A public, open, and independently-curated database of happiness coefficients

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Abstract

We present a nascent database of happiness coefficients. This is a synthesis of evidence on the size of improvements to human life experience that can be expected from changing objective, policy-amenable circumstances. The wealth of data on people's self-reported satisfaction with life in a wide variety of circumstances, from around the world, including respondents undergoing a diversity of changes and life events and subject to a variety of public policies and policy changes, has provided a rich base of knowledge about what makes life good. This growing research literature has in recent years been met with interest from central governments looking for accountable but more human-centred approaches to measuring progress, as well as for communicating objectives, making policy, and allocating resources. Meanwhile, frameworks for benefit-cost accounting using inference from life satisfaction data have been devised. In some cases central government finance departments and treasuries are incorporating this approach into their formal methodology for budgeting. The body of causal inference about these effects is still somewhat diffuse. Collating, reviewing, and synthesizing such evidence should be led initially by academia and ultimately by a broad academic, civil society, and government collaboration. We report on the assembly of a database of summary estimates for Canada, supplemented where needed by evidence from around the world. The categorized domains of individual experience and circumstances include Education, Environment, Work, Finances, Health, Social Capital, and Crime. The paper also explains the context for and limitations of the use of a database of happiness coefficients.

Keywords: Life satisfaction, policy, subjective well-being, happiness

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1 Introduction: precedent databases

As governments strive to establish new and updated frameworks for the evaluation and planning of programs, policies, and budgets based on modern evidence about human well-being, some new institutions will be needed (Barrington-Leigh, 2021). This paper (1) suggests some principles for the curation of growing knowledge about what makes for a good life, and happy societies; (2) provides a fledgling sample of what a database of such research findings might look like; and (3) articulates some important limitations on how such knowledge can be used in policy making.

Throughout this paper, the term "happiness" can be taken as a short hand to mean the set of subjective wellbeing measures that are used to gauge overall quality of life, most prominent and important among them being respondents' own numerical evaluation of their level of satisfaction with life (SWL), obtained through a single survey question. The focus on response data to this one specific subgroup of subjective well-being questions, known as "evaluative" subjective well-being or as "cognitive evaluations of life," is motivated by extensive evidence that it best captures the impacts of enduring lived circumstances, while subjective well-being questions focused more on affective states are better suited to capture day-to-day influences (e.g., Abdel-Khalek, 2006; Helliwell, Wang, et al., 2022). It is also the measure recommended to government statistical agencies for use as an overarching measure of well-being (OECD, 2013; Stone, Mackie, et al., 2014).

Reviews of econometric studies of happiness have in several instances compiled summary effect sizes into tabular form, in which the existing evidence on several different influences on life satisfaction are brought together (Clark, Flèche, et al., 2019, online Annexes 2–5). A more comprehensive but less synthetic approach is embodied as part of the World Data Base of Happiness (Veenhoven, 2023). Its "Correlational Findings" section reports estimates of effects on happiness from a vast number of studies.

Frijters, Clark, et al. (2020) describe a process by which the UK might maintain an authoritative list of the best available estimates for any given influence on wellbeing. Frijters, Clark, et al.'s description may represent an overly-frequentist conception of filtering and aggregating evidence, but they emphasize the importance of moving towards transparency in however the updating of the database is carried out. Barrington-Leigh (2021) similarly advocates for a process to debate and distill knowledge about the relationship between policy-influenced variables and human experience, in an accountable and ongoing process, but suggests that this be led initially by the analytic community, rather than initially by government, with a transition towards more independence over time.

2 Principles for curation

In what follows, we dub the database of such knowledge a *Database of Happiness Coefficients* (DoHC) and, for the purposes of discussion, the public body tasked with curating it a *Wellbeing Knowledge Centre* (WKC). We propose the following principles for a WKC and DoHC to support policy making by government:

1. The DoHC should be curated independently or at **arms-length** from government. This is to ensure that all findings wll be made available to the public as well as to government agencies.

   While the knowledge embodied in the DoHC will never be sufficient to dictate policies (see Section 4), it must be available to the public and to public and private organizations in order

to help to push government to adopt a more evidence- and human- oriented policy making approach.

2. The WKC must strive for maximum **transparency** of its methods, including the criteria for selection and integration of studies.

   Collating, reviewing, and synthesizing evidence for the DoHC should be a collaborative undertaking, with engagement from all interested stakeholders. Initially, this task should likely be led by academia but ultimately it should become a broad academic, civil society, and government collaboration. This will ensure that the evidence remains (i) robust, (ii) inclusive of evidence, such as government program trials, which is high quality but may not be published, and (iii) likely to be both used and usable by interested parties. A possible productive service for the WKC would be to host an ongoing open review process of all research sources used to build the DoHC.

3. The WKC must always embrace an **openness to revision** of the database.

   Core to the DoHC are evaluations of the degree of confidence in causal inferences behind each coefficient. Future evidence will continuously revise and deepen the DoHC.

4. The DoHC should be designed to inform calculations about the expected **distribution of wellbeing**.

   Most frequentist statistical models in use in this field focus on estimating mean values of wellbeing, or use strong distributional assumptions, but these will ultimately prove inadequate to inform policy choices, which will be based on the full predicted distributions of wellbeing outcomes. That is, policy makers will want to consider both the univariate distribution of (for instance) SWL, as well as its variation along standard dimensions of disadvantage, oppression, and inequality.

5. The DoHC should target content to **support the needs of planners** and decision makers.

   Explanatory variables (predictive factors) in academic models are often chosen based on (a) their hypothesized importance in accounting for variance in happiness, or (b) simply on their availability, or (c) on being able to show or argue that their variation constitutes or contains a natural experiment of some kind. In order to be useful to decision makers and community planners, estimates will instead need increasingly to focus on the effects caused by objective, policy-amenable outcomes. One may therefore expect initially many knowledge gaps in the DoHC. The WKC may need to help direct resources to fill those gaps.

   In order to be accessible and useful, evidence in the DoHC also needs to be available in a format or formats tailored to the needs and capacities of relevant analysts and policy makers. It will need to be effectively communicated to ensure both awareness and timely attention.

6. The DoHC should be constructed so as to allow for **hierarchically-sourced evidence** and be able to privilege locally-contextualized evidence.

   A national WKC will incorporate evidence from around the world and liaise with other national or international curators of DoHC s, or possibly to lead in the curation of an international one. In any case, locally-contextualized evidence should be given appropriate priority, and at all geographic scales. A municipal or community government will need to lean heavily on evidence about wellbeing gathered from beyond its jurisdiction, but at the same time will want to emphasize local experience.

In practice, large government departments may inevitably maintain their own version of the DoHC internally, but it is expected that internal government studies and experience will eventually make it into the public domain, so that novel information should ultimately all flow into the public DoHC.

The WKC will most likely need to commission studies to summarize the knowledge in a given field, and incorporate the synthesized findings into the DoHC. The What Works Centre for Wellbeing in the U.K. is already playing this role of commissioning reviews (e.g., What Works Centre for Wellbeing, 2018).

3 Seed DoHC for Canada

In the interest of seeding an effort of building a DoHC for Canada, and in order to communicate the concept, we report the construction of a small DoHC.

3.1 Methods

Briefly, the following procedure was carried out to arrive at our database entries. First, a search of EconLit, EconPapers, Scopus, and JSTOR for publications in economics and psychology led to a set of 189 academic articles and working papers related to life satisfaction in Canada.

Secondly, these papers were retrieved and sorted by topic. Features such as survey data used, sample size, age of respondents, geographic scope, temporality (cross-section or longitudinal), and the subjective wellbeing measure in use were all tagged.

Thirdly, studies with large sample sizes, relevant SWB measures, nationwide scope and/or longitudinal data were preferentially chosen. Within each, we identified estimates derived through well-defined methodologies and evaluated the confidence in their effect and causality. These features were recorded in the database, along with any free-form comments or clarifications.

Our database is similar in intent to that of the What Works Centre for Wellbeing (2018), and different from that of Veenhoven (2023), in that it aims to synthesize a literature and interpret the relevance, confidence, and causal identification of available studies rather than to comprehensively enumerate them all. This process will always require judgment, but (Bayesian) statistical procedures needed to achieve the principles described above, especially the sixth, in a reproducible way will still need to be developed.

3.2 Findings

Our database is available online at lifesatisfaction.ca/dohc and included in full (as at the time of writing) at the end of this manuscript. Table 1 shows a few sample values from the database, which also includes commentary on the persistence of effects over time, the degree of confidence in effect and causality, the data source and type, and of course the relevant citation(s).

4 The role of happiness policy in context

In any discussion of the life satisfaction approach to benefit-cost accounting, it is important to keep the context in mind. There is a lot that any DoHC or wellbeing policy approach will never be able to do, and DoHCs do not have the potential to diminish policy making towards a deterministic or

Domain	Change	Effect on 0–10 SWL
Education	Extra compulsory year	-0.03 (± 0.098)
Environment	$\uparrow SO_2$ by $10 \mu g$ m^{-3}	-0.04 ($\pm .04$)
Work	Overqualification	-0.280 ($\pm .049$)
Finances	doubling of HH income	$+0.16$ ($\pm .196$)
Health	smoking daily$\rightarrow$never	$+0.12$ ($\pm .04$)
Social Capital	Partnered$\rightarrow$separated	-0.4 (± 0.14)
Crime	Victim of violent crime	-0.396

Table 1. Sample entries in the Canadian DoHC from several different domains. See Table 2 at the end of the paper for fuller details.

technocratic exercise. This section describes three important limitations (discussed in more detail in Barrington-Leigh, 2021) to what can be expected from a DoHC.

Distributions

First, as mentioned above, the knowledge base around predicting policy effects on wellbeing should in principle be designed to predict distributions of outcomes, not just averages. Having a good understanding of wellbeing impacts means one can disaggregate the overall effects of a given policy or budget based on different demographic groups or subpopulations and, importantly, intersectional groups. Many governments, when carrying out evaluations or projections, already disaggregate outcomes in this way. Using a new or more encompassing measure of wellbeing as an objective does not change the need nor challenge of understanding distributional outcomes.

Moreover, those distributional outcomes are fundamental to decision making. While the early literature on cost/benefit accounting for policy-making (e.g., Happiness Research Institute, 2020; Frijters and Krekel, 2021) emphasizes scalar objectives and descision criteria, in reality decision makers are sensitive to non-scalar considerations. For instance, Figure 1(a) and (b) show hypothetical distributions of current and projected future life satisfaction. The prospective policy appears to increase wellbeing from 6.6 to 7.3, according to its mean, yet the distribution shows that some people are worse off afterwards than before. Panel (c) disaggregates the anticipated outcome into a demographic subgroup (shown in orange) and the rest of the population (shown in blue). The relative lack of thriving of the subgroup may be a considerable concern for policy makers for ethical (equity) or political reasons. In any case, nothing about a life satisfaction approach nor the information in a DoHC will resolve the question of how to value different parts of a distribution in coming to an overall decision. These kinds of considerations do not happen automatically with a wellbeing approach, just as they do not happen automatically when using traditional welfare measures like family income.

Dynamics

There is a second reason that a DoHC does not act as a policy oracle. Policy makers may disagree about whether reducing a given disparity is best carried out through strong government intervention and redistribution, or more through removing barriers and allowing for people to change their own situation. However, this question is not just about ethics and principle, but also about the dynamics of how people behave and invest over their life course, and indeed how all kinds of possible

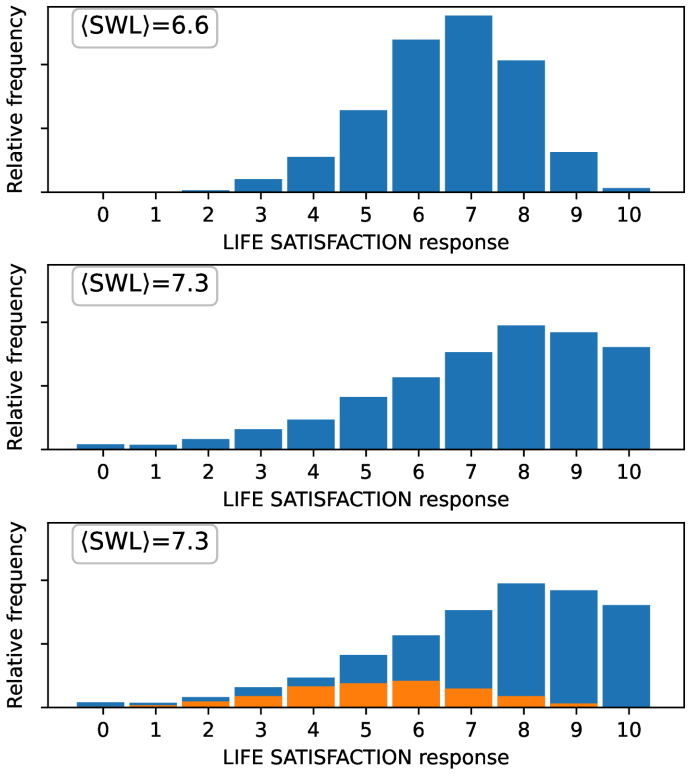

Fig. 1. Policy impact and the distribution of wellbeing. Hypothetical distributions of life satisfaction responses described in the text. (a) is before a policy change; (b) is a predicted outcome after the policy takes effect, and (c) a disaggregation of the resulting distribution for a demographic subgroup.

and typical government investments pay off over time. Those are questions to which a wellbeing approach assumes you already know the answer. That is, the DoHC is likely to specialize, especially early on, in answering the question, "Given a set of objective conditions *at some (future) point in time*, how happy would someone be?" In order to project the outcome of a policy change or budget allocation today, one will need to predict *future* objective conditions driven by the policy change. This information is all outside of the DoHC's contribution (for more explanation, see Barrington-Leigh, 2021; Barrington-Leigh, 2022). If anything, though, the policy synergies made possible by having an overarching, well-understood measure of wellbeing may make it much more desirable and valuable for governments to have sophisticated and detailed models of the return to human and non-human investments over the life course.

Precautionary approach

Despite the limitations above, the most ambitious and attractive promise of a wellbeing approach is that it offers a way to add up all the effects of taxation, legislation, and expenditure, along with extant conditions, to come up with a reasonable prediction of the distribution of outcomes for a prospective policy. This system, which boasts accountability to measurable outcomes and a growing evidence base, can provide cost/benefit or cost effectiveness guidance to a decision maker who has a way to handle distributional questions.

However, there is another dimension in which this vision has its limits: one cannot feasibly apply the wellbeing approach to all questions about future public investments. In particular, when considering questions about some investments with far-future payoffs, the uncertainty in predictions of objective outcomes will lead to a large amount of uncertainty about the implications for future human wellbeing. This uncertainty can overwhelm any decision-making clarity for decisions about alternative uses and benefits of a resource in the short term. That is, for long-run, unfamiliar, unpredictable, complex, and uncertain dynamics, the calculations described in the previous sections may not provide precise enough answers for making decisions in the same way that shorter-run decisions can be made. They will not always be able, therefore, to direct us when making choices between short-term outcomes and long-run outcomes.

This limitation is, again, nothing to do with switching to a more evidence-informed metric for human wellbeing. It is instead an existing challenge that is unchanged by the availability of a DoHC except in that it comes into sharper focus. When one has a more explicit measure of human wellbeing, the question of whether policy is simply meant to maximise it is starker than when pursuing vague, proxy objectives like economic growth, which no one would argue is a singular goal of optimal policy. The implication of this limitation is that some other principle, i.e., beyond wellbeing maximisation, is needed to make long-run decisions whose ramifications are particularly speculative or far-off. Barrington-Leigh (2021, section 6.1) again describes the alternative, or solution, in more detail, and associates these long-run quandaries with the idea of sustainability. A "precautionary approach" is typical language for how to handle such uncertainty when the costs and benefits for human wellbeing are not sufficiently understood or precise.

5 Conclusion

The availability of a DoHC with sufficient coverage and precision to be useful for informing government decision-making has become an imminent reality. The UK Treasury (2021) already has explicit guidance in place for this kind of quantitative evaluation. Canada's new Quality of Life

framework (Department of Finance, 2021) is perfectly suited to benefit from it also. On the way there, however, are significant capacity gaps and institutional transitions. A close relationship with academic researchers will be necessary in the beginning to construct this important database of human knowledge. The nascent DoHC in this paper may serve as an example for researchers and government agencies to begin thinking about how to shape, organize, and curate such information in an open and transparent and geographically hierarchical way.

As this idea permeates government agencies, a few cautions or points of advice are in order, and described above. To reiterate, (1) quantitative wellbeing approaches do not release governments from the duty of judging questions of distribution and equity; nor do they diminish the role of politics and debate in this task; (2) a DoHC does not predict the future; it only tells us how a given future may map onto experienced wellbeing; great efforts are needed in bolstering governments' abilities to model returns to investments, in particular investments in people which bear fruit throughout the life course; and (3) many questions of long-run sustainability cannot be sufficiently handled through quantitative optimization of wellbeing and should instead be debated and settled using an alternative framing principle, such as the goal of more arbitrary conservation.

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Table 2. Entries in the DoHC, available in a sortable, downloadable, and updated form at lifesatisfaction.ca/dohc.

Domain	Category	Change	Effect on 0-10 Life Satisfaction	Dynamics	Confidence in effect and causality	Source, Country, and Comments
Crime	Fear	A doubling fear of crime	Approx -0.30	Unknown	Medium. Panel data-based, often replicated, but drivers of fear not exogenous	Hanslmaier (2013), "derived from the relative effect of fera of crime versus effect from unemployment in a log-odds setting" (note on this reference in Frijters handbook) . Nationwide representative study on victimization and crime-related issues, 2010 (Panel; DEU). Derived from relative effect of fear of crime versus effect from unemployment in a log-odds setting
Crime	Violent crime	Victim of violent crime	-0.396	Effect largely in first year (only statistically significant in first year)	High but specific: effects are for unanticipated events that were recorded	Johnston, Shields, and Suziedelyte (2018), Table 3 (?) Effect of -0.398 for females and -.300 for males. HILDA 2002-12 (Panel; AUS).
Education	Duration	Extra year of compulsory education	-0.03 (± 0.098) converted from 1-7 to 0-10 LS	Persistent effects	High for UK; since effect found from 1972 UK compulsory school changes. Marginal result also found in other Western countries	Clark and Jung (2017), Page 11, paragraph 1 (based on Table 3). BHPS 1996-2008 (Panel; GBR).
Environment	Air pollution	Increase of 1-day SO_2 level by 10 μg m^{-3} (equivalent to 3.9 ppb)	-0.02 (± 0.02) on 5-point LS	Temporary effect	Effect robust in cross-sectional data; includes high-resolution geographic fixed effects.	Barrington-Leigh and Behzadnejad (2017a), In text, bottom of page 16 of paper. CCHS 2005-11 (Cross-sectional; CAN).
Environment	Air pollution	Increase of average PM10 level by 10 μg m^{-3} (equivalent to 3.9 ppb)	0.014 on a 3-point happiness scale	Unknown	Medium to high; effects of air pollution significantly exogenous for single individual	Levinson (2012), Results section paragraph 1. GSS (USA) 1984-96 (Cross-sectional; USA).
Environment	Air pollution	Increase of average SO_2 level by 10 μg m^{-3} (equivalent to 3.9 ppb)	-0.08	Unknown	High; effects driven by unanticipated changes in power plant emissions due to policy	Luechinger (2009), Table 4, column II (IV estimate). GSOEP 1983-2011 (Panel; DEU).
Environment	Land use	Construction of wind turbine within 4km around household	-0.1405 (±0.0782)	Seems temporary; effect disappears after 5 years	High; wind turbine construction exogenous for household in surroundings, difference-in-differences with treatment at multiple points in time	Krekel and Zerrahn (2017), Table 2, column 1. GSOEP 2000-2012 (Panel; DEU).
Environment	Land use	Increase of 1 hectare of greenspace within 1km of household	+0.0031 converted from 1-7 to 0-10 LS	Seems permanent	Medium to high; panel data-based set but no clearcut exogenous variation	White et al. (2013), 0.0020 in Table 2, Column 5. BHPS 1991-2008 (Panel; GBR). Cited by / taken from DOHC in Frijters and Krekel...?
Environment	Land use	Increase of 1 hectare of greenspace within 1km of household	+0.0066 (± 0.0049)	Seems permanent	Medium to high; panel data-based set but no clearcut exogenous variation; similar results by studies in the UK	Krekel, Kolbe, and Wüstemann (2016), Table B.2. GSOEP 2000-2012 (Panel; DEU). Effects strongest for older residents

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Domain	Category	Change	Effect on 0-10 Life Satisfaction	Dynamics	Confidence in effect and causality	Source, Country, and Comments
Environment	Land use	Increase of 1 hectare of vacant land (abandoned areas) within 1km of household	-0.0395 (± 0.0002)	Unknown	Medium; panel data-based but no clearcut exogenous variation	Krekel, Kolbe, and Wüstemann (2016), Table B.2. GSOEP 2000-2012 (Panel; DEU). Effects strongest for older residents
Environment	Weather	Daily rainfall of 6mm above average	-0.008 (± 0.0012) on 5-point LS	Temporary effect	Effect is statistically significant and robust in cross-sectional dataset, but not in panel dataset	Barrington-Leigh and Behzadnejad (2017b), Table 2, Columns 7 and 8. CCHS 2005-11, NPHS 2004-10 (Cross-sectional and panel; CAN). Women and individuals with poor health condition are more affected
Finances	Financial satisfaction	High financial stress (self-rated)	–0.864 (±0.086)	Unknown	Cross-sectional data, considering the possibility of an indirect effect of income through financial stress uncovers a strong effect of financial stress on life satisfaction, but an effect not clearly linked to income	Brzozowski and Spotton Visano (2020), Table 2, Column 2. GSS 19-24 (Cross-sectional; CAN). Measurement includes those who report 3 or higher on a 5-point stress scale and also choose "finances" as their primary source of stress
Finances	Income	Doubling of household income	+0.16 (± 0.196)	Persistent effects with elation peak	High. Effect found in panels, cross-sections, and shock-related (lotteries).	Flèche et al. (2019), Table 2.1. BCS70 (Panel; GBR). Height disputed and income measurement problematic.
Finances	Income	Doubling of household income	+0.5	Persistent effects with elation peak	High. Effect found in panels, cross-sections, and shock-related (lotteries).	Frijters, Haisken-DeNew, and Shields (2004), Table 2. GSOEP 1991-2001 (Panel; DEU).
Finances	Income	Increase in difference between own log income and log income of a provincial reference group	+0.194 (± 0.135)	Unknown	Medium. Panel data, significant negative effect as found in other Canadian literature.	Latif (2016), Table 5, Column 2. NPHS 1994-2009 (Panel; CAN). Reference group contains all individuals with a similar education level that are inside the same age bracket and residing in the same province
Finances	Prosocial spending	Donated to charity in the past month	+0.27(±0.039) on 11-point Cantril ladder	Unknown	Cross-sectional data, relies on correlational analysis, supported by limited experimental data	Aknin et al. (2013), . GWP 2006-08 (Cross-sectional and panel; WLD).
Finances	Prosocial spending	Donated to charity in the past month	+0.28 (±0.047) on 11-point Cantril ladder	Unknown	Cross-sectional data, relies on correlational analysis, supported by limited experimental data	Aknin et al. (2013), . GWP 2006-08 (Cross-sectional and panel; USA, CAN, AUS, NZL). Region-specific coefficient using survey results from US, Canada, Australia, NZ
Health			+0.24 (±-0.03)	Effect lasts while treatment lasts	Medium. Fixed-effect estimates consistent with small RCTs and public health campaign results, but magnitude very unclear	Mujcic and J.Oswald (2016), Table 2, column 1 and 2; in text near beginning of page 3. HILDA 2007, 2009 (Panel; AUS).

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Domain	Category	Change	Effect on 0-10 Life Satisfaction	Dynamics	Confidence in effect and causality	Source, Country, and Comments
Health	Mental health	From depression to full mental health	+0.71	Permanent, little evidence of a peak	High as found everywhere, including large clinical trials	Flèche et al. (2019), Table 16.2. BHPS (Panel; GBR). Based on 4-point change on a 0-12 scale
Health	Mental health	From excellent to poor mental health (self-rated)	-3.13 (±0.30)	Unknown	Cross-sectional data precludes causal claims	Shi et al. (2019), . CCHS 2009-10 (Cross-sectional; CAN). Obtained from control variables
Health	Nutrition	From 0 to 8 portions of fruit and vegetables a day	+0.16 (±0.08)	Unknown	Cross-sectional data precludes causal claims	Shi et al. (2019), Table 2, column 2. CCHS 2009-10 (Cross-sectional; CAN).
Health	Physical health	From excellent to poor physical health (self-rated)	-2.19 (± 0.17)	Unknown	Cross-sectional data precludes causal claims	Shi et al. (2019), Table 2, Column 1. CCHS 2009-10 (Cross-sectional; CAN). Obtained from control variables
Health	Physical health	From healthy to poor physical health (self-rated)	-0.96	Permanent effect, with initial peak	High as found everywhere, including to health shocks.	Ferrer-i-Carbonell and Frijters (2004), Unclear but likely taken from Table 3. See additional comments column. GSOEP 1983-2011 (Panel; DEU). Based on a 3-point change in a 1-5 self-report measure of physical health
Health	Physical health	From healthy to poor physical health (self-rated)	-1.080 (± 0.122)	Permanent effect, with initial peak	High as found everywhere, including to health shocks.	Frijters, Johnston, and Shields (2014), Table 4, column 2. NCDS 1958-2009 (Panel; GBR).
Health	Physical health	Satisfied with health status, at age 60 or older	+0.292 (±0.059) on 10-point LS	Unknown	Medium. Cross-sectional data precludes causal claims, yet findings are consistent with many studies suggesting health is the strongest single predictor of late-life SWB	Zelikova (2013), Table 2, Column 7. WVS 2005-07 (Cross-sectional; CAN, NZL, GBR, USA).
Health	Smoking	From smoking daily to not at all	+0.12 (± 0.04)	Unknown	Cross-sectional data precludes causal claims	Shi et al. (2019), Table 2, column 1. CCHS 2009-10 (Cross-sectional; CAN). Obtained from control variables
Social capital	Belonging	Sense of belonging to Canada	+0.336 (±0.137) on 10-point LS	Unknown	Cross sectional data precludes causal claims	Helliwell and Wang (2011), Table 3, Column 5. GSS17 (Cross-sectional; CAN). A sense of belonging to Canada is strongly associated with general social trust
Social capital	Belonging	Sense of belonging to the community	+0.781 (±0.110) on 10-point LS	Unknown	Cross sectional data precludes causal claims but is consistent with broader literature suggesting community-level belonging is most important	Helliwell and Wang (2011), Table 3, Column 5. GSS17 (Cross-sectional; CAN). A sense of belonging to one's community is strongly associated with neighbourhood trust
Social capital	Belonging	Sense of belonging to the province	+0.274 (±0.114) on 10-point LS	Unknown	Cross sectional data precludes causal claims	Helliwell and Wang (2011), Table 3, Column 5. GSS17 (Cross-sectional; CAN).

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Domain	Category	Change	Effect on 0-10 Life Satisfaction	Dynamics	Confidence in effect and causality	Source, Country, and Comments
Social capital	Discrimination	Experience religious discrimination	-0.39	Unknown	Cross-sectional data precludes causal claims	Vang, Hou, and Elder (2019), Table 4, Column 2. GSS27 (Cross-sectional; CAN). Significant positive interaction term suggests higher religiosity mitigates the negative effect of religious discrimination
Social capital	Friendships	Can count on friends	+0.414 (±0.090) on 11-point Cantril ladder	Unknown	Low. Cross sectional data with regional effects; causality unclear	Helliwell and Wang (2011), . GWP 2006 (Cross-sectional; WLD). Comes from Y/N response to question: "If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?"
Social capital	Friendships	From 0 close friends to 3-5 close friends	+0.241 (±0.017) on 10-point LS	Unknown	Cross sectional data; consistent with broader literature	Helliwell and Wang (2011), Table 3, Column 1. GSS17 (Cross-sectional; CAN). Impact is much smaller for those who are married or living with a partner, suggesting friends and spouses provide some similar happiness benefits
Social capital	Friendships	From 0 close relatives to 3-5 close relatives	+0.526 (±0.149) on 10-point LS	Unknown	Cross sectional data; consistent with broader literature	Helliwell and Wang (2011), Table 3, Column 1. GSS17 (Cross-sectional; CAN). Paper includes several categories of numbers of close relatives (1 or 2, 3-5, 6-10, 11-20, over 20), an increase from one category to the next is about 0.15
Social capital	Friendships	Seeing close friends more frequently	+0.096 (±0.051) on 10-point LS	Unknown	Cross-sectional data precludes causal claims, but consistent with	Helliwell and Wang (2011), Table 3, Column 4. GSS17 (Cross-sectional; CAN). Frequency of visits with family and especially with friends add significantly to LS above and beyond the effects of having such networks in place
Social capital	Friendships	Seeing close relatives more frequently	+0.096 (±0.051) on 10-point LS	Unknown	Cross sectional data; consistent with broader literature	Helliwell and Wang (2011), Table 3, Column 1. GSS17 (Cross-sectional; CAN). Frequency of visits with family add significantly to LS above and beyond the effects of having the network in place
Social capital	Immigration	Being an immigrant parent (female)	-0.210 (±0.106) on 5-point LS	No apparent improvement over time, "years since arrival" variable is statistically insignificant	Medium. Cross sectional data, effect persists with controls for personal characteristics such as ethnicity, income, etc; consistent with broader literature	Burton and Phipps (2010), Table 5, Column 3. CCHS 2002-10 (Cross-sectional; CAN). No statistically significant effect for female immigrant children once mediating variables (language, ethnicity) are added

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Domain	Category	Change	Effect on 0-10 Life Satisfaction	Dynamics	Confidence in effect and causality	Source, Country, and Comments
Social capital	Immigration	Being an immigrant parent (male)	-0.218 (±0.133) on 5-point LS	No apparent improvement over time, "years since arrival" variable is statistically insignificant	Medium. Cross sectional data, effect persists with controls for personal characteristics such as ethnicity, income, etc; consistent with broader literature	Burton and Phipps (2010), Table 5, Column 4. CCHS 2002-10 (Cross-sectional; CAN). No statistically significant effect for female immigrant children once mediating variables (language, ethnicity) are added
Social capital	Romantic relationships	From never married to married at 50 or older	+0.20 (±-0.078)	Permanent effect with high initial peak	Medium: cohort study findings so causality unclear	Flèche et al. (2019), Table 9.1. BHPS (Panel; GBR).
Social capital	Romantic relationships	From partnered to separated	-0.40 (±-0.14)	High intial effect, then some adaptation	High as found everywhere.	Flèche et al. (2019), Table 5.2. BHPS (Panel; GBR). Note that most find new partners and don't stay separated. Lone men suffer more.
Social capital	Romantic relationships	From single to married/partnered	+0.28 (±-0.10)	Permanent effect with initial peak	High. Ubiquitous finding around the world	Flèche et al. (2019), Table 5.2. BHPS (Panel; GBR).
Social capital	Romantic relationships	From single to married/partnered	+0.1	Permanent effect with initial peak	High. Ubiquitous finding around the world	Ferrer-i-Carbonell and Frijters (2004), Taken from Frijters and Krekel's table– not exactly sure where this coefficient came from. Maybe Column 1: fixed effect ordered logit 0.08 in Table 3 ?. GSOEP 1983-2011 (Panel; DEU).
Social capital	Romantic relationships	From single to married/partnered	+0.60 (±0.022)	Unknown	High. Panel data, fixed instrumental effects	Latif (2010), Table 3, Column 2. NPHS 1994-2007, CCHS 2009-11 (Panel; CAN).
Social capital	Romantic relationships	Never married, age 60 or older	-0.122 (±-0.078)	Unknown	Medium. Cross-sectional data precludes causal claims, yet consistent with broader literature as found widely	Zelikova (2013), Table 2, Column 7. WVS 2005-07 (Cross-sectional data; CAN, NZL, GBR, USA).
Social capital	Trust	Believe a lost wallet is likely to be returned if found by a stranger	+0.237 (±0.098) on 10-point LS	Unknown	Cross sectional data precludes causal claims but is consistent with GWP findings and broader literature	Helliwell and Wang (2011), Table 3, Column 3. GSS17 (Cross-sectional; CAN).
Social capital	Trust	Believe a lost wallet is likely to be returned if found by a stranger	+0.074 (±0.098) on 11-point Cantril ladder	Unknown	Low. Cross sectional data includes regional fixed effects; but effect is statistically insignificant.	Helliwell and Wang (2011), Table 2-c, Column 6. GWP 2006 (Cross-sectional; WLD).

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Domain	Category	Change	Effect on 0-10 Life Satisfaction	Dynamics	Confidence in effect and causality	Source, Country, and Comments
Social capital	Trust	Believe a lost wallet is likely to be returned if found by neighbours	+0.172 (±0.088) on 10-point LS	Unknown	Cross sectional data; consistent with GWP findings and broader literature	Helliwell and Wang (2011), Table 3, Column 3. GSS17 (Cross-sectional; CAN). Respondents who live in high-density census tracts and are highly mobile are less likely to believe a neighbour would return their wallet
Social capital	Trust	Believe a lost wallet is likely to be returned if found by neighbours	0.117 (±0.088) on 11-point Cantril ladder	Unknown	Medium. Cross sectional data includes regional fixed effects; generally consistent with broader literature	Helliwell and Wang (2011), Table 2-a, Column 6. GWP 2006 (Cross-sectional; WLD).
Social capital	Trust	Believe a lost wallet is likely to be returned if found by police	0.138 (±0.094) on 11-point Cantril ladder	Unknown	Medium. Cross sectional data includes regional fixed effects; generally consistent with broader literature	Helliwell and Wang (2011), Table 2-b, Column 6. GWP 2006 (Cross-sectional; WLD).
Social capital	Trust	Confidence in police	+0.361 (±0.114) on 10-point LS	Unknown	Cross sectional data precludes causal claims	Helliwell and Wang (2011), Table 3, Column 5. GSS17 (Cross-sectional; CAN).
Social capital	Trust	Social trust (self-reported trust in "most people")	+0.131 on 10-point LS	Unknown	Cross-sectional data precludes causal claims; statistically significant positive effect on life satisfaction and domain satisfaction in all domains	van der Horst and Coffé (2012), Table 3, Column 1. GSS17 (Cross-sectional; CAN). Social trust measured by a binary variable where 0 is “one cannot be too careful in dealing with people” and 1 is “most people can be trusted”.
Social capital	Trust	Trust in co-workers	+0.638 (±0.149) on 10-point LS	Unknown	Cross sectional data precludes causal claims;	Helliwell and Wang (2011), Table 3, Column 5. GSS17 (Cross-sectional; CAN).
Social capital	Trust	Trust in neighbours	+0.336 (±0.140) on 10-point LS	Unknown	Cross sectional data precludes causal claims but is consistent with broader literature on community-level trust	Helliwell and Wang (2011), Table 3, Column 5. GSS17 (Cross-sectional; CAN). Respondents who live in high-density census tracts and are highly mobile are less likely to trust their neighbours
Work	Commute	From no commute to 1 hour car commute	-0.012 (± 0.041)	Unknown	Low. Findings disputed and causality unclear.	Dickerson, Hole, and Munford (2014), Table 2, Column 2. BHPS 1996-2008 (Panel; GBR).
Work	Commute	From no commute to 1 hour car commute	-0.20 (± 0.098)	Unknown	Low. Findings disputed and causality unclear.	Stutzer and Frey (2008), Table 1, Column 2. GSOEP 1985-2003 (Panel; DEU).
Work	Commute	Increase in commute (by ???)	-0.18 (± 0.1176) on 10-point LS	Unknown	Low. Unclear units on time allocation commuting variable .	Hilbrecht, Smale, and Mock (2014), Table 12, Column 2. GSS 24 (Cross-sectional; CAN). Particularly strong effect for women; Significant indirect effects for time spent in physically active leisure and seriousness of traffic congestion
Work	Employment status	From employment to unemployment	-0.71 (±0.059)	Immediate effect higher then reducing, but no adaptation	Immediate effect higher then reducing, but no adaptation	Flèche et al. (2019), Table 4.2. BCS70 (Panel; GBR).

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Domain	Category	Change	Effect on 0-10 Life Satisfaction	Dynamics	Confidence in effect and causality	Source, Country, and Comments
Work	Employment status	From employment to unemployment	-0.46 (±0.078)	Immediate effect higher, then reducing, but no adaptation	High. Large effects found in longitudinal cross-sections, recession-related and employment-shock related (plant closures)	Flèche et al. (2019), Table 4.2. GSEOP (Panel; DEU).
Work	Employment status	From employment to unemployment	–.054 (±0.022) on 5-point happiness-in-life	Short and long term effects	High. Panel data, fixed instrumental effects	Latif (2010), Table 3, Column 2. NPHS 1994-2007, CCHS 2009-11 (Panel; CAN). Not statistically significant for individuals aged 54 and older
Work	Employment status	From full-time employed to part-time employed not wanting more hours	+0.080 (±0.043)	Largely permanent	Effect very robust in cross section and panels, but causality unclear	De Neve and Ward (2017), Table 6.3, Column 8 "NA+ANZ". GWP 2006-08 (Cross-sectional and panel; CAN, NZL, AUS, USA). Particularly strong effect for men
Work	Employment status	From full-time employed to part-time employed wanting more hours	-0.108 (±0.016)	Largely permanent	Effect very robust in cross section and panels, but causality unclear	De Neve and Ward (2017), Table 6.3, Column 8 "NA+ANZ". GWP 2006-08 (Cross-sectional and panel; CAN, NZL, AUS, USA). Particularly strong effect for men
Work	Employment status	From unemployment to out-of-labour force	-0.23 (± 0.13)	Unknown	Cross-sectional data precludes causal claims	Shi et al. (2019), Table 4.2. CCHS 2009-10 (Cross-sectional; CAN).
Work	Employment status	From working to retired (at age 55 or older)	+0.056 (± 0.047) on 5-point happiness-in-life	Unknown	High. Panel data, fixed instrumental effects	Latif (2011), Table 2, Column 4. NPHS 1994-2007 (Panel; CAN). No significant effect for ages 45-54
Work	Job satisfaction	One unit change on 0-10 scale of non-financial job satisfaction	+0.15 (± 0.04)	Unknown	Cross sectional data but findings consistent between ESC and GSS data. Causality unclear.	Helliwell and Huang (2010), Table 1, Column 2. GSS17, ESC2 (Cross-sectional; CAN). Income effect instrumented for ESC data, adjusted in GSS data
Work	Type of job	Being in a white collar job versus a blue collar job	Approx. +0.80	Unknown	Effect very robust in cross-section and panels but causality unclear	De Neve and Ward (2017), Approximated from job categories in Table 6.5 (?). GWP 2006-08 (Cross-sectional and panel; WLD). White collar includes: managers, officials, clerical and office workers; blue collar includes construction, transportation, farming
Work	Type of job	Employment in an occupation that is below an individual's skills or work experience (immigrants)	-0.055 (± 0.096)	Negative effect tends to diminish with increased length of stay in Canada	Cross-sectional data precludes causal claims	Hou and Frank (2017), Table 3, Column 4. CCHS 2009-14 (Cross-sectional; CAN). Lower income the main intermediate factor linking over-education to life satisfaction for immigrant

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Domain	Category	Change	Effect on 0-10 Life Satisfaction	Dynamics	Confidence in effect and causality	Source, Country, and Comments
Work	Type of job	Employment in an occupation that is below an individual's skills or work experience (non-immigrants)	-0.280 (± 0.049)	Unknown	Cross-sectional data precludes causal claims	Hou and Frank (2017), Table 3, Column 2. CCHS 2009-14 (Cross-sectional; CAN). Lower income just one of the important factors for non-immigrants.
Work	Work conditions	Flexible work hours	+0.19 (± 0.1176)	Unknown	Cross-sectional data precludes causal claims	Hilbrecht, Smale, and Mock (2014), Table 12, Column 3. GSS 24 (Cross-sectional; CAN).