial versions please contact University of Toronto Press

Last, John, Susan Harris, Michel Thuriaux, and Robert Spasoff. 2001. *A Dictionary of Epidemiology*. Chicago: International Epidemiological Association, Inc.

Layard, Richard, Andrew Clark, Jan-Emmanuel De Neve, Chris Krekel, Daisy Fancourt, Nancy Hey, and Gus O'Donnell. 2020. *When to Release the Lockdown? A Wellbeing Framework for Analysing Costs and Benefits*. (No. 13186). IZA Discussion Papers.

Layard, Richard, and Gus O'Donnell. 2015. "How to Make Policy when Happiness Is the Goal." *World Happiness Report 2015*, 76–87. https://worldhappiness.report/ed/2015/.

Lemyre, Xavier, Joelle Mader, and Marke Ambard. 2018. *Quantifying and Valuing the Wellbeing Impacts of Arts, Culture and Sports in Canada*. Ottawa: Heritage Canada. https://cudo.carleton.ca/system/files/dli_training/4330/wellbeing-impacts-arts-culture-and-sports-canada-final.pdf.

OECD. 2013. *OECD Guidelines on Measuring Subjective Well-Being*. Paris: OECD Publishing. http://www.oecd.org/statistics/Guidelines%20on%20Measuring%20Subjective%20Well-being.pdf.

– 2019. *Putting Well-Being Metrics into Policy Action*. Report of meeting held 3–4 October 2019. Paris: OECD. http://www.oecd.org/statistics/putting-well-being-metrics-into-policy-action.htm.

Ontario Ministry of Long-Term Care. 2018. *Mental Health Promotion Guideline 2018*. http://health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/protocols_guidelines/Mental_Health_Promotion_Guideline_2018.pdf.

Orpana, Heather, Julie Vachon, Jen Dykxhoorn, Louise McRae, and Gayatri Jayaraman. 2016. "Monitoring Positive Mental Health and Its Determinants in Canada: The Development of the Positive Mental Health Surveillance Indicator Framework." *Health Promotion and Chronic Disease Prevention in Canada: Research, Policy and Practice* 36, no. 1: 1.

Peasgood, Tessa, Derek Foster, and Paul Dolan. 2019. "Priority Setting in Healthcare through the Lens of Happiness." In *Global Happiness and Wellbeing Policy Report 2019*, 27–52. New York: Global Happiness Council. https://s3.amazonaws.com/ghwbpr-2019/UAE/GH19_Ch3.pdf.

Pickett, Kate E., and Richard G. Wilkinson. 2015. "Income Inequality and Health: A Causal Review." *Social Science & Medicine* 128: 316–26.

Rosella, Laura C., Longdi Fu, Emmalin Buajitti, and Vivek Goel. 2019. "Death and Chronic Disease Risk Associated with Poor Life Satisfaction: A Population-based Cohort Study." *American Journal of Epidemiology* 188, no. 2: 323–31.

Shi, Yipu, Craig Joyce, Ron Wall, Heather Orpana, and Christina Bancej. 2019. "A Life Satisfaction Approach to Valuing the Impact of Health Behaviours on Subjective Well-Being." *BMC Public Health* 19, no. 1: 1547.

Statistics Canada. 2020. "Provisional Death Counts and Excess Mortality, January to March 2019 and January to March 2020." *The Daily*, 13 May 2020. https://www150.statcan.gc.ca/n1/daily-quotidien/200513/dq200513d-eng.htm.

CC-BY-NC-ND
This work is published subject to a Creative Commons Attribution Non-commercial No Derivative License. For permission to publish commercial versions please contact University of Toronto Press

Stiglitz, Joseph E., Amartya Sen, and Jean-Paul Fitoussi. 2009. *The Measurement of Economic Performance and Social Progress Revisited: Reflections and Overview.* Paris: Commission on the Measurement of Economic Performance and Social Progress.

Sud, Amit, Michael Jones, John Broggio, Chey Loveday, and Clare Turnbull. 2020. "Collateral Damage: The Impact on Outcomes from Cancer Surgery of the COVID-19 Pandemic." *Annals of Oncology.* doi:https://doi.org/10.1016/j.annonc.2020.05.009.

The Treasury. 2019. "CBAx Tool User Guidance: Guide for Departments and Agencies Using Treasury's CBAx Tool for Cost Benefit Analysis." Wellington: Treasury of New Zealand. https://treasury.govt.nz/sites/default/files/2019-09/cbax-guide-sep19.pdf.

VanderWeele, Tyler J., Ying Chen, Katelyn Long, Eric S. Kim, Claudia Trudel-Fitzgerald, and Laura D. Kubzansky. 2020. "Positive Epidemiology?" *Epidemiology* 31, no. 2: 189–93.

World Health Organization. 1948. "Preamble to the Constitution of WHO as Adopted by the International Health Conference, New York, 19 June–22 July 1946; Signed on 22 July 1946 by the Representatives of 61 States (Official Records of WHO, no. 2, p. 100) and Entered into Force on 7 April 1948." Geneva: World Health Organization.

CC-BY-NC-ND
This work is published subject to a Creative Commons Attribution Non-commercial No Derivative License. For permission to publish commercial versions please contact University of Toronto Press