

Evidence Check

Wellbeing indicators across the life cycle

An **Evidence Check** review brokered by the Sax Institute for NSW Family and Community Services and FACSIAR. November 2017.

An **Evidence Check** rapid review brokered by the Sax Institute for NSW Family and Community Services and FACSIAR. November 2017.

This report was prepared by:

Riyana Miranti, Robert Tanton, Yogi Vidyattama, Jacki Schirmer, Pia Rowe.

The National Centre for Social and Economic Modelling (NATSEM), University of Canberra.

November 2017
© Sax Institute 2017

This work is copyright. It may be reproduced in whole or in part for study training purposes subject to the inclusions of an acknowledgement of the source. It may not be reproduced for commercial usage or sale. Reproduction for purposes other than those indicated above requires written permission from the copyright owners.

Enquiries regarding this report may be directed to the:

Principal Analyst
Knowledge Exchange Program
Sax Institute
www.saxinstitute.org.au
knowledge.exchange@saxinstitute.org.au
Phone: +61 2 91889500

Suggested Citation:

Miranti R, Tanton R, Vidyattama Y, Schirmer J, Rowe P. Wellbeing indicators across the life cycle: an Evidence Check rapid review brokered by the Sax Institute (www.saxinstitute.org.au) for NSW Family and Community Services and FACSIAR. November 2017

Disclaimer:

This **Evidence Check Review** was produced using the Evidence Check methodology in response to specific questions from the commissioning agency.

It is not necessarily a comprehensive review of all literature relating to the topic area. It was current at the time of production (but not necessarily at the time of publication). It is reproduced for general information and third parties rely upon it at their own risk.

Wellbeing indicators across the life cycle

An **Evidence Check** rapid review brokered by the Sax Institute for NSW Family and Community Services and FACSIAR. November 2017.

This report was prepared by Riyana Miranti, Robert Tanton, Yogi Vidyattama, Jacki Schirmer, Pia Rowe.



UNIVERSITY OF
CANBERRA



INSTITUTE FOR
GOVERNANCE
& POLICY ANALYSIS

NATSEM
at the University of Canberra

About NATSEM/IGPA

The National Centre for Social and Economic Modelling (NATSEM) was established on 1 January 1993. It supports its activities through research grants, commissioned research and longer-term contracts for policy analysis and model development and maintenance. In January 2014, the Institute for Governance and Policy Analysis (IGPA) was established at the University of Canberra to harness the research strengths of NATSEM and the Australia and New Zealand School of Government (ANZSOG) Institute for Governance (ANZSIG). IGPA aims to create and sustain an international-class research institution for the study and practice of governance and public policy. The Institute has a strong social mission committed to the production of leading-edge research and research-driven education programs with genuine public value and, by implication, policy impact. The integration of ANZSIG and NATSEM has created exciting opportunities for the development of cutting-edge research in public policy analysis through combining expertise in qualitative and quantitative methods, micro-simulation, policy modelling and evaluation.

NATSEM is one of three research centres within IGPA. NATSEM aims to be a key contributor to social and economic policy debate and analysis by undertaking independent and impartial research of the highest quality, including supplying commissioned research services. NATSEM is one of Australia's leading economic and social policy research centres and is regarded as one of the world's foremost centres of excellence for micro-data analysis, microsimulation modelling and policy evaluation. In keeping with IGPA's core mission, NATSEM's research activities aim to have significant policy impact and lead to social and economic change.

IGPA Director: Professor Mark Evans

NATSEM Directors: Professor Robert Tanton and Professor Laurie Brown

About the staff

The staff at University of Canberra who have worked on this Evidence Check are experts in the wellbeing literature.

Associate Professor Riyana Miranti has worked at NATSEM since 2007 and has a strong research interest in social wellbeing and equity, focusing on issues of disadvantage and wellbeing including poverty, social exclusion and inequality affecting children, women, older people, families and migrants. She worked on the Child Social Exclusion Index, Youth Social Exclusion Index and Index of Wellbeing for Older People at the small area level in Australia and led the Older Adults Social Exclusion project, which was published in the journal *Social Inclusion*. She was a Chief Investigator for an ARC Linkage project on workforce vulnerabilities among mature-aged workers.

Professor Robert Tanton has been at NATSEM since 2005 and worked on the Child Social Exclusion indexes, indexes of Wellbeing for Older Australians and the Youth Social Exclusion index. He has also attended Organisation for Economic Co-operation and Development (OECD) conferences on wellbeing. Before joining NATSEM, he worked at the Australian Bureau of Statistics (ABS), where he led the team reviewing and calculating the 2001 Socio-Economic Index for Areas. He was in the same ABS branch as Jon Hall, principal author of the first *Measuring Australia's Progress* (renamed *Measures of Australia's Progress* in 2004), and edited sections of these first two publications. He has presented to national and international conferences on spatial disadvantage and wellbeing, including the United Nations University World Institute for Development Economics Research (UNU-WIDER), the Australian Economics Society and ABS seminars.

Dr Yogi Vidyattama is a senior research fellow at NATSEM. He has focused on spatial and geographical economic analysis and is experienced in microsimulation modelling, economic growth, income and wealth distribution and inequality. His principal areas of research include: spatial impact of government policy; housing affordability; spatial distribution of inequality and disadvantage; and analysis of wealth and superannuation. He helped develop the Index of Wellbeing for Older People at the small area level in Australia.

Associate Professor Jacki Schirmer is co-appointed by the University of Canberra's Health Research Institute and Institute for Applied Ecology. She leads the Regional Wellbeing Survey, which explores the wellbeing and quality of life of 13,000 regional Australians. She works with government agencies and community organisations to identify strategies for improving wellbeing.

Dr Pia Rowe recently completed her PhD at the IGPA. Her PhD research investigated inclusive notions of politics and feminism. She would like to find a way to include the voices of those traditionally absent from the mainstream political science literature and as a result influence the way in which politicians engage with non-traditional audiences such as those found in online interest groups. Her other research fields include social media and the 'wellness' industry.

Contents

Key concepts.....	4
Wellbeing frameworks: key terms.....	4
Indicators and measurement.....	5
Quality of evidence.....	6
Executive summary.....	7
Research questions and aims.....	7
Methodology.....	7
Scope and limitations.....	9
Introduction.....	10
Defining and measuring wellbeing.....	10
Defining good indicators.....	12
Methodology.....	13
Classifying the selected indicators according to the domains of the NSW Human Services Outcomes Framework.....	18
Collecting and assessing the evidence.....	18
Wellbeing indicators: evidence and useability.....	22
Main indicators that apply across the life cycle.....	22
Wellbeing indicators that are relevant for a particular life cycle.....	37
Discussion.....	40
Conclusion.....	41
References.....	43

Key concepts

This Evidence Check identifies key indicators of wellbeing relevant across the life cycle. A number of key terms are used throughout. A brief overview of these key concepts is provided below, focusing on (i) concepts related to developing a wellbeing framework, (ii) concepts related to indicators and measurement, and (iii) concepts related to assessing the quality of evidence.

Wellbeing frameworks: key terms

Domain	A domain examines a specific aspect of wellbeing within an overall framework. In this review we draw on the domains identified in the NSW Human Services Outcomes Framework, which is based on seven core areas or domains of wellbeing: safety, social and community, health, economic, home, education and skills, and empowerment.
Determinant	A determinant is a factor that influences something and, in this case, a factor that can change our wellbeing outcome.
Framework	A framework is a set of structured ideas or principles that become the basis from which to measure and achieve wellbeing. Frameworks can usually be broken down into a number of domains, and then into a number of indicators that measure wellbeing within that domain. In this Evidence Check, we based our analysis on the NSW Human Services Outcomes Framework. We assessed multiple wellbeing frameworks to identify the indicators of wellbeing most commonly included in internationally recognised wellbeing frameworks. A total of 17 frameworks were identified as having high relevance and being representative of the wellbeing frameworks used in Australia and internationally. We called these our key frameworks.
Outcome	An outcome is a result or product; in this review it is the level of wellbeing a person has achieved overall as a result of having differing levels of access to positive outcomes in different wellbeing domains. Overall wellbeing outcomes are often assessed using subjective measures such as a person's life satisfaction or happiness.
Wellbeing	Wellbeing is usually defined as the extent to which a person has a high quality of life, can achieve desired outcomes in life and can contribute to society. Stable wellbeing is often defined as a state in which "individuals have the psychological, social and physical resources they need to meet a particular psychological, social and/or physical challenge." It is usually multidimensional, capturing all important aspects in life, including mental health, physical health, economic wellbeing, social wellbeing and liveability. Wellbeing can be measured objectively and subjectively.

Indicators and measurement

Data availability	The availability of the published data for NSW. If known about, administrative data is also included. However, the authors may not be aware of some data available to the NSW Department of Family and Community Services (FACS).
Frequency	The frequency with which an indicator is included across the key frameworks we investigated. In Appendices 2–4, frequency is classified high if an indicator is included in 60%–100% of the relevant key frameworks investigated, medium if an indicator is included in 41%–59% of the relevant key frameworks and low if an indicator is included in 40% or less of the frameworks we reviewed. We listed 'N/A' or 'not available' against an indicator if it was not included in any framework we investigated. Appendix 1 summarises the information in Appendices 2–4, and in this appendix an indicator is classified high if a summary of the repetition across different key frameworks of the life cycle is high (for example, if children are high, youth are high and older people are low, then all population would be high). Please note, there may be some subjective consideration in this ranking if the composition of the frequency is complex.
Practicality/Useability	A summary measure of how useful a measure or indicator is. It is based on three criteria: (i) reliability (or evidence, as will be described below); (ii) frequency; and (iii) data availability. Practicality/Useability is categorised as high, medium or low based on the most common rating achieved across these three criteria. For example, if two out of three criteria are assessed as high, then the summary measure will also be high.
Reliability	Reliability refers to the consistency of findings. In this Evidence Check, we assessed reliability based on whether the literature contained repetitive and consistent findings regarding the linkage between a particular indicator and wellbeing outcomes. We assessed repetitiveness based on finding evidence in multiple reputable journal articles or reports. We assessed consistency based on whether multiple studies identified the same type of association between an indicator and wellbeing outcomes. We categorised reliability as high, medium (if there is repeated academic evidence with mixed or inconsistent findings) or low. This categorisation was based on our assessment of the academic integrity of the literature. It is deliberately broad due to the state of available evidence: the lack of precision in estimates of the strength and reliability of associations in the literature means a simple, three-category qualitative categorisation best reflects the quality of evidence available to assess reliability.
Relevance	The applicability of the measure to people in different stages of the life cycle (children, youth, older people) and to specific population groups such as Aboriginal and Torres Strait Islanders, people with disability and people from culturally and linguistically diverse communities (CALD).

Sensitivity	In general, sensitivity refers to the extent to which one variable changes when another does. In this Evidence Check, sensitivity refers to the extent to which wellbeing outcomes vary as a result of a change in an indicator of wellbeing. We assessed sensitivity based on the magnitude or strength of statistical associations found between different indicators and wellbeing outcomes in the studies reviewed. Many studies performed little or no sensitivity assessment, limiting our subsequent assessment of overall sensitivity.
-------------	--

Quality of evidence

Indicator	An indicator is the information that shows the condition of a domain. An indicator belongs to at least one domain, but can also be relevant to multiple domains.
Measure	A measure is a way of evaluating something, or a standard against which something can be compared. Measures are used to provide values for indicators.
Time frame	The time frame is the period over which the data is collected — a point in time refers to an indicator collected on a certain day (for example, Census data). Some indicators can have a number of different periods of collection — for example, income can be weekly, fortnightly or annual.
Unit of analysis	The unit in which the indicator is measured.

Executive summary

Research questions and aims

This Evidence Check was commissioned by the Sax Institute for the NSW Department of Family and Community Services (FACS). The objective was to review potential indicators to support the implementation of the NSW Human Services Outcomes Framework, which is based on seven core wellbeing domains: safety, social and community, health, economic, home, education and skills, and empowerment. The review aims to answer three research questions:

1. What indicators and their measures of wellbeing have been successfully validated and applied in population settings?
2. Which measures have specific application at different points across the life cycle?
3. Which measures have application to specific population groups in NSW? At what stages of the life cycle?

The review provides advice on answering these questions, as well as identifying gaps in the literature and indicator frameworks.

This work has been conducted by staff at the National Centre for Social and Economic Modelling, part of the Institute for Governance and Policy Analysis at the University of Canberra, with assistance from Jacki Schirmer from the Health Research Institute, which conducts Australia's Regional Wellbeing Survey.

Methodology

To identify the current evidence and any other evidence needed to develop indicators for the framework, we examined a number of international and Australian frameworks on wellbeing, including those from the OECD, the British Office for National Statistics (ONS), the Australian Bureau of Statistics (ABS) and the Australian Institute of Health and Welfare (AIHW). After identifying the wellbeing indicators used in these frameworks, we assessed the quality of evidence for these indicators in the academic and grey literature. We assessed the quality of evidence for each indicator using three criteria:

- Frequency of inclusion in key frameworks (rated as high, medium or low), for the whole population, children, youth and older adults
- Reliability — the consistency of the statistical association of the indicator with wellbeing outcomes in multiple reputable journal articles or reports (high, medium or low)
- Availability of data for NSW (including administrative data, if known) (measured as high, medium or low after assessing the availability of datasets).

We then made an overall assessment of the practicality and useability of the indicator, weighing up both the quality of evidence and the availability of data.

As a final step, the assessment was validated against the broader knowledge the staff conducting the review have of international developments in the field of wellbeing.

High useability indicators

From this process, we identified 16 high useability indicators for the NSW context, covering economic, home, health, education and skills, and social and community. They are household income, educational attainment, employment, unemployment, financial hardship, overcrowding, housing affordability, homelessness, life expectancy, self-reported health status, disability, smoking behaviour, mental health, cognitive skills, social network/support and volunteering.

Table 1. High useability indicators

Economic
1. Household income
2. Employment
3. Unemployment
4. Financial hardship
Home
1. Overcrowding
2. Housing affordability
3. Homelessness
Health
1. Life expectancy
2. Self-reported health status
3. Disability
4. Smoking behaviour
5. Mental health
Education and Skills
1. Educational attainment
2. Cognitive skills
Social and Community
1. Social network/support
2. Volunteering
Empowerment (0)
Safety (0)

While we assessed these indicators as having high useability for the NSW framework, FACS may wish to use other indicators. We have therefore included our assessment of every indicator in Appendix 1, so that FACS has detailed information on each indicator we assessed.

One of our conclusions from our analysis of the overseas frameworks is that there is a gap in useable data in the empowerment domain. Further examination of other indicators that can be included under this domain is warranted in future research.

Scope and limitations

It is important to understand what is and is not assessed in this Evidence Check. The review assesses the state of current evidence. Where there is little or no evidence of an association between an indicator and wellbeing outcomes, it does not mean there is no relationship but may point to a lack of research into the relationship between the indicator and wellbeing. Alternatively, the research currently available may have identified only a weak relationship, but new research may identify a stronger relationship using different statistical methods. Research examining wellbeing is a fairly new field, and new research is being released regularly, some of which the authors of this review are involved in (see, for example, Tomyn et al.¹ This means the state of evidence is evolving rapidly and is likely to change as a larger and more robust body of evidence becomes available.

Further, the relationship between an indicator and wellbeing may be low due to the way the indicator is specified. For some indicators, the evidence was mixed, some studies found high academic evidence between the indicator and wellbeing and some did not. In many of these cases, the differences may be a consequence of the use of different approaches to measuring and calculating the indicator rather than a lack of actual association. Context, for example, the country the analysis was conducted in, may also matter (for example, a high-income vs a low-income country). Income was one such indicator.

The analysis conducted for this Evidence Check was written up for every indicator assessed, and this is included as attachments/appendices to this report, which summarises this extensive analysis.

We hope this summary of the current state of evidence will inform discussion within the NSW Government on appropriate indicators for measuring wellbeing in its own domains.

Introduction

This is an Evidence Check review to inform indicators and measurement of wellbeing across the life cycle for the NSW Human Services Outcomes Framework. This framework is based on seven core domains of wellbeing: safety, social and community, health, economic, home, education and skills, empowerment. There are three research questions. First, what indicators of wellbeing have been successfully measured, validated and applied in population settings? Second, what indicators have specific application at different points across the life cycle? Finally, which indicators of wellbeing are applicable to specific population groups in NSW?

The review is structured into several sections. Following the introduction, the second section discusses the definition and measurement of wellbeing. The third section discusses the review methodology while the fourth section presents the results of our assessment in terms of useability and evidence, followed by a discussion on the strength of and gaps in the evidence. The last section summarises the strength of evidence available for the use of different indicators.

Defining and measuring wellbeing

While wellbeing is a fairly new academic field, it came to public attention after the 2010 publication in book form of a French government report by distinguished economists Joseph Stiglitz, Amartya Sen and Jean-Paul Fitoussi.² That report concluded gross domestic product (GDP) was an unreliable measure of the state of a nation and that other factors, such as wellbeing, should also be considered when framing public policy. Others have also concluded discussing and evaluating wellbeing is important because it provides useful information about the quality of lives of individuals³, which is important to inform public policy.

Various interpretations and approaches to measuring wellbeing have been proposed in the literature: very broadly, the term usually refers to the extent to which a person has a high quality of life, can achieve desired outcomes in life and can contribute to society. Stable wellbeing is often defined as a state in which *“individuals have the psychological, social and physical resources they need to meet a particular psychological, social and/or physical challenge.”*⁴ It is usually multidimensional, capturing all important aspects in life including mental health, physical health, economic wellbeing, social wellbeing and liveability. Wellbeing can be measured objectively and subjectively.

Objective measures of wellbeing use currently available indicators such as education, labour force status or homelessness. Subjective measures of wellbeing ask a respondent a specific question. Examples of ways to subjectively measure wellbeing include questions on life satisfaction such as ‘In general, how satisfied are you with your life?’; and questions on self-assessed health such as ‘In general, would you say that your health is excellent, very good, good, fair, or poor?’.

Despite growing interest in the measurement and monitoring of wellbeing, and because it is still a relatively new field, it remains a contested concept with multiple definitions proposed in the literature.³

Interest in measuring wellbeing has emerged in part from a rejection of the use of economic measures only, such as income or GDP, to measure societal progress. In recent years there has been a shift of focus in which progress or development is not measured solely on economic indicators, but focuses on a broader range of measures of quality of life, or wellbeing.^{2,4} An important difference between the concepts of wellbeing and economic welfare is that wellbeing usually adopts a multidimensional approach capturing all important aspects of life, rather than focusing purely on the economic aspect. A range of objective measures of quality, life and progress based on this broader conceptualisation has developed, perhaps exemplified by the United Nations Human Development Index, which measures progress based on the extent to which nations achieve

a high standard of living, lifespan and education for their citizens. This addresses the concerns raised by many about traditional economic indicators, which assume overall economic activity is an indicator of quality of life.⁵

At the same time, a rapidly growing field examining subjective wellbeing has developed. Subjective wellbeing considers an individual's own interests, needs or preferences^{3 5} and Kahneman and Krueger⁶ have argued that indicators of subjective wellbeing provide a more nuanced appraisal than objective measures such as income, expenditure, educational attainment or lifespan.

Not surprisingly given the broad and sometimes differing definitions of wellbeing used across the literature, there is no clear agreement on measures of wellbeing, with a wide range of measures used. In addition, in many cases there is no clear distinction between measures of 'determinants of wellbeing' and 'wellbeing outcomes'. A determinant is a factor likely to change a person's wellbeing (for example, having good health, good social connections, high household income, high levels of education), and the outcome is the level of wellbeing achieved as a consequence of access to different determinants (for example, high levels of life satisfaction). As an example, is income a determinant of wellbeing? Or a wellbeing outcome? Many argue it is a determinant, but many frameworks use it as a proxy for wellbeing, so measure and interpret it as an outcome. This is usually because a direct measure of wellbeing is not available, so proxies such as income are used to measure it.

There is also a division in the literature between using objective and subjective measures of wellbeing. Within the subjective wellbeing literature, two related approaches are often debated: the hedonic, which measures wellbeing based on a person's self-rated happiness, positive affect, low negative affect and satisfaction with life^{3 7,8} and the eudaimonic, which measures a person's sense of purpose and meaning.^{9,10} Ryan and Deci have argued the eudaimonic approach goes beyond hedonic as wellbeing is different from just happiness per se.¹⁰ Within both concepts, there are domain-based measures of wellbeing that combine measures of various wellbeing determinants to construct an index of overall wellbeing outcomes. For example, Ryff and Keyes conceptualised wellbeing as psychological wellbeing (PWB) with six separate aspects of human actualisation based largely on eudaimonic wellbeing measures: autonomy, personal growth, self-acceptance, life purpose, mastery and positive relatedness.¹¹ Seligman's PERMA framework contains five wellbeing measures — positive emotions, engagement, relationships, meaning and accomplishment — that are both hedonic and eudaimonic.¹²

Objective measures of wellbeing are characteristics of people and communities that can be measured independently by an external observer. Wellbeing is seen as high or low depending on these characteristics, which include a person's educational attainment, employment, housing, income, security and environmental quality. In general, income, jobs, housing, health and education indicators are considered better quality than indicators measuring other dimensions of the quality of life, and this is reflected in the fact that they have long been embedded in the national statistical system.¹³ Objective indicators are usually cardinal (values are ordered, can be multiplied by a scalar, and the magnitude of differences in values is meaningful). Subjective indicators can only be measured by asking a person to self-rate their experiences, and typically examine a person's feelings and experiences, for example, their level of satisfaction with life, happiness, or satisfaction with a range of aspects of their life such as their relationships, security, sense of personal safety and having strong social connections. Subjective measures are usually ordinal (so we know that 2 is higher than 1, but a rank of 2 is not twice as bad as a rank of 1).

There is a range of wellbeing frameworks that use objective and subjective indicators. Some use only objective indicators: examples include the United Nations Development Programme (UNDP) — Human Development Index (life expectancy, educational attainment, income). Others combine both objective and subjective measures, for example the later versions of Measures of Australia's Progress (MAP) from the ABS in Australia, and the OECD wellbeing framework.

Just as economic measures of income are sometimes considered to infer a state of wellbeing, subjective measures of mental health are sometimes used to infer a person's state of wellbeing. For example, Huppert and So considered wellbeing as the opposite end of a spectrum to the common mental disorders (depression, anxiety).¹⁴

For policy purposes, Diener et al. have argued for the importance of subjective indicators of wellbeing, as they shed light on the relative importance of various domains in people's lives, which is crucial for decision-making.³

Defining good indicators

A review methodology is needed to assess the evidence for good wellbeing indicators. How do we define them? There is a body of literature that discusses potential criteria for assessing good indicators. For example, the OECD¹⁵ (discussed in Durand¹³ has suggested good indicators of wellbeing should:

- Capture wellbeing achievements at the individual or household level
- Measure outcomes
- Allow disaggregation
- Fulfil a number of standard statistical requirements:
 - have adequate 'face validity'
 - be commonly used and accepted within the statistical and academic community
 - be amenable to change and sensitive to policy interventions
 - be comparable across countries and have the highest degree of country coverage within the OECD area
 - as far as possible be based on official data collections that are fairly frequent and timely.¹³

Statistics agencies have produced lengthy lists of characteristics of good indicators. For example, Statistics NZ focuses on the following criteria for a good indicator:¹⁶

- Valid and meaningful — should reflect the phenomenon it intends to measure
- Sensitive and specific to underlying phenomenon — how significantly the indicator varies according to changes in the underlying phenomenon
- Grounded in research — awareness of key influences and factors affecting outcomes
- Statistically sound
- Intelligible and easily interpreted
- Relate where appropriate to other indicators
- Allow international comparison
- Ability to be disaggregated over time — broken down to sub-groups or areas of particular interest
- Consistency over time
- Timeliness — minimal time lag between the collection and reporting of the data
- Linked to policy or emerging issues
- Able to compel interest and excite — the indicator should resonate with the intended audience.¹⁶

The Statistics New Zealand criteria are in line with the ABS good headline indicators from Measures of Australia's Progress¹⁷ which were that indicators should:

- Be relevant to the particular dimension of progress
- Where possible, focus on outcomes for the dimension of progress (rather than on the inputs or processes used to produce outcomes)
- Show a 'good' direction of movement (signalling progress) and 'bad' direction (signalling regress) — at least when the indicator is considered alone, with all other dimensions of progress kept equal
- Be supported by timely data of good quality
- Be available as a time series

- Be available at a national level
- Be sensitive to changes in the underlying phenomena captured by the dimension of progress
- Be summary in nature
- Preferably be capable of disaggregation by, say, geography or population group
- Be intelligible and easily interpreted by the general reader.

ABS argued that an indicator measuring progress should focus on the outcome rather than other influences that generated the outcome.¹⁷ For example, in the health dimension, an actual health status indicator should be used rather than dietary or smoking habits.

Methodology

We undertook a rapid literature review to examine the state of research on wellbeing and provide a basis for assessing the quality of evidence supporting the use of different wellbeing indicators. We focused on identifying ‘evidence-based indicators’: indicators used frequently in key wellbeing frameworks and/or empirically tested in studies published in the academic literature.

- First, we selected a representative set of wellbeing frameworks, from which a population of potential indicators could be identified.
- Secondly, we classified the indicators by domain.
- Thirdly, we gathered the evidence and assessed each indicator to identify the quality of evidence available regarding the association between the respective indicator and wellbeing outcomes.
- Fourthly, we assessed the indicators against three criteria to determine an overall rating of useability in NSW for each indicator.
- Our fifth and final step was to remove duplicates among the indicators and summarise the overall assessments of evidence.

When selecting frameworks, we identified a representative sample based on (i) frameworks that are internationally recognised and widely used, and (ii) frameworks that have been applied in Australia.

Many frameworks are developed based on other frameworks so there is a lot of overlap. As an example, the person leading the team that conducted the first ABS Measuring Australia’s Progress (Jon Hall — <http://hdr.undp.org/en/content/jon-hall>) then moved to the OECD to contribute to its wellbeing framework and is now at the UNDP contributing to its human development reports. The work at the ABS fed into his work at both the OECD and UNDP. Further, conferences such as the OECD *Transforming Policy, Changing Lives* bring researchers and practitioners together to share knowledge and experience. This means there is considerable overlap between frameworks internationally. Finally, one academic expert can be involved in multiple projects on wellbeing, which means there is a sharing of knowledge. As an example, Professor Ann Harding from NATSEM was on the advisory committee for the first ABS MAP project, then led the team conducting the first Child Social Exclusion index at NATSEM and recruited Robert Tanton from the ABS, who had led the team calculating the 2001 Socio-Economic Indexes for Areas (SEIFA) index, to work on this project. NATSEM is also a supporting partner of the Australian National Development Index (ANDI) (<http://www.andi.org.au/our-partners.html>). This overlap in staff and ideas means there is substantial overlap in the indicators used across different wellbeing frameworks.

A summary of the steps we took to identify frameworks and indicators is outlined in the PRISMA diagram in Figure 1 and described below.

Selecting indicators from leading wellbeing frameworks

First, we identified a representative set of leading wellbeing frameworks using the grey literature (manuscripts published by international development organisations and policy papers published by governments) and relevant journal articles. This literature covers all populations and each stage of the life

cycle (child, youth and older adults). From this, we identified a number of international and Australian key frameworks.

Second, we identified potential wellbeing indicators from other sources that examined particular stages of the life cycle, specifically NATSEM's work on social exclusion and wellbeing — the Child Social Exclusion index, Youth Social Exclusion index, Indicators of Wellbeing for Older Australians (IOWA) and older adults' social exclusion. This work has been published in reports, international journals and/or been used by policy makers and researchers in Australia.

A total of 17 frameworks were identified as having high relevance and being representative of the wellbeing frameworks used in Australia and internationally. These frameworks represent the key literature in this field. They are listed in Table 2.

As noted, these frameworks cover most of the indicators required across all domains of a wellbeing framework. One framework not covered in this Evidence Check is the Australian National Development Index (ANDI), with which NATSEM has a direct association as an official supporter, but is still under construction. Many of the indicators reviewed in this document fit within the ANDI framework, which includes both objective measures and a measure of subjective wellbeing. Once the ANDI framework is implemented in Australia, we expect it will contribute to a better understanding of national wellbeing and progress. However, as it was still in development at the time of writing, we excluded it from this analysis.

Within the time constraints available for this Evidence Check, we selected 235 indicators used in the 17 wellbeing frameworks and 19 indicators from other sources (journal articles and other NATSEM work).

Figure 1: PRISMA Flow Diagram

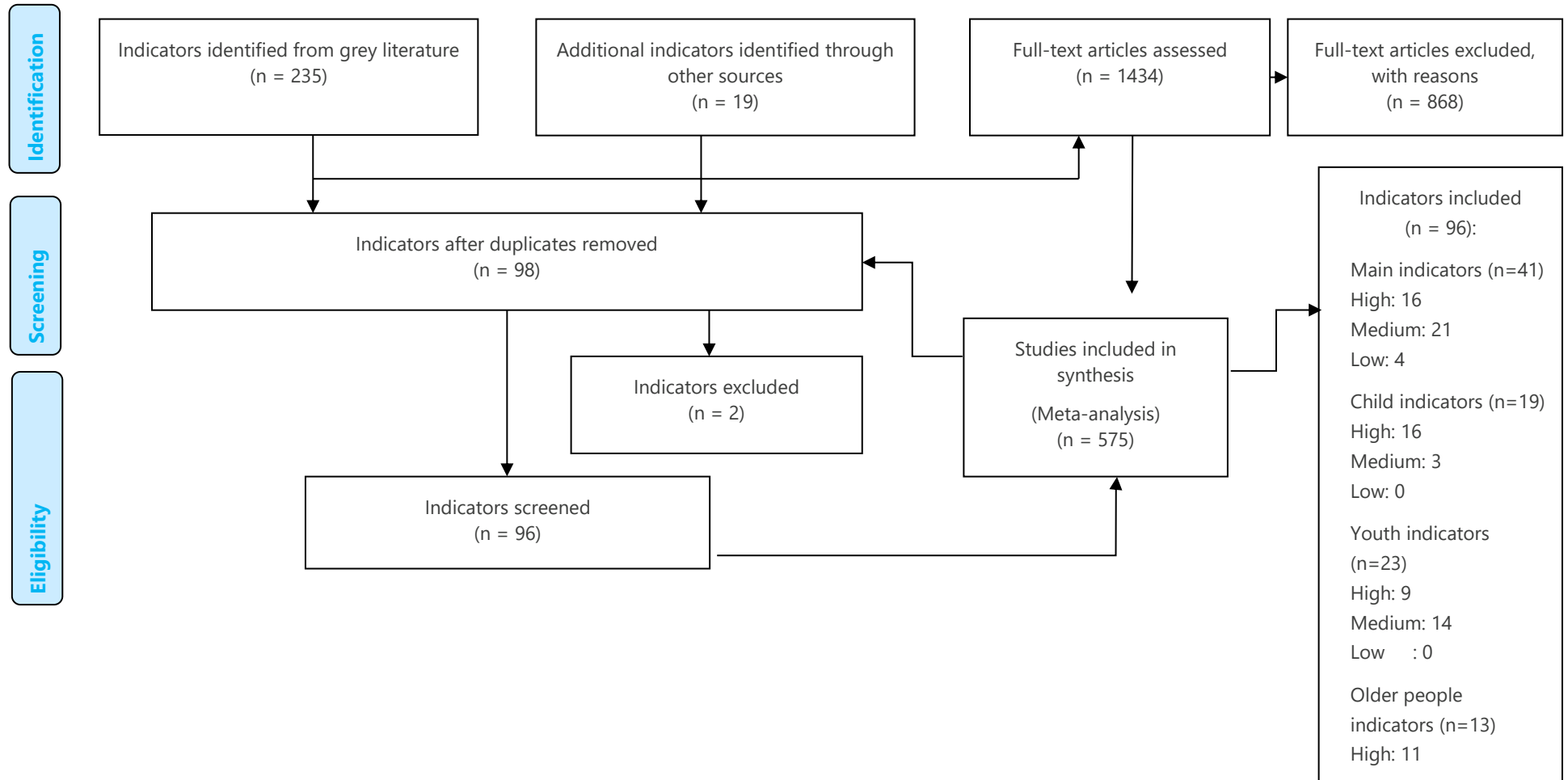


Table 2. Key wellbeing frameworks used in this study

Framework / source	Year
All population	
Organisation for Economic Co-operation and Development — Compendium of OECD well-being indicators http://www.oecd.org/general/compendiumofoecdwell-beingindicators.htm	2011
British Office for National Statistics (ONS) — Measuring National Well-being https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/datasets/measuringnationalwellbeingdomainsandmeasures	2016
Australian Bureau of Statistics — Measures of Australia’s Progress (MAP) http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1370.0~2013~Main%20Features~Homepage~1	2013
UNDP Human Development Index (HDI) http://hdr.undp.org/en/content/human-development-index-hdi	2015
Australian Institute of Health and Welfare (AIHW) — Australia’s Welfare 2015 http://www.aihw.gov.au/publication-detail/?id=60129552015	2015
Children	
United Nations Children’s Fund (UNICEF) — Positive Indicators of Child Well-Being: A Conceptual Framework, Measures and Methodological Issues https://www.unicef-irc.org/publications/580/	2009
British Office for National Statistics — Review of available sources and measures for children and young people’s well-being http://webarchive.nationalarchives.gov.uk/20160105231814/http://www.ons.gov.uk/ons/guide-method/user-guidance/well-being/publications/review-of-available-sources-and-measures-for-children-and-young-people-s-well-being.pdf	2013
AIHW — National outcome measures for early childhood development: development of indicator based reporting framework http://webarchive.nla.gov.au/gov/20120403115733/http://www.aihw.gov.au/publication-detail/?id=10737419493&tab=2	2011
Victoria State Government, Education and Training — Early Childhood Indicators http://www.education.vic.gov.au/about/research/Pages/ecindicators.aspx	N/A

NATSEM Child Social Exclusion index	2015
Miranti, R., Daly, A., & Tanton, R. (2015). An area-based measure of risk of social exclusion for Australian school-age children. <i>Australasian Journal of Regional Studies</i> , 21(1), 26.	
Youth	
Australian Institute of Health and Welfare — Young Australians: their health and wellbeing http://www.aihw.gov.au/publication-detail/?id=10737419261	2011
NATSEM Youth Social Exclusion index	2016
Abello, A., Cassells, R., Daly, A., D'Souza, G., & Miranti, R. (2016). Youth social exclusion in Australian communities: A new index. <i>Social Indicators Research</i> , 128(2), 635-660	
Older Adults	
Small area Indicators of Wellbeing for Older Australians (IWOA) (Tanton et al 2016) http://www.natsem.canberra.edu.au/publications/?publication=small-area-indicators-of-wellbeing-for-older-australians-iwoa	2016
NATSEM Older Adults Social Exclusion	2015
Miranti, R., & Yu, P. (2015). Why Social Exclusion Persists among Older People in Australia. <i>Social Inclusion</i> , 3(4). 112-126	
The Brotherhood of St Laurence — The Brotherhood's Social Barometer: living the second fifty years https://www.bsl.org.au/research/browse-publications/the-brotherhood-s-social-barometer-living-the-second-fifty-years/	2009
Australian Institute of Health and Welfare — Older Australia at a glance http://webarchive.nla.gov.au/gov/20110313004900/http://www.aihw.gov.au/publication-detail/?id=6442468045&libID=6442468043	2007
Federal Interagency Forum on Aging-Related Statistics — Older Americans 2016: Key Indicators of Well-Being https://agingstats.gov/docs/LatestReport/Older-Americans-2016-Key-Indicators-of-WellBeing.pdf	2016

Classifying the selected indicators according to the domains of the NSW Human Services Outcomes Framework

The indicators were then classified into the NSW Human Services Outcomes Framework. There are seven domains in this framework: economic; education and skills; empowerment; health; home; safety; and social and community. We also included the names of alternative domains in the other frameworks. The classification into the NSW domain was mostly informed by the domain in which the indicator was classified in the various frameworks it was used in. However, there were sometimes inconsistencies where an indicator was classified in different frameworks, or a range of related but not always identical domains were identified. For example, wealth has been classified under 'economic' in the NSW Human Services Outcomes Framework, but it was classified under 'income and wealth' in the OECD framework and 'the economy' according to ONS. Indicators may also fit into more than one domain as domains can be interrelated. We have classified each indicator into the NSW domain it is most related to, given our knowledge of the indicator, the international frameworks and the NSW framework.

Collecting and assessing the evidence

We then collected the evidence. As indicated in Figure 1, we initially collected more than 1400 articles. After reviewing the abstracts, we excluded 62% because they were not relevant or did not contain enough evidence. High quality academic journals were sourced mainly from Google Scholar, which covers 87% of accessible English-language scholarly documents on the web¹⁸ and includes academic electronic databases such as ProQuest. Our assessment of the peer-reviewed literature has also been influenced by our judgement based on our expertise in this field.

The advanced search function in Google Scholar has similar properties to an academic database and allows searches by word, phrase, title, text, author, year, etc. We also searched in the EBSCOhost Online Research Database, which includes a combination of EconLit, Medline and PsycINFO, databases that may not be automatically covered by Google Scholar. Table 1 demonstrates the review and assessment strategy used.

Search terms

The basic search parameters we applied were as follows:

- Years: we focused on the past 10 years of publications (2006-2016) as suggested by NSW FACS but also included significant literature that was published in previous years where relevant.
- Language: we focused on English-based literature.
- Geography: we focused on literature worldwide to be able to check the robustness of the evidence.
- Life cycle: we searched children, youth and older adults.
- Wellbeing outcomes: we focused on the permutation of "wellbeing"/"well-being"/"life satisfaction"/"happiness". Further, while some traditional objective measures are strong indicators of objective wellbeing, such as income, labour force indicators and educational attainment, we also looked at these indicators from the perspective of subjective wellbeing, where the subjective wellbeing indicators are outcome indicators and the objective indicators are the determinants of wellbeing. We undertook multiple searches, focusing on a combination of search terms for a particular indicator (as the determinant) and wellbeing/well-being/life satisfaction/happiness (as the outcomes) to assess the reliability or the association between indicators and wellbeing. Sometimes, using these search terms, we found mental health outcomes were also discussed as wellbeing outcomes.

When searching for the indicators, we used the name of the indicator as listed in the appendix in combination with the above search parameters, which remained the same for all indicators. Occasionally, where alternative well-known phrases existed for a particular indicator, we also used these as search terms. For example, a search term can be "household wealth" and "wellbeing" and "net worth" and "wellbeing"; "income" and "life satisfaction" and "income" and "wellbeing"; "older adults" and "income" and "life

satisfaction”, where “older adults” can be replaced by “older people” or “elderly”. More detailed search terms were used in some cases. For example, “personal income” and “household income” or “income” and “life satisfaction” and “Indigenous” were used when our search focused on the association between income and life satisfaction within the Indigenous community.

Our search found 1434 studies that had examined at least one of the wellbeing outcomes and domains, either across the whole population or for a particular stage of the life cycle or a particular population group. We then assessed these for suitability for inclusion in the Evidence Check. Any that reported on studies that had not collected evidence (for example, opinion pieces or arguments) were excluded, as were others that could not be assessed to identify the quality of evidence. This process identified 575 articles as suitable for review to assess indicators. We then conducted the assessment of the indicators.

This assessment was as objective as possible, but did require subjective interpretation due to the high level of variability in the methodologies used to collect data and in the academic traditions within which the data was collected and interpreted. For example, when assessing reliability, more is not always better — the quality of the journal an article is published in needs to be taken into account. So there was a subjective element in assessing reliability. To reduce potential bias, our team discussed and confirmed any subjective assessments so they reflected the consensus of five experts in the field. Our review and assessment strategy is described in Table 3, and we describe the assessment criteria and how they were quantified below.

Table 3. Review and assessment strategy

Name of the indicator
Measurement options
NSW Domain
Domains in other frameworks
Indicator type
Time frame
Unit of analysis
Reliability (<i>statistical evidence as a predictor of wellbeing, and validated against other indicators, etc.</i>)
Sensitivity (<i>degree to which measures are able to distinguish between different states of wellbeing</i>)
Relevance (<i>relevance across the life cycle (Q2 — FACS) and relevance across specific populations of interest (Q3 — FACS)</i>)
Assessment of Useability: High/Medium/Low
<ol style="list-style-type: none"> 1. Frequency used in key frameworks: High/Medium/Low <ul style="list-style-type: none"> • All population • Children • Youth • Older adults 2. Reliability (as specified above): High/Medium/Low 3. Availability in NSW data): High/Medium/Low

Reliability

We assessed the reliability of the indicators by searching relevant and good quality academic literature containing statistical evidence of a correlation between the indicator and wellbeing. For the reliability criteria, the size of this correlation was not as important as the number of articles identifying the correlation. Reliability was assessed as higher if there were multiple articles providing the evidence, giving a consistency in the finding. The general guidelines were:

- Reliability was assessed as high if the indicator had repetitive evidence and consistent findings
- Reliability was assessed as medium if the indicator was discussed a number of times but not necessarily with consistent findings (mixed findings)
- Reliability was assessed as low if there was limited evidence and inconsistent findings.

Sensitivity

We assessed the sensitivity or degree to which measures were able to distinguish between different states of wellbeing based on the evidence of reliability found earlier. We derived sensitivity information from studies citing the magnitude or strength of the correlation or association, which refers to either one of these measures (significant at least at the 10% probability level): correlation coefficient, linear regression coefficient, R2 values from (multiple) regression analyses, odds-ratios/prevalence ratios. In some cases, there was not enough information in the literature to assess the sensitivity of the indicator.

Overall assessment of useability in NSW

We assessed the overall useability of each indicator using three criteria:

1. Frequency of its use in the key frameworks; we examined population, children, youth and older adult frameworks and classified them into high, medium or low, based on the following criteria:
 - High if frequency of the indicator is included in 60%–100% of the relevant key frameworks we investigated, either for all population, children, youth or older adults.
 - Medium if frequency of the indicator is included in 41%–59% of the relevant key frameworks we investigated, either for all population, children, youth or older adults.
 - Low if there is limited evidence, and the indicator is included in 40% or less of the key frameworks we investigated, either for the whole population, children, youth or older adults.
2. Statistical/academic (reliability) classifies the indicators into a high, medium and low correlation with wellbeing, as explained above.
3. Availability of the data — high (if the data is available), medium (if some relevant data is available), or low (if the data is not available). Please note, for this assessment we have looked at publicly available data such as data published by the ABS, the Australian Tax Office (ATO), the AIHW or other public sources. There may be other less available data sources that we have not identified.

At the end, we summarised these measures to form a useability score, which is a summary measure of how useful a measure or indicator is, based on three criteria: (i) reliability (strong evidence from the academic field), (ii) frequency and (iii) data availability. Useability is categorised into high, medium or low based on the number of high, medium, and low classifications in each of the three criteria. For example, if two out of three criteria are assessed as high, then the summary measure will also be high. Table 4 shows an example. Appendix 5 summarises the domain, indicator, measure and evidence, and Appendix 6 summarises Useability.

Table 4. Example to assess Practicality/Useability

Indicator	Frequency	Statistical/academic evidence (reliability)	Availability	Useability
Unemployment	High	High	High	High
Household wealth	Medium	Medium (repetitively discussed with mixed or inconsistent findings)	High	Medium
Self-reported health status	High	Medium	High	High

Wellbeing indicators: evidence and useability

Based on the discussion of the literature in Section 2, we identified the indicators and assessed them one by one using the strategy identified in Table 3 and the methodology outlined in the previous section. We have divided this section into two subsections. In the first subsection, we have focused on the selection of the main indicators, which usually overlap across the life cycle and have been found frequently in frameworks examining the whole population, children, youth and older adults. In the second subsection, we focus on indicators that we found to be relevant only for a particular stage in the life cycle, either child, youth or older adults. We have presented those indicators based on our overall assessment of useability, which covers the three criteria discussed earlier.

We present the indicators that were classified as high or medium useability and, particularly for the main indicators, we discuss each of the indicators with a special focus on the strength of the academic evidence and the frequency of the indicator being discussed in the grey literature across the life-cycle stages we investigated. The complete assessment of each of these indicators can be found in Appendix 1.

Main indicators that apply across the life cycle

Economic

Indicators within the economic domain are usually objective, although our assessment in this report also includes a subjective indicator of financial hardship. The indicators are shown in Table 5.

Table 5. Economic indicators

Useability: High	Useability: Medium
Household income	Household wealth
Employment	Personal income
Unemployment	Working hours (can be also under the health domain)
Financial hardship	Job satisfaction
	Inflation rate

Income (household and personal income)

Household income is categorised as having high useability, while personal income has medium useability. This is because household income is discussed in the key frameworks more frequently and is relevant to more stages of the life cycle than personal income, which may only be relevant for those of working age. Household income measures also assume some sharing of income across members of a household, which is more appropriate when measuring wellbeing, as this is how families normally operate. In older adult frameworks, the discussion of income also typically includes the age pension and superannuation.

Reliability of the academic evidence for this indicator is considered medium, with sometimes contradictory findings across multiple studies on the relationship between income and wellbeing. These contradictory findings are likely to be in part a consequence of different approaches to the measurement of both income and wellbeing across these studies or the development level of the country investigated. In general, a weak

positive association between income and wellbeing is a common finding in the literature, with some arguing this means the indicator is not well validated as a measure of wellbeing¹⁹ Clark, Frijters and Shields reviewed the relationship between income and subjective wellbeing²⁰, or what is referred as the Easterlin paradox, that average wellbeing remains constant over time despite increases in national income per capita.²¹ This may be due to the fact that as national income per capita increases, everyone is richer, so it is relative income that contributes to wellbeing. A positive but diminishing return to income is also defined as a non-linear relationship by Kahneman and Deaton who found people earning more than \$75,000 a year in the US had reached an income level where higher income was no longer associated with higher subjective wellbeing²² (see also Layard).²³ Similar findings have been reported by Britain's Office for National Statistics and Cummins.^{24,25} This suggests that in terms of subjective wellbeing, money does matter but more may not be better. There is a ceiling above which it seems income may no longer influence levels of wellbeing. Stevenson and Wolfers also tested this non-linear relationship but did not find strong empirical support for this claim.²⁶ However, increasing income will increase wellbeing more for those who are on a low income.

In regard to specific populations, in particular the Indigenous population, Biddle found a correlation between income and wellbeing for Indigenous males in non-remote areas (major cities, inner regional and outer regional Australia), but this correlation was weaker for non-remote Indigenous females and not present for either gender in remote areas.²⁷ This may be due to the fact that status in Indigenous communities is not determined by cash-based economic resources and there are other non-economic activities that support Indigenous livelihoods.

Financial hardship/stress

The financial hardship literature includes information on the inability to do various activities and pay for items, including the inability to pay utility bills on time, the inability to heat one's home, the need to seek assistance from welfare or community organisations or family and friends, and having to pawn or sell an asset. This type of information is subjective, coming from survey questions such as, "If all of a sudden [you/members of this household] had to get \$2000 for something important, could the money be obtained within a week?" with the answer being Yes, No or Don't Know.²⁸

The frequency with which this financial indicator is discussed in the literature is medium, but the reliability is high as the literature has found consistent and frequent evidence of better health status (which includes psychological wellbeing evidence such as anxiety and depression) for an individual who does not experience financial hardship.^{29, 30} Individuals who experience financial hardship also tend to suffer from elevated levels of psychological distress because financial hardship can have important effects on (and be affected by) factors such as a person's health, family relationships, self-esteem and their coping styles and practice.³¹ Research also shows financial stress has a negative influence on the psychological health and wellbeing of the elderly.³²⁻³⁵

Employment

Labour market indicators are usually associated with wellbeing. Perhaps the most common labour market indicator is employment. Interestingly, there is mixed evidence for the reliability of this indicator, so we have assessed it as medium in terms of reliability, although the frequency of its inclusion in wellbeing frameworks is high. Dolan et al. ³⁶ argued employment has clearer evidence of an association with wellbeing than unemployment. Being employed has been preferred in terms of wellbeing than having no job at all.³⁷

Satisfaction with work also matters for overall wellbeing. Tait et al.³⁸ found a positive correlation of 0.44 between job satisfaction and life satisfaction. On the other hand, the literature identifies that happiness in working life spills over into non-working life³⁹, so that being in a job affects overall wellbeing. However, it is not only being in a job that matters. The type of employment or the quality of work also matters. For example, people may be employed but we are not sure about the types of jobs they are doing, so this may

not reflect their overall wellbeing. Dolan et al.³⁶ in their summary concluded there was a medium level of evidence on the relationship between work (either part or full-time) and wellbeing (some found part-time work has been associated with lower wellbeing while others did not find a significant difference between the two). Further, some people may be underemployed¹⁵, or working in precarious conditions or working long hours⁴⁰, which has a negative effect on wellbeing. Further, casual work has been discussed as having a negative association with wellbeing.⁴¹

This indicator is also relevant for specific populations, except directly for children. For example, van Campen and Iedema⁴² argued people with disabilities are at a greater disadvantage in terms of labour force participation compared with other types of participation. They also rejected the hypothesis that higher participation by people with disabilities is associated with higher subjective wellbeing and found the labour market participation rate does not appear to promote better wellbeing among this group.

Unemployment

There is high academic evidence that unemployment has a strong association with poorer wellbeing outcomes, so we assessed reliability as high. The frequency of inclusion of this indicator in wellbeing frameworks is also high. Unemployment has been found to have a negative impact on an individual's wellbeing. In 2014, the ONS found unemployed people rated their life satisfaction significantly lower on average than employed people. The average life satisfaction of unemployed people was 6.7 out of 10 compared with 7.6 for employed people.⁴³ This is in line with Carroll⁴⁴, who examined the impact of unemployment on life satisfaction across genders and found being unemployed rather than employed is associated with a 44% lower probability of reporting high life satisfaction among men, while it was higher, at 63%, for women. Further, Stutzer⁴⁵ found unemployed people have around 5%–15% lower life satisfaction scores compared with the employed.

Unemployment or loss of employment is also associated with mental health issues. Unemployment has been associated with a loss of self-esteem, and the unemployed are more likely to suffer depression, anxiety and social stigma (see for example, Flatau et al.⁴⁶; Frey and Stutzer^{47, 48}; Clark⁴⁹; Layard²³). Long-term unemployment is associated with a greater incidence of suicide.⁵⁰

Working hours

There is mixed evidence of an association between working hours and wellbeing in the academic literature, so we have assessed the reliability of this indicator as medium. The frequency of inclusion of working hours in wellbeing frameworks was low. While Meier and Stutzer⁵¹ found life satisfaction increases with working hours, there is a limit where working hours start to have a diminishing association with life satisfaction. There are variations on how to define long working hours — for example, the OECD has defined it as working more than 50 hours a week, while Schaufeli et al⁵² defined excess working time simply as working beyond what is required.

The impact of working long hours can be damaging. Caruso⁵³ and Golden and Wiens-Tuers⁵⁴ found long working hours were related to a wide range of risks to workers, families, employers and the community including increased work stress, fatigue, sleep deprivation, obesity, injuries and chronic disease.

Household wealth

The frequency of inclusion of the household wealth indicator in key wellbeing frameworks is medium. We assessed the academic reliability as medium as the relationship between household wealth and subjective wellbeing is still contested. Headey and Wooden⁵⁵ found using a regression model of wellbeing, the coefficient for wealth was higher than the coefficient for income, with a coefficient of 0.57 for net worth compared with 0.04 for income. However, Roszkowski and Grable⁵⁶ found the correlation between wealth and wellbeing was low in the US. Using product moment correlations, they found correlation between income and mood was 0.01 while the correlation between wealth and mood was 0.06.

Headey et al.⁵⁷ and Brandolini et al.⁵⁸ have found wealth affects current wellbeing (such as life satisfaction and standard of living satisfaction) and is a major determinant of the longer-term prospects of households and individuals. Senik⁵⁹ also confirmed household wealth has been shown to improve individual wellbeing by providing a safety net that protects against negative income shocks.

Home

All three indicators of the domain 'home' we reviewed were classified as having high useability, as shown in Table 6.

Table 6. Home indicators

Useability: High	Useability: Medium
Overcrowding	N/A
Housing affordability	
Homelessness (can be also under the safety domain)	

Overcrowding

Overcrowding, which compares the number of rooms in a dwelling and persons who live in the dwelling, is frequently included as an indicator in key wellbeing frameworks and has been found to have high academic evidence in the literature, so we assessed it as having high reliability. Overcrowding has been found to affect wellbeing, and is associated with higher levels of psychological distress among adults⁶⁰⁻⁶³ and poorer educational outcomes for children.^{64, 65}

Overcrowding can be a subjective concept and may be influenced by cultural norms. For instance, living in large family groups may be culturally acceptable for some. Nevertheless, the relationship between overcrowding and wellbeing is still negative. For example, Booth and Carroll⁶⁶ found that among Indigenous communities, adult overcrowding is associated with worse health and this contributed about 30% to the health gap between Indigenous people living in remote areas and the non-Indigenous population.

Housing affordability

Housing affordability is included in many of the key frameworks as an indicator of wellbeing so its frequency is high. However, the literature provides mixed evidence so we assessed its reliability as medium. While there is a common view that living in households where housing costs are very high can be detrimental to wellbeing, as it may create economic hardship⁶⁷, this is not strongly supported in the literature. Burke et al.⁶⁸, Lester et al.⁶⁹, Rowley and Ong⁷⁰, Rowley et al.⁷¹ and Yates²⁹ all indicate that housing stress is, at best, only weakly associated with financial wellbeing (financial stress). Further, Leventhal and Newman⁷² found there is no evidence that housing affordability is associated with adverse health and behaviour outcomes or academic achievement at ages 5–17 years for poor and near-poor children. Coley et al.⁷³ also argued there is limited evidence linking housing cost burdens to child functioning.⁷⁴ They argued the benefits of higher costs might mean better housing or neighbourhood characteristics such as safety, resources or social capital, which might then outweigh the costs and contribute to the insignificant association of housing affordability with child wellbeing.

Homelessness

There is a high level of evidence that homelessness is associated with low wellbeing, so we assessed it as having high reliability. Homelessness is also included as an indicator in many frameworks so it has high frequency. The impact of homelessness on wellbeing is mainly through worse mental and physical health. Smith et al.⁷⁵ and Shelter Net BC⁷⁶ identify that homelessness is traumatic, disempowering and socially isolating. Among youth and children, homelessness has a strong association with mental health problems,

including anxiety, depression, behavioural disorders and alcohol and drug-related issues.^{77,78} Similarly, in the case of children, homelessness is correlated not only with mental health problems and developmental delays but also with educational outcomes, poor health and poor nutrition ^{79,80}

Across specific populations, particularly in the Indigenous community, the issues surrounding homelessness are complex and include the intergenerational effects of separation from family and culture (a legacy of the Stolen Generations), the relative socioeconomic disadvantage of Indigenous Australians, and differing cultural perceptions of homelessness. ^{81,82}

Health

The assessment of health indicators shows there is a balance between health indicators that are classified as having high or medium useability, as indicated in Table 7.

Table 7. Health indicators

Useability: High	Useability: Medium
Life expectancy	Overall life satisfaction/happiness
Self-reported health status	Exposure to air pollution
Disability	Climatic variability and climatic change
Smoking behaviour	Time devoted to leisure and personal care (can also be under the social and community domain)
Mental health	Leisure activities, such as sports participation (can also be under the social and community domain)

Life expectancy

Life expectancy has been used as an indicator of wellbeing in several frameworks, giving it a medium frequency. However, it has high reliability. For example, the United Nations Development Programme (UNDP) used it as a measure of development in its Human Development Index (HDI).⁸³ In addition, Perenboom et al.⁸⁴ argued life expectancy was a useful indicator to measure quality of life for the whole population. This is in line with Bérenger and Verdier-Chouchane⁸⁵, who used life expectancy at birth as components of standard of living and quality of life. Further, D’Acci also used life expectancy at birth in a Well-Being and Progress Index.

Self-reported health status

Okun et al.⁸⁶ found health and subjective wellbeing were positively and significantly correlated. The Australian Institute of Health and Welfare (AIHW) defines health status as a universal concept that is determined by more than the presence or absence of any disease. It also measures functioning, physical illness and mental wellbeing. Nevertheless, the academic evidence is mixed, so we have assessed reliability as medium, despite health being frequently included as a measure of wellbeing in key frameworks, giving it a high frequency. Okun et al⁸⁷ found self-reported physical health had a significant correlation of 0.32 with subjective wellbeing and Stutzer⁴⁵ found people with lower life satisfaction on average had poorer health. The ONS⁸⁸ argued this variable had the strongest association with all the measures of personal wellbeing. Angner et al.⁸⁹ found that as a function of self-reported health, happiness increased at a diminishing rate. This indicator does a fairly reasonable job in explaining subjective wellbeing even after taking into account additional objective indicators. Sibthorpe et al and Ahn found self-reported health status is determined by socioeconomic status, levels of education, employment, housing conditions, remoteness and Indigenous status, most of which are indicators of wellbeing.^{90,91} This highlights the interrelated nature of most wellbeing indicators: most will influence each other in some way, meaning they will often co-vary.

Disability

There is strong statistical evidence for disability as a wellbeing indicator, so we have assessed reliability as high. It also has a high frequency of inclusion in key frameworks. Oswald and Powdthavee⁹² identified that people with a disability had on average lower life satisfaction than those without a current or past disability, even several years after the disability. They found the mean wellbeing score for 13,776 people who reported never having a disability was approximately 5.3 on a 1 to 7 scale, while 129 people who were constantly disabled had a mean score of approximately 4.3.

This finding is similar to Freedman et al.⁹³ who focused on disability and subjective wellbeing among older couples. They found regardless of the measure of wellbeing used and other demographic and socioeconomic profile variables, older married adults with a disability reported worse subjective wellbeing than those without. Lucas also argued the period of disability matters and that long-term disability was associated with lasting changes in subjective wellbeing.⁹⁴

Smoking behaviour

The academic evidence for the association between smoking and reduced wellbeing in terms of poorer health outcomes is high so reliability has been assessed as high, although the association may not always be direct. When looking at a direct association between smoking and wellbeing, Keyes and Venning et al. found young adolescents who experienced high wellbeing were less likely to smoke or drink alcohol.^{95, 96} Smoking is associated with a range of other issues in adolescence such as problematic alcohol use, academic and sleep problems^{97,98}, all of which are associated with lower levels of wellbeing.

In addition, Lawrence et al. found smoking was one of the leading causes of preventable disease and death in Australia (and the US). Lawrence et al. also found mental illness was correlated with both higher rates of smoking and higher levels of smoking among smokers.⁹⁹

Mental health

There are high levels of evidence for a strong association between poor mental health and low overall wellbeing in the academic literature, so we have assessed reliability as high. Mental health is often incorporated as a wellbeing indicator in key frameworks, so we have assessed frequency as medium. Alston and Dudley¹⁰⁰ argued that life satisfaction is actually a component of mental health and quite strongly correlated with depression.¹⁰¹ This is in line with Guney et al. who found there is a negative and significant association between life satisfaction and mental health measures, such as depression, anxiety and hopelessness scales.¹⁰² Moreover, Ferguson et al. argue there is dual causality between these two, so life satisfaction influences mental disorder, and vice versa.¹⁰³

Mental health is important for people across the life cycle. Among children, it has been linked to “suffering, functional impairment, exposure to stigma and discrimination, and increased risk of premature death”.¹⁰⁴ Children with conditions such as ADHD, depressive disorder or conduct disorder experience poorer psychosocial growth and development, have higher healthcare requirements, poorer education and occupational attainment, and higher involvement with the justice system.^{105, 106} On the other hand, depression in childhood and adolescence creates a significant burden for individuals, families and societies by increasing morbidity, increasing mortality and negatively affecting quality of life during times of significantly depressed mood.¹⁰⁷

Indigenous populations and children living in out-of-home care are at particularly high risk of experiencing mental health issues. Jorm et al. argued that mental health inequality between Indigenous and non-Indigenous Australians starts from an early age.¹⁰⁸ Adermann and Campbell found that parents and teachers believe excessive anxiety is a significant issue among Indigenous youth.¹⁰⁹

Other studies have found homeless young adults with a history of foster care are at a greater risk of problems related to mental health and addiction than homeless young adults who did not experience foster

care.¹¹⁰ Further, Unrau and Grinnell found at-risk youth with a history of out-of-home care had more physical and mental health problems than comparison groups with no history of out-of-home care.¹¹¹

Overall life satisfaction/happiness

Overall life satisfaction and happiness are two indicators that directly measure individual wellbeing using self-assessment. They are typically considered wellbeing outcomes, but given the interactions between all aspects of wellbeing, they will also act as determinants of a person's subsequent wellbeing — happiness begets further happiness, to put it simply. Life satisfaction captures a profound assessment of how things are going in one's own life, and allows an evaluation of which life circumstances and conditions (for example, work, family) are important for subjective wellbeing.⁶ Analysing life satisfaction measures also assists in understanding the disparity between people's objective living conditions and their own evaluation of these conditions.¹¹² It has also been argued that life satisfaction is a determinant of future health outcomes. For example, Diener and Chan argue life satisfaction is a significant determinant of health and longevity¹¹³, while Helliwell suggests low levels of average national life satisfaction are related to higher suicide rates.¹¹⁴

Diener et al.¹¹⁵ argue that life satisfaction is reliable across short time periods but may change over time as life circumstances change. Measuring happiness, rather than satisfaction with life, may reflect shorter-term circumstances. The theory of homeostasis argues life satisfaction returns to a 'set point' over time.¹¹⁶ This means there is not much variability in life satisfaction over longer periods of time, as individuals return to their set point after an external event reduces life satisfaction. This may happen for many external events, but the effect may not be as strong for some external events, such as a long-term disability. Cummins has demonstrated low variability in life satisfaction except in times of severe stress.

Time devoted to leisure

Leisure activities need to be freely chosen based on individual interest.¹¹⁷ The academic evidence for this indicator is mixed so we have assessed reliability as medium, and it is only rarely included in the key frameworks, so we have assessed frequency as low. Having time devoted to leisure increases overall psychological wellbeing¹¹⁸, and leisure during adolescence predicted wellbeing 15 years later.¹¹⁹ This is also in line with Agate et al. who found satisfaction in family leisure is related to satisfaction with family life.¹²⁰ Types of leisure activity may also matter, as discussed in the next indicator. For example, active participation in voluntary organisations is positively and significantly associated with higher life satisfaction, with an effect that is quantitatively similar to that of moving up by one decile in the income scale. The voluntary activities where the dimension of genuineness (non-instrumentality) is stronger, such as charity, church and art-related activities, matter most for life satisfaction.¹²¹

Holder et al. examined the relationship between leisure and wellbeing among children. Active leisure (e.g. physical activity) was positively correlated with wellbeing but passive leisure (e.g. television and video games) was negatively correlated.¹²² The findings are in line with Argyle¹²³; Csikszentmihalyi and Hunter¹²⁴; Shaw and Gant¹²⁵ for the relationship between passive activities and wellbeing, and Csikszentmihalyi and Hunter¹²⁴; Hills and Argyle¹²⁶ for the active activities and wellbeing. The section on sport participation, below, is also relevant.

Leisure activities (such as sport activities)

Participation in social activities is often discussed in the academic literature: a specific example of this is involvement in sporting groups. The academic evidence for this indicator is mixed so we have assessed reliability as medium. As the indicator is included in some of the key wellbeing frameworks, we have also assessed frequency as medium. Steptoe and Butler¹²⁷ and Holder et al.¹²² found active leisure activities (e.g. physical activity such as sport) were positively associated with wellbeing while in contrast passive leisure activities (e.g. television and video games) were negatively associated with wellbeing. The greater

involvement in physical activities is associated with academic adjustment, psychological competencies and a positive peer context, with the results strongest for the older group of youth.¹²⁸ Physical activity improves an adolescent's psychosocial wellbeing by reducing symptoms of depression, stress and anxiety, and through improvements in self-confidence, self-esteem, energy levels, sleep quality and ability to concentrate.¹²⁶ These findings are relevant for children, adolescents and adults.

Participation in team sports can also be associated with higher levels of alcohol use.^{128, 129} Eccles and Barber found participation in team sports predicted an increase in alcohol use and intoxication between 10th and 12th grade, even after controlling for gender, intellectual aptitude and mothers' education.¹²⁹

Exposure to air pollution

The academic evidence for this indicator is high so we assessed reliability as high, although the frequency of inclusion in wellbeing frameworks is low. The evidence suggests that even after controlling for a range of other factors, higher local air pollution and noise levels significantly diminish subjective wellbeing.¹³⁰ Welsch found air pollution plays a statistically significant role as a predictor of inter-country and inter-temporal differences in subjective wellbeing.¹³¹

MacKerron and Mourato found both perceived and measured air pollution levels have a significant negative association with the life satisfaction of respondents to their survey, even when controlling for a wide range of other effects. An increase of 10 $\mu\text{g}/\text{m}^3$ in mean nitrogen dioxide concentration is associated with a drop of nearly half a point in life satisfaction on an 11-point rating scale.¹³²

This indicator may be more relevant for developing countries than for developed countries such as Australia.

Climatic variability and climatic change

The academic evidence for this indicator is mixed so we have assessed reliability as medium. As it is rarely included as an indicator in wellbeing frameworks we have given it a low frequency. While a small body of literature suggests natural environments are a key driver of life satisfaction, experience of climate change is not always direct or simple, and nor is experience of climatic variability (whether or not this variability is a result of increasing greenhouse gas emissions). Other indicators of quality of the natural environment are experienced more directly by individual people, such as poor vegetation or animal health (See, for example, Brereton, Clinch and Ferreira¹³³; Smyth, Mishra and Qian.¹³⁴

Maddison and Rehdanz's findings suggest that in countries with climates characterised by months of very high and very low temperatures, residents have significantly lower levels of life satisfaction.¹³⁵ This finding is robust to a wide variety of model specifications.

Wilson et al. found respondents with lifestyles that generate higher direct greenhouse gas (GHG) emissions did not report being healthier, happier or more connected to their communities¹³⁶, which suggests individuals can experience similar degrees of wellbeing regardless of the amount of GHG emissions associated with their respective lifestyles.

In general, more work is needed to specify indicators of climatic variability and health of the natural environment that are consistently related to wellbeing outcomes and have a clear causal relationship. The Millennium Ecosystem Assessment framework has been developed to test the hypothesis that the natural environment contributes to wellbeing, but many of these pathways have limited direct evidence — see <http://www.millenniumassessment.org/en/Framework.html>

Empowerment

There is a lack of literature providing evidence for indicators that can be classified under the empowerment domain. This gap was recognised in the first Measuring Australia's Progress report from the ABS in 2002, where no indicators were used for the supplementary dimension 'Governance, Democracy and Citizenship'.

Table 8. Empowerment indicators

Useability: High	Useability: Medium
N/A	Voter turn-out

Voter turn-out

The academic evidence for the voter-turn-out indicator is mixed, so we assessed reliability as medium. The frequency with which this indicator is discussed in the key frameworks is also medium. Weitz-Shapiro and Winters found a positive correlation between the proportion of people voting and happiness in Latin America, using the Americas Barometer surveys carried out in 18 countries by the Latin American Public Opinion Project (LAPOP) at the Vanderbilt University¹³⁷. These countries are Argentina, Bolivia, Brazil, Colombia, Costa Rica, Chile, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela. The authors also noted the relationship is attenuated in those countries that have enforced compulsory voting, such as Australia.

Education and skills

Education indicators of wellbeing are usually objective. The list of indicators assessed is in Table 9.

Table 9. Education and skills indicators

Useability: High	Useability: Medium
Educational attainment	Those not in education, employment or training
Cognitive skills	

Educational attainment

Educational attainment is one of the most frequently used objective indicators of wellbeing discussed in the key frameworks, so has a high frequency; however, academic evidence of the relationship is mixed, so we assessed reliability as medium. Some studies find a positive relationship between each additional level of education and subjective wellbeing¹³⁸, while others show middle-level education is related to the highest life satisfaction.⁴⁵ Frey and Stutzer^{47, 48} find high educational attainment does not guarantee happiness, but it does help people cope better with life challenges. Michalos argued education has an impact on overall human wellbeing¹³⁹ although, like income, the relationship between education and wellbeing is complex.¹⁴⁰

The importance of education to wellbeing is different for different age groups — so for older workers who may have left school in Year 10, experience and on-the-job training may be far more important than formal education. At the national level, educational attainment has been found to have a greater association with wellbeing in low-income countries than in higher-income countries.^{141, 142} Some studies exploring the indirect impact of education on subjective wellbeing found the positive coefficient for attending high school and college increases by about one-third compared with having no high school education, suggesting the indirect effect of education is considerable.^{143, 144} While these studies have identified an association between education and wellbeing, there are also studies that have found either weaker results or non-significant results when looking at the relationship between high educational attainment and subjective wellbeing. (See for example, Frey and Stutzer^{47, 48}; Helliwell¹⁴⁵; Ovaska and Takashima¹⁴⁶; Blanchflower and Oswald.¹³⁸)

This is in line with findings from the OECD⁴⁰, which found that once other variables such as income and social trust are included, the correlation between education and other variables falls, suggesting the impact of education on subjective wellbeing is partly through the impact on other intermediate variables. This may be due to the fact that the conceptual and empirical links between education and wellbeing are complex, as explained in Desjardins.¹⁴⁰ Dolan et al.³⁶ note some of these issues as follows:

- Education qualifications may be related to unobservable characteristics at the individual level (motivation, intelligence or family background), and so studies should control for unobserved heterogeneity
- The coefficient of education is often responsive to the inclusion of other variables within the model, and is likely to be positively correlated with income and health, which therefore should be controlled for.

Cognitive skills

Cognitive skills are usually defined as academic personal beliefs, and these are usually found to be correlated with life satisfaction.¹⁴⁷ Previous studies have argued there is a **correlation between school success and subjective wellbeing**.^{148, 149} The link between lack of literacy skills and later social exclusion has been well established¹⁵⁰, with poor literacy associated with loss of employment opportunities, lower income and consequent disadvantage in housing and health.

There is a reverse causality between wellbeing and academic performance as examined by Quinn and Duckworth, who conducted a longitudinal study exploring the direction of causality in this relationship, and found participants reporting higher wellbeing were more likely to reach higher final grades, even when controlling for IQ, age and previous wellbeing.¹⁵¹

Happiness is consistently found to be related to the three literacy scores (reading, writing and arithmetic), the magnitude of the association being highest for reading literacy.¹⁵² The results from two simultaneous cross-sectional surveys among British university students suggested reciprocal relationships between health, health behaviour and educational achievement.¹⁵³

Interestingly, the academic evidence in terms of cognitive skills is mixed so we assessed reliability as medium. Huebner found recent school grades did not correlate significantly with global life satisfaction¹⁵⁴, while Freeman et al. found countries with lower inequality scores tended to have higher average test scores in the Programme for International Student Assessment (PISA).¹⁵⁵

Those not in education, employment or training (NEET)

Participation is important for someone's life and has an impact on wellbeing. Previous studies of adolescents have found youths who leave school and do not subsequently become employed have lower levels of self-reported activity, perceived competence and life satisfaction, and increased depressive affect.¹⁵⁶ Research has also found unemployed school-leavers have higher levels of depression, external locus of control and decreased self-esteem compared with employed school-leavers.^{157, 158} The academic evidence for this indicator is mixed so we have assessed reliability as medium; repetition in key frameworks is low so we have assessed frequency as low.

Social and community

The role of social capital has been discussed in the literature. The benefits of social capital include positive mental health and behavioural outcomes in childhood and later life, reduced school dropout rates and an increased likelihood of gaining meaningful employment.¹⁰³ Social support may also have positive psychological and emotional effects, helping people to better cope with stress and illness.^{159, 160} Table 10 shows the classification of these indicators.

Table 10. Social and community indicators

Useability: High	Useability: Medium
Social network/support (has someone to rely on)	Trust in government
Volunteering	Feeling of loneliness
	Relationship with partner
	Feeling a sense of belonging to their neighbourhood
	Accessing natural environment/outdoor activities (can be also under the health domain)
	Engagement with/participations in arts and cultural activities (can be also under the health domain)

Social network/support

The academic evidence of a link between social networks/support and wellbeing has been very mixed, as highlighted by Siedlecki et al.¹⁶¹, even though it has been discussed extensively in key frameworks. This means we have assessed this indicator's reliability as medium and its frequency as high. Previous literature has linked social support to measures of subjective wellbeing^{162, 163} and this is relevant across the life cycle. Particularly for children, a strong social network within their families may protect them from adverse effects of socioeconomic disadvantage. Access to friends and neighbours to discuss issues has also been found to be helpful in managing life challenges.^{103, 164, 165} Supportive teachers are also linked to higher life satisfaction among children.¹⁶⁶ Fiori et al. proposed two types of social networks, non-family networks and a non-friends network. Their findings show the absence of family in the context of friends is surprisingly less unfavourable than the absence of friends in the context of family, and that support quality is one mechanism through which network types affect mental health¹⁶⁷. This indicator is also discussed in older adult wellbeing literature (see, for example, Kafetsios and Sideridis¹⁶⁸, who found perceived satisfaction with social support was strongly correlated with the wellbeing of older adults. Further, Chu et al.¹⁶⁹ found the correlation between loneliness and positive affect among older adults was significant at -0.412 , while it was -0.296 for a younger age group. The correlation between loneliness and negative affect among older adults was 0.339 . Lepore et al.¹⁷⁰ found a marginally significant association between negative affect and received support among people with cancer.

Volunteering

The academic evidence of the relationship between volunteering and wellbeing is high, as this indicator has been associated with increased wellbeing in older adults and youth, so we assessed reliability as high. We assessed the frequency with which the indicator has been discussed in key frameworks as medium. Older adults who volunteer have been found to experience better mental health and a greater quality of life through participating socially and engaging in the community. This is associated with increased life satisfaction, reduced likelihood of depression, improved morale and self-esteem, and larger social networks.^{171, 172} In the case of youth, volunteering has positive effects on educational and occupational

achievement, functional ability and mortality, and it reduces the likelihood of engaging in problem behaviours such as school truancy and drug abuse.¹⁷³

Trust in government

The role of institutions also matters for wellbeing¹⁷⁴, but the academic evidence is mixed so we have assessed reliability as medium, and the frequency with which this indicator is discussed in the key frameworks is low. Previous studies show people who live in countries with more effective public institutions report higher levels of subjective wellbeing than people who live in countries where the quality of institutions has been low.¹⁷⁵ In contrast, Jovanović found institutional trust had only a small influence on wellbeing.¹⁸⁵

Feeling of loneliness

Although not the same as feeling lonely, living alone has proved to be negatively correlated to wellbeing, regardless of relationship status, so we have assessed it as having medium reliability, although it has a low frequency in key frameworks. All household types where two or more people live together give higher ratings for 'worthwhile' and 'life satisfaction' than those living alone.⁸⁸

Chu et al. found young and older adults who reported the greatest amount of loneliness experienced significantly lower wellbeing (measured by positive affect) than those who reported the least amount of loneliness. Nevertheless, the impact of higher levels of loneliness was only associated with increased negative affect in older adults. Increased loneliness was also associated with poorer reports of physical health exclusively in older adults.¹⁶⁹

Relationship with partner

There is a medium level of academic evidence for this indicator, and it has a low frequency in key frameworks. Kim and McKenry argued the effect of the quality of marital (cohabiting) relationships on psychological wellbeing was significant.¹⁷⁶ Nevertheless, the strong effect of marital status remained unchanged after controlling for relationship quality, with marriage leading to greater wellbeing than cohabiting relationships.

Hawkins and Booth found if people were married but unhappy, it was more damaging to their wellbeing than divorcing, as people in low-quality marriages are less happy and have lower levels of life satisfaction, self-esteem and overall health than individuals who divorce and remain unmarried.¹⁷⁷

Feeling a sense of belonging to the local neighbourhood

The academic evidence for this indicator is medium, with a low frequency in key frameworks. For example, O'Brien and Ayidiya found feeling part of the local community is associated with a higher subjective quality of life.¹⁷⁸ This is similar to the finding of Oktay et al. who found there is a positive relationship between life satisfaction and feelings of attachment to the local neighbourhood.¹⁷⁹ A sense of neighbourhood and feelings of safety have been associated with better physical and mental health, lower stress, better social support and being physically active among older women.¹⁸⁰

However, Farrell et al. argued a sense of community mediates the relationship between neighbourhood stability (as defined by population mobility) and residents' wellbeing. It is not the frequency of engaging in neighbourly behaviour that is directly associated with wellbeing, but an increased sense of community¹⁸¹. Consistent with previous findings, this highlights the importance of building a sense of community among residents in a neighbourhood.

Accessing the natural environment

In line with the literature that argued active participation is better than passive participation, spending time in natural environments has an impact on wellbeing. Environmental attributes have been identified as

linking to quality of life by Sugiyama and Ward Thompson.¹⁸² Compared with exercising indoors, Thompson Coon et al. found exercising in natural environments was correlated with higher feelings of revitalisation and positive engagement, increased energy and declines in tension, confusion, anger and depression.¹⁸³ The academic evidence is mixed, so we assessed reliability as medium. This indicator is rarely included in wellbeing frameworks because of the varying results across studies, so we assessed frequency as low.

Engagement with/participation in arts or cultural activities

We found a medium level of academic evidence for this type of activity, and it is rarely included in key frameworks, so we assessed frequency as low. Among those who argue for the positive impact of engagement with art or cultural activities are Nimrod¹⁸⁴ and Cohen et al.¹⁸⁵ Nimrod found participating in cultural activities is significantly correlated with retirees’ life satisfaction while Cohen et al. found participating in art programs had a positive impact on older adults, including on their overall health, and a reduction in risk factors that may cause the need for long-term care. In contrast, Lewis et al. found there was no significant association between involvement in arts activities and wellbeing.¹⁸⁶

Safety

The final dimension we looked at was safety, as indicated in Table 11.

Table 11. Safety indicators

Useability: High	Useability: Medium
N/A	Feeling safe
	Self-reported victimisation
	Crimes against people

Feeling safe

The academic evidence for this indicator is high despite the fact the frequency of discussion in key frameworks is low. We have therefore assessed reliability as high and frequency as low. Feeling safe or freedom from fear has been found to be highly correlated with mental health status and wellbeing, as discussed in Green et al.¹⁸⁷ For example, feeling safe when out alone after dark is a consistent predictor of mental health wellbeing. Those who feel safe have ranked significantly higher on all five dimensions of the SF-36 measure of health, which includes mental and social wellbeing. (SF-36 is a short-form survey measuring quality of life across eight domains: physical functioning; role limitations due to physical health; role limitations due to emotional problems; energy/fatigue; emotional wellbeing; social functioning; pain; and general health.)

Feeling fear is more likely to restrict people’s behaviour and make them feel isolated and distressed. People may perceive themselves to be in poorer health, and this produces a loss in personal wellbeing and leaves people anxious, as discussed in studies by Skogan and Maxfield¹⁸⁸, Lavrakas¹⁸⁹, Lewis and Salem¹⁹⁰, Moore and Trojanowicz⁷⁷ and Ross.¹⁹¹

Self-reported victimisation

There has been mixed evidence on self-reported victimisation so we have assessed it as medium, with a low frequency in key frameworks. Sundaram et al. found there is an association between sexual victimisation and poor health outcomes for both genders.¹⁹² Hanslmaier found victimisation has been associated with lower life satisfaction.¹⁹³ Turner et al. found sexual assault, child maltreatment, witnessing family violence, and other major violence exposure contributed to levels of both depression and anger/aggression.¹⁹⁴ Further, cumulative exposure to multiple forms of victimisation over a child’s life-course represents a substantial source of mental health risk and are risk factors for poorer adult health, as discussed in Greenfield.¹⁹⁵ They

are also associated with a significantly higher risk of medical, psychological, behavioural and sexual disorders.¹⁹⁶

Interestingly, Michalos and Zumbo found the opposite and argued that criminal victimisation, beliefs, feelings and worries about safety, and special defensive behaviour related to personal safety have relatively little impact on people's satisfaction with the quality of their lives, with life satisfaction or happiness¹⁹⁷.

Crimes against people

The academic evidence for this indicator is mixed so we assessed reliability as medium, although the frequency of discussion in key frameworks is low. Cohen argued the impact of crime on life satisfaction is medium and may depend on the type of crime.¹⁹⁸ For example, the impact of a home burglary on life satisfaction is quite large, and different from county-level crime rates, which have little or no significant impact.¹⁹³ Further, as Hanson et al. highlight, violent crime is a major contributing factor in the development of mental health problems¹⁹⁹, most commonly post-traumatic stress disorder (PTSD).²⁰⁰⁻²⁰²

Crime may lead to a loss of life and property, as well as engendering physical pain, post-traumatic stress and anxiety. It may also cause impairments in occupational activities (e.g. lower productivity and higher absenteeism) and disruption in social functioning (e.g. restriction in freedom of movement). The pathway may be through the feeling of vulnerability that it causes.²⁰³

An analysis of homicide victims between 2007 and 2012 shows that among Indigenous Australians there was a higher rate of homicide of intimate partners and other family members (60%) compared with non-Indigenous Australians (43%).²⁰⁴

Wellbeing indicators that are relevant for a particular life cycle

In addition to assessing the main indicators, we also assessed wellbeing indicators that apply to specific life cycles, particularly children, youth or older adults. Note that many of the indicators that apply to the whole population (such as education) apply particularly to children, but are covered in detail in the previous section. This section covers additional indicators from the published research that are applicable to each group.

Table 12 presents children indicators, table 13 youth indicators and table 14 the older adult indicators. Please also see Appendix 2–4 for the detailed assessment for child, youth and older adult indicators.

Table 12. Child indicators

Useability: High	NSW Domain
Birthweight	Health
Breastfeeding	Health
Parental substance use	Health
Smoking in pregnancy	Health
Immunisation	Health
Injuries	Health
Environmental tobacco smoke	Health
Child abuse and neglect	Health; Safety
Oral health	Health
Overweight and obesity	Health
Nutrition	Health
Sleep habits	Health
Cognitive/developmental resources (books, phone, internet, magazines, newspapers)	Education and skills
Parental education	Education and skills
Parental employment	Economic
Organised child recreational activities	Social and community
Useability: Medium	NSW Domain
Alcohol and drug use in pregnancy	Health
Safe schools	Safety
Relationships at school	Social and community

It is interesting to note the majority of indicators for children and youth are from the health domain. There are many indicators that overlap between children and youth, such as oral health, overweight and obesity, nutrition, environmental tobacco smoke, parental socioeconomic status and safe schools, which includes relationships at school and freedom from bullying. This suggests the importance of these variables for both child and youth development.

Table 13. Youth indicators

Useability: High	NSW Domain
Injury and poisoning	Health
Oral health	Health
Substance use	Health
Sexual and reproductive health	Health
Parental health and disability	Health
Environmental tobacco smoke	Health
General practice consultations	Health
Child protection	Safety
Parental socioeconomic status	Economic
Useability: Medium	NSW Domain
Potentially preventable hospitalisation	Health
Chronic conditions	Health
Communicable disease	Health
Overweight and obesity	Health
Nutrition	Health
Survival for melanoma of the skin	Health
Cervical cancer	Health
Delivery by caesarean section	Health
Emergency department waiting times	Health
Adverse events treated in hospital	Health
Sun protection	Health
Appropriate use of antibiotics	Health
School relationships and bullying	Safety
Family functioning	Social and community

In terms of older adult indicators, having access to transportation and internet connectivity are important components of wellbeing. Gilhooly et al.²⁰⁵ find both car ownership and access to transport are determinants of the quality of life of older people in Britain. There is also a need to provide alternative transport options for older people. Studies have found good access to public transport is linked to a higher quality of life. Browning and Sims, in an Australian context, also mention walking, cycling and scooters as alternative transport methods to driving, although these may not be ideal for all older people.²⁰⁶ Other options include transport sharing or moving residence closer to amenities and/or public transport.

The concept of ageing in place is closely related to the mobility of older people, which is strongly affected by actual or potential reductions in personal autonomy, or the ability to live independently. These have been

highlighted with the indicators representing 'institutional move', which is a move away from informal care by family members and others to institutional care such as aged care.

Table 14. Older adult indicators

Useability: High	NSW Domain
Carer (caring duties)	Social and community
Access to transportation	Social and community; or Safety
Connectivity (access to internet)	Education and skills
Home tenure	Home
Rent assistance	Home
Need assistance with core activities	Health
Use aged-care services	Health
Use home and community care	Health
Number of hours of care	Health
Community packaged care	Health
Prevalence of dementia	Health
Useability: Medium	NSW Domain
Underemployment	Economic

Discussion

We have identified indicators of wellbeing across the life cycle in the key frameworks and academic literature.

Overall, we have identified 16 main indicators that have been classified as having high useability for NSW. They are household income, educational attainment, employment, unemployment, financial hardship, overcrowding (possibly due to a strong link with mental wellbeing), housing affordability, homelessness (possibly due to a strong link with mental and physical wellbeing), life expectancy, self-reported health status, disability, smoking behaviour, mental health, cognitive skills, social network/support and volunteering.

We found a gap in indicator availability in the empowerment domain. Future research is warranted into what other indicators could be included under this domain. There appears to be a gap in the literature and low academic evidence for several indicators (see appendices), for example, sanitary facilities, access to key services, and energy consumption from renewable resources. This gap may be a result of insufficient research in a fairly new field, or it may be due to a lack of data for researchers to work with.

We found most indicators were also relevant for specific populations, although we would advise caution when using them for other groups, and the evidence for a particular group needs to be assessed separately.

Conclusion

Despite growing consensus that wellbeing is a critical concept to measure, there remains a high level of debate about how best to define and measure it. The concept has many potential meanings and in this report we have used a loose interpretation of wellbeing. This report is an Evidence Check review of wellbeing indicators across the life cycle. The aim is to determine indicators and measurement of wellbeing across the life cycle covering seven core domains: economic, home, health, empowerment, education and skills, social and community and safety. The review could be used by NSW FACS to assist implementation of the NSW Human Services Outcomes Framework through informing changes to outcomes and monitoring.

The Evidence Check set out to answer three research questions:

1. What indicators and their measures of wellbeing have been successfully validated and applied in population settings?
2. Which measures have specific application at different points across the life cycle?
3. Which measures have application to specific population groups in NSW? At what stages of the life cycle?

To answer these three questions, we have assessed the useability of the indicators based on three criteria: (i) frequency used in key frameworks, (ii) reliability and consistency of the link to wellbeing in the academic literature, and (iii) availability of NSW data. The findings indicate there is variability in the useability of the indicators for NSW and also in terms of evidence. There are three key findings:

First, in our literature investigation of the main indicators, we identified 37 indicators as having high or medium useability. These indicators have either high or medium academic (statistical) evidence and/or high or medium frequency in key frameworks across the life cycle. The majority of these indicators are from the social and community domain (eight indicators), while the domain with the least number of number of indicators is empowerment (one indicator). We identified 16 main indicators as having high useability for NSW. They are household income, employment, unemployment, financial hardship, overcrowding, housing affordability, homelessness, life expectancy, self-reported health status, disability, smoking behaviour, mental health, educational attainment, cognitive skills, social network/support and volunteering. We found a gap in indicator availability in the empowerment domain.

Our Evidence Check also identified indicators that apply only to children, youth or older adults and many indicators that overlap among children and youth, such as oral health, overweight and obesity, nutrition, environmental tobacco smoke, parental socioeconomic status and safe schools, which includes relationships at school and freedom from bullying, perhaps indicating the importance of these variables for both child and youth development. For older adults, the prevalence of dementia and the use of residential care are also among indicators that have high useability.

We found most indicators will also be relevant for a specific population, although indicators for these groups should also be assessed to see whether they do identify a similar relationship between wellbeing and the population in question. Further, among specific populations, many indicators are also influenced by a cultural norm that is contextual. For example, overcrowding may be acceptable for some communities/cultures.

When considering how best to use the findings from this Evidence Check, it is important to emphasise the limitations of the available evidence. Research in the area of wellbeing is rapidly growing but in many areas remains relatively undeveloped, with limited evidence. This means our conclusions are drawn from an evidence base that is partial at best, and which is likely to change rapidly in coming years.

Although we have included 17 wellbeing frameworks in our assessment that we think sufficiently represent the key literature in the field, we acknowledge that other frameworks that we have not covered in this Evidence Check may use additional indicators. Similarly, in terms of the data, we focus on data sources that are publically available, so there may be other data sources that are available to the NSW Government and that could be used.

We hope this Evidence Check is useful in helping NSW FACS choose the indicators to include in its Human Services Outcomes Framework that would best fit its policy goals.

References

1. Tomy AJ, Mellor D, Fuller-Tyszkiewicz M, Cummins RA, Tanton R. Geographic Differences in Subjective Well-Being among Indigenous and Non-Indigenous Australian Adolescents and Adults. *Journal of Community Psychology*. 2017;45(1):81-99.
2. Stiglitz JE, Sen A, Fitoussi J. *Mismeasuring Our Lives: Why Gdp Doesn't Add Up*: The New Press; 2010.
3. Diener E, Lucas R, Schimmack U, Helliwell J. *Well-Being for Public Policy*: Oxford University Press; 2009.
4. Braun B, Olson PD, Bauer JW. Welfare to Well-Being Transition. *Social Indicators Research*. 2002;60(1-3):147-54.
5. Diener E, Seligman ME. Beyond Money toward an Economy of Well-Being. *Psychological Science in the Public Interest*. 2004;5(1):1-31.
6. Kahneman D, Krueger AB. Developments in the Measurement of Subjective Well-Being. *The Journal of Economic Perspectives*. 2006;20(1):3-24.
7. Diener E, Suh E, Lucas R, Smith H. Subjective Well-Being: Three Decades of Progress. *Psychological Bulletin*. 1999;125:276-302.
8. Bradburn NM. *The Structure of Psychological Well-Being*. 1969
9. Waterman AS. Two Conceptions of Happiness: Contrasts of Personal Expressiveness (Eudaimonia) and Hedonic Enjoyment. *Journal of Personality and Social Psychology*. 1993;64(4):678.
10. Ryan RM, Deci EL. On Happiness and Human Potentials: A Review of Research on Hedonic and Eudaimonic Well-Being. *Annual Review of Psychology*. 2001;52(1):141-66.
11. Ryff CD, Keyes CLM. The Structure of Psychological Well-Being Revisited. *Journal of Personality and Social Psychology*. 1995;69(4):719.
12. Seligman ME. *Learned Optimism: How to Change Your Mind and Your Life*: Vintage; 2011.
13. Durand M. The OECD Better Life Initiative: How's Life? And the Measurement of Well-Being. *Review of Income and Wealth*. 2015;61(1):4-17.
14. Huppert FA, So TT. Flourishing across Europe: Application of a New Conceptual Framework for Defining Well-Being. *Social Indicators Research*. 2013;110(3):837-61.
15. Initiative OBL. *Compendium of OECD Well-Being Indicators*. OECD Paris; 2011
16. Brown D. *Good Practice Guidelines for Indicator Development and Reporting*. Busan: Third. 2009
17. Australian Bureau of Statistics. *Measuring Australia's Progress*, Cat. No. 1370.0. Canberra: ABS; 2013. Available from: <http://www.abs.gov.au/ausstats/abs@.nsf/mf/1370.0>
18. Khabsa M, Giles CL. The Number of Scholarly Documents on the Public Web. *PloS one*. 2014;9(5):e93949.
19. Rojas M. *Well-Being and the Complexity of Poverty*. Research paper. 2004;29
20. Clark AE, Frijters P, Shields MA. Relative Income, Happiness, and Utility: An Explanation for the Easterlin Paradox and Other Puzzles. *Journal of Economic literature*. 2008;46(1):95-144.
21. Easterlin RA. Will Raising the Incomes of All Increase the Happiness of All? *Journal of Economic Behavior & Organization*. 1995;27(1):35-47.
22. Kahneman D, Deaton A. High Income Improves Evaluation of Life but Not Emotional Well-Being. *Proceedings of the national academy of sciences*. 2010;107(38):16489-93.
23. Layard PRG, Nickell SJ, Jackman R. *Unemployment: Macroeconomic Performance and the Labour Market*: Oxford University Press on Demand; 2005.
24. Office for National Statistics. *How Much Do Household Income and Spending Matter to Personal Well-Being?* ONS; 2014.
25. Cummins RA. Personal Income and Subjective Well-Being: A Review. *Journal of Happiness Studies*. 2000;1(2):133-58.
26. Stevenson B, Wolfers J. Subjective Well-Being and Income: Is There Any Evidence of Satiation? *The American Economic Review*. 2013;103(3):598-604.
27. Biddle N. Indigenous Income, Wellbeing and Behaviour: Some Policy Complications. *Economic Papers: A Journal of Applied Economics and Policy*. 2015;34(3):139-49.
28. Australian Bureau of Statistics. *General Social Survey User Guide*, Cat. No. 4159.0.55.002. ABS; 2010. Available from: <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4159.0.55.002Main+Features22010?OpenDocument>
29. Yates J. *Housing Affordability and Financial Stress*. 2007

30. O'Neill B, Prawitz AD, Sorhaindo B, Kim J, Garman ET. Changes in Health, Negative Financial Events, and Financial Distress/Financial Well-Being for Debt Management Program Clients. *Journal of Financial Counseling and Planning*. 2006;17(2)
31. Bradshaw M, Ellison CG. Financial Hardship and Psychological Distress: Exploring the Buffering Effects of Religion. *Social Science & Medicine*. 2010;71(1):196-204.
32. Chi I, Chou K-L. Financial Strain and Depressive Symptoms among Hong Kong Chinese Elderly: A Longitudinal Study. *Journal of Gerontological Social Work*. 2000;32(4):41-60.
33. Chou K-L, Chi I. Determinants of Life Satisfaction in Hong Kong Chinese Elderly: A Longitudinal Study. *Aging & Mental Health*. 1999;3(4):328-35.
34. Krause N. Chronic Financial Strain, Social Support, and Depressive Symptoms among Older Adults. *Psychology and Aging*. 1987;2(2):185.
35. De Leon CFM, Rapp SS, Kasl SV. Financial Strain and Symptoms of Depression in a Community Sample of Elderly Men and Women a Longitudinal Study. *Journal of Aging and Health*. 1994;6(4):448-68.
36. Dolan P, Peasgood T, White M. Do We Really Know What Makes Us Happy? A Review of the Economic Literature on the Factors Associated with Subjective Well-Being. *Journal of Economic Psychology*. 2008;29(1):94-122.
37. Grün C, Hauser W, Rhein T. Is Any Job Better Than No Job? Life Satisfaction and Re-Employment. *Journal of Labor Research*. 2010;31(3):285-306.
38. Tait M, Padgett MY, Baldwin TT. Job and Life Satisfaction: A Reevaluation of the Strength of the Relationship and Gender Effects as a Function of the Date of the Study. *Journal of Applied Psychology*. 1989;74(3):502.
39. Dockery AM. Education and Happiness in the School-to-Work Transition: ERIC; 2010.
40. Organisation for Economic Co-operation and Development. OECD Guidelines on Measuring Subjective Well-Being, OECD Publishing. <https://www.oecd.org/statistics/Guidelines%20on%20Measuring%20Subjective%20Well-being.pdf>; OECD; 2013.
41. Bardasi E, Francesconi M. The Impact of Atypical Employment on Individual Wellbeing: Evidence from a Panel of British Workers. *Social science & medicine*. 2004;58(9):1671-88.
42. van Campen C, Iedema J. Are Persons with Physical Disabilities Who Participate in Society Healthier and Happier? Structural Equation Modelling of Objective Participation and Subjective Well-Being. *Quality of Life Research*. 2007;16(4):635-45.
43. Office for National Statistics. Human Capital Estimates: 2015. Estimates of National and Regional Human Capital in the UK from 2004 to 2015. <https://www.ons.gov.uk/releases/humancapitalestimates2015>; ONS; 2015.
44. Carroll N. Unemployment and Psychological Well-Being. *Economic Record*. 2007;83(262):287-302.
45. Stutzer A. The Role of Income Aspirations in Individual Happiness. *Journal of Economic Behavior & Organization*. 2004;54(1):89-109.
46. Flatau P, Galea J, Petridis R. Mental Health and Wellbeing and Unemployment. *Australian Economic Review*. 2000;33(2):161-81.
47. Frey BS, Stutzer A. What Can Economists Learn from Happiness Research? *Journal of Economic Literature*. 2002;40(2):402-35.
48. Frey BS, Stutzer A. *Happiness and Economics: How the Economy and Institutions Affect Well-Being* Princeton: Princeton University Press; 2002
49. Clark AE. Unemployment as a Social Norm: Psychological Evidence from Panel Data. *Journal of Labor Economics*. 2003;21(2):323-51.
50. Milner A, Page A, LaMontagne AD. Long-Term Unemployment and Suicide: A Systematic Review and Meta-Analysis. *PLoS one*. 2013;8(1):e51333.
51. Meier S, Stutzer A. Is Volunteering Rewarding in Itself? *Economica*. 2008;75(297):39-59.
52. Schaufeli WB, Taris TW, Bakker AB. It Takes Two to Tango. Workaholism Is Working Excessively and Working Compulsively. The long work hours culture Causes, consequences and choices. 2008:203-26.
53. Caruso CC. Possible Broad Impacts of Long Work Hours. *Industrial Health*. 2006;44(4):531-36.
54. Golden L, Wiens-Tuers B. To Your Happiness? Extra Hours of Labor Supply and Worker Well-Being. *The Journal of Socio-Economics*. 2006;35(2):382-97.
55. Headey B, Wooden M. The Effects of Wealth and Income on Subjective Well-Being and Ill-Being. *Economic Record*. 2004;80(s1):S24-S33.
56. Roszkowski MJ, Grable J. How Are Income and Net Worth Related to Happiness? *Journal of Financial Service Professionals*. 2007;61(1)
57. Headey B, Muffels R, Wooden M. Money Does Not Buy Happiness: Or Does It? A Reassessment Based on the Combined Effects of Wealth, Income and Consumption. *Social Indicators Research*. 2008;87(1):65-82.

58. Brandolini A, Magri S, Smeeding TM. Asset-Based Measurement of Poverty. *Journal of Policy Analysis and Management*. 2010;29(2):267-84.
59. Senik C. Wealth and Happiness. *Oxford Review of Economic Policy*. 2014;30(1):92-108.
60. Edwards M. Rental Housing and the Urban Poor: Africa and Latin America Compared. *Housing Africa's Urban Poor*. 1990:253-72.
61. Evans GW, Palsane MN, Lepore SJ, Martin J. Residential Density and Psychological Health: The Mediating Effects of Social Support. *Journal of Personality and Social Psychology*. 1989;57(6):994.
62. Jain P. Housing in Japan: The Politics of the "Rabbit Hutch". *Asian profile*. 1987;15(2):129-41.
63. Lepore SJ, Evans GW, Palsane M. Social Hassles and Psychological Health in the Context of Chronic Crowding. *Journal of Health and Social Behavior*. 1991:357-67.
64. Bradshaw J, Hoelscher P, Richardson D. An Index of Child Well-Being in the European Union. *Social Indicators Research*. 2007;80(1):133-77.
65. Solari CD, Mare RD. Housing Crowding Effects on Children's Wellbeing. *Social Science Research*. 2012;41(2):464-76.
66. Booth AL, Carroll N. Overcrowding and Indigenous Health in Australia. 2005
67. Deidda M. Economic Hardship, Housing Cost Burden and Tenure Status: Evidence from Eu-Silc. *Journal of Family and Economic Issues*. 2015;36(4):531-56.
68. Burke T, Pinnegar S, Pihbs P, Neske C, Gabriel M, et al. Experiencing the Housing Affordability Problem: Blocked Aspirations Trade-Offs and Financial Hardships Melbourne: 2007 01 Jan 2008 Report No.: NRV3-9. Available from: <https://www.ahuri.edu.au/research/nrv-research-papers/nrv3-9>
69. Lester L, Baker E, Beer A. The Roc and Role of the 30% Rule. 2013
70. Rowley S, Ong R, Haffner M. Bridging the Gap between Housing Stress and Financial Stress: The Case of Australia. *Housing Studies*. 2015;30(3):473-90.
71. Rowley S, Ong R. Housing Affordability, Housing Stress and Household Wellbeing in Australia. 2012
72. Leventhal T, Newman S. Housing and Child Development. *Children and Youth Services Review*. 2010;32(9):1165-74.
73. Coley RL, Leventhal T, Lynch AD, Kull M. Relations between Housing Characteristics and the Well-Being of Low-Income Children and Adolescents. *Developmental Psychology*. 2013;49(9):1775.
74. Harkness J, Newman SJ. Housing Affordability and Children's Well-Being: Evidence from the National Survey of America's Families. *Housing Policy Debate*. 2005;16(2):223-55.
75. Smith K, Flicker L, Lautenschlager N, Almeida O, Atkinson D, et al. High Prevalence of Dementia and Cognitive Impairment in Indigenous Australians. *Neurology*. 2008;71(19):1470-73.
76. Shelter Net BC. Homelessness: Responding to the Hard-to-House. A British Columbia Perspective on a National Problem. 2004.
77. Moore MH, Trojanowicz RC. Policing and the Fear of Crime: US Department of Justice, National Institute of Justice Washington, DC; 1988.
78. Vostanis P. Mental Health of Homeless Children and Their Families. *Advances in Psychiatric Treatment*. 2002;8(6):463-69.
79. Molnar JM, Rath WR, Klein TP. Constantly Compromised: The Impact of Homelessness on Children. *Journal of Social Issues*. 1990;46(4):109-24.
80. Rafferty Y, Shinn M. The Impact of Homelessness on Children. *American Psychologist*. 1991;46(11):1170.
81. Birdsall-Jones C, Corunna V, Turner N, Smart G, Shaw W. Indigenous Homelessness. AHURI. Melbourne: Australian Housing and Urban Research Institute, Western Australia Research Centre.; 2010.
82. Memmott P, Long S, Chambers C, Spring F. Categories of Indigenous 'Homeless' People and Good Practice Responses to Their Needs. Melbourne: Australian Housing and Urban Research Institute.; 2003 Contract No.: AHURI Final Report No. 49. .
83. Saith R, Harriss-White B. Gender Sensitivity of Well-Being Indicators. United Nations Research Institute for Social Development. 1998(95):1-52.
84. Perenboom R, van Herten LM, Boshuizen H, Van Den Bos G. Trends in Life Expectancy in Wellbeing. *Social Indicators Research*. 2004;65(2):227-44.
85. Bérenger V, Verdier-Chouchane A. Multidimensional Measures of Well-Being: Standard of Living and Quality of Life across Countries. *World Development*. 2007;35(7):1259-76.
86. Okun MA, George LK. Physician-and Self-Ratings of Health, Neuroticism and Subjective Well-Being among Men and Women. *Personality and Individual Differences*. 1984;5(5):533-39.
87. Witter RA, Okun MA, Stock WA, Haring MJ. Education and Subjective Well-Being: A Meta-Analysis. *Educational Evaluation and Policy Analysis*. 1984;6(2):165-73.
88. Office for National Statistics. Review of Available Sources and Measures for Children and Young People's Well-Being. www.ons.gov.uk ONS; 2013.

89. Angner E, Ray M, Saag K, Allison J. Health and Happiness among Older Adults. *Journal of Health Psychology*. 2009;14(4):503-12.
90. Sibthorpe B, Anderson I, Cunningham J. Self-Assessed Health among Indigenous Australians: How Valid Is a Global Question? *American Journal of Public Health*. 2001;91(10):1660-63.
91. Acevedo-Garcia D, Soobader M-J, Berkman LF. Low Birthweight among US Hispanic/Latino Subgroups: The Effect of Maternal Foreign-Born Status and Education. *Social Science & Medicine*. 2007;65(12):2503-16.
92. Oswald AJ, Powdthavee N. Does Happiness Adapt? A Longitudinal Study of Disability with Implications for Economists and Judges. *Journal of Public Economics*. 2008;92(5):1061-77.
93. Freedman VA, Stafford F, Schwarz N, Conrad F, Cornman JC. Disability, Participation, and Subjective Wellbeing among Older Couples. *Social Science & Medicine*. 2012;74(4):588-96.
94. Lucas RE. Long-Term Disability Is Associated with Lasting Changes in Subjective Well-Being: Evidence from Two Nationally Representative Longitudinal Studies. *Journal of Personality and Social Psychology*. 2007;92(4):717.
95. Keyes C. Mental Health in Adolescence: Is America's Youth Flourishing? *The American Journal of Orthopsychiatry*. 2006(76):395-402.
96. Venning A, Wilson A, Kettler L, Elliott J. Mental Health among Youth in South Australia: A Survey of Flourishing, Languishing, Struggling, and Floundering. *Australian Psychologist*. 2013;48(4):299-310.
97. Mathers M, Toumbourou J, Catalano R, Williams J, Patton G. Consequences of Youth Tobacco Use: A Review of Prospective Behavioural Studies. *Addiction*. 2006;101(7):948-58.
98. Pitkänen T, Lyyra AL, Pulkkinen L. Age of Onset of Drinking and the Use of Alcohol in Adulthood: A Follow-up Study from Age 8-42 for Females and Males. *Addiction*. 2005;100(5):652-61.
99. Lawrence D, Mitrou F, Zubrick SR. Smoking and Mental Illness: Results from Population Surveys in Australia and the United States. *BMC public health*. 2009;9(1):1.
100. Alston JP, Dudley CJ. Age, Occupation, and Life Satisfaction. *The Gerontologist*. 1973;13(1):58-61.
101. Headey B, Kelley J, Wearing A. Dimensions of Mental Health: Life Satisfaction, Positive Affect, Anxiety and Depression. *Social Indicators Research*. 1993;29(1):63-82.
102. Guney S, Kalafat T, Boysan M. Dimensions of Mental Health: Life Satisfaction, Anxiety and Depression: A Preventive Mental Health Study in Ankara University Students Population. *Procedia - Social and Behavioral Sciences*. 2010;2(2):1210-13.
103. Ferguson KM. Social Capital and Children's Wellbeing: A Critical Synthesis of the International Social Capital Literature. *International Journal of Social Welfare*. 2006;15(1):2-18.
104. Australian Institute for Health and Welfare. National Outcome Measures for Early Childhood Development: Development of an Indicator-Based Reporting Framework. Canberra: AIHW; 2011.
105. Bhatia SK, Bhatia SC. Childhood and Adolescent Depression. *Depression*. 2007;100:53.
106. Leslie LK, Wolraich ML. ADHD Service Use Patterns in Youth. *Journal of Pediatric Psychology*. 2007;32(6):695-710.
107. Lynch FL, Clarke GN. Estimating the Economic Burden of Depression in Children and Adolescents. *American Journal of Preventive Medicine*. 2006;31(6):143-51.
108. Hillerås PK, Jorm AF, Herlitz A, Winblad B. Activity Patterns in Very Old People: A Survey of Cognitively Intact Subjects Aged 90 Years or Older. *Age and Ageing*. 1999;28(2):147-52.
109. Adermann J, Campbell M. Big Worry: Implications of Anxiety in Indigenous Youth. *The Australian Journal of Indigenous Education (Supplement)*. 2007;36:74-80.
110. Lenz-Rashid S. Employment Experiences of Homeless Young Adults: Are They Different for Youth with a History of Foster Care? *Children and Youth Services Review*. 2006;28(3):235-59.
111. Unrau YA, Grinnell RM. Exploring out-of-Home Placement as a Moderator of Help-Seeking Behavior among Adolescents Who Are High Risk. *Research on Social Work Practice*. 2005;15(6):516-30.
112. Helliwell JF. Life Satisfaction and Quality of Development. *National Bureau of Economic Research*; 2008.
113. Diener E, Chan MY. Happy People Live Longer: Subjective Well-Being Contributes to Health and Longevity. *Applied Psychology: Health and Well-Being*. 2011;3(1):1-43.
114. Helliwell JF. Well-Being and Social Capital: Does Suicide Pose a Puzzle? *Social Indicators Research*. 2007;81(3):455-96.
115. Diener E, Inglehart R, Tay L. Theory and Validity of Life Satisfaction Scales. *Social Indicators Research*. 2013;112(3):497-527.
116. Cummins R. Measuring Life Balance through Discrepancy Theories and Subjective Well-Being. *Life balance: Multidisciplinary Theories and Research*. 2009:73-93.
117. Lu L, Hu C-H. Personality, Leisure Experiences and Happiness. *Journal of Happiness Studies*. 2005;6(3):325-42.

118. Caldwell LL. Leisure and Health: Why Is Leisure Therapeutic? *British Journal of Guidance & Counselling*. 2005;33(1):7-26.
119. Sacker A, Cable N. Do Adolescent Leisure-Time Physical Activities Foster Health and Well-Being in Adulthood? Evidence from Two British Birth Cohorts. *The European Journal of Public Health*. 2006;16(3):331-35.
120. Agate JR, Zabriskie RB, Agate ST, Poff R. Family Leisure Satisfaction and Satisfaction with Family Life. *Journal of Leisure Research*. 2009;41(2):205.
121. Bruni L, Stanca L. Watching Alone: Relational Goods, Television and Happiness. *Journal of Economic Behavior & Organization*. 2008;65(3):506-28.
122. Holder MD, Coleman B, Sehn ZL. The Contribution of Active and Passive Leisure to Children's Well-Being. *Journal of Health Psychology*. 2009;14(3):378-86.
123. Argyle M. *The Psychology of Happiness*, 2nd. East Sussex: Routledge. 2001
124. Csikszentmihalyi M, Hunter J. Happiness in Everyday Life: The Uses of Experience Sampling. *Journal of Happiness Studies*. 2003;4(2):185-99.
125. Shaw LH, Gant LM. Users Divided? Exploring the Gender Gap in Internet Use. *CyberPsychology & Behavior*. 2002;5(6):517-27.
126. Hills P, Argyle M. Positive Moods Derived from Leisure and Their Relationship to Happiness and Personality. *Personality and Individual Differences*. 1998;25(3):523-35.
127. Steptoe A, Butler N. Sports Participation and Emotional Wellbeing in Adolescents. *The Lancet*. 1996;347(9018):1789-92.
128. Fredricks JA, Eccles JS. Developmental Benefits of Extracurricular Involvement: Do Peer Characteristics Mediate the Link between Activities and Youth Outcomes? *Journal of Youth and Adolescence*. 2005;34(6):507-20.
129. Eccles JS, Barber BL. Student Council, Volunteering, Basketball, or Marching Band What Kind of Extracurricular Involvement Matters? *Journal of Adolescent Research*. 1999;14(1):10-43.
130. Rehdanz K, Maddison D. Local Environmental Quality and Life-Satisfaction in Germany. *Ecological Economics*. 2008;64(4):787-97.
131. Welsch H. Environment and Happiness: Valuation of Air Pollution Using Life Satisfaction Data. *Ecological Economics*. 2006;58(4):801-13.
132. MacKerron G, Mourato S. Life Satisfaction and Air Quality in London. *Ecological Economics*. 2009;68(5):1441-53.
133. Brereton F, Clinch JP, Ferreira S. Happiness, Geography and the Environment. *Ecological Economics*. 2008;65(2):386-96.
134. Smyth R, Mishra V, Qian X. The Environment and Well-Being in Urban China. *Ecological Economics*. 2008;68(1):547-55.
135. Maddison D, Rehdanz K. The Impact of Climate on Life Satisfaction. *Ecological Economics*. 2011;70(12):2437-45.
136. Wilson J, Tyedmers P, Spinney JE. An Exploration of the Relationship between Socioeconomic and Well-Being Variables and Household Greenhouse Gas Emissions. *Journal of Industrial Ecology*. 2013;17(6):880-91.
137. Weitz-Shapiro R, Winters MS. The Link between Voting and Life Satisfaction in Latin America. *Latin American Politics and Society*. 2011;53(4):101-26.
138. Blanchflower DG, Oswald AJ. Well-Being over Time in Britain and the USA. *Journal of Public Economics*. 2004;88:1359-86.
139. Michalos AC. Education, Happiness and Wellbeing. *Social Indicators Research*. 2008;87(3):347-66.
140. Desjardins R. Researching the Links between Education and Well-Being. *European Journal of Education*. 2008;43(1):23-35.
141. Fahey T, Smyth E. Do Subjective Indicators Measure Welfare? Evidence from 33 European Societies. *European Societies*. 2004;6(1):5-27.
142. Ferrer-i-Carbonell A. Income and Well-Being: An Empirical Analysis of the Comparison Income Effect. *Journal of Public Economics*. 2005;89(5):997-1019.
143. Bukenya JO, Gebremedhin TG, Schaeffer PV. Analysis of Rural Quality of Life and Health: A Spatial Approach. *Economic Development Quarterly*. 2003;17(3):280-93.
144. Gerdtham U-G, Johannesson M. The Relationship between Happiness, Health, and Socio-Economic Factors: Results Based on Swedish Microdata. *The Journal of Socio-Economics*. 2001;30(6):553-57.
145. Helliwell JF. How's Life? Combining Individual and National Variables to Explain Subjective Well-Being. *Economic Modelling*. 2003;20(2):331-60.
146. Ovaska T, Takashima R. Economic Policy and the Level of Self-Perceived Well-Being: An International Comparison. *The Journal of Socio-Economics*. 2006;35(2):308-25.
147. Suldo SM, Shaffer EJ, Riley KN. A Social-Cognitive-Behavioral Model of Academic Predictors of Adolescents' Life Satisfaction. *School Psychology Quarterly*. 2008;23(1):56.

148. Gilman R, Huebner S. A Review of Life Satisfaction Research with Children and Adolescents. *School Psychology Quarterly*. 2003;18(2):192.
149. Verkuyten M, Thijs J. School Satisfaction of Elementary School Children: The Role of Performance, Peer Relations, Ethnicity and Gender. *Social indicators research*. 2002;59(2):203-28.
150. Bird V, Akerman R. Every Which Way We Can: A Literacy and Social Inclusion Position Paper. National Literacy Trust. 2005
151. Quinn PD, Duckworth AL, editors. Happiness and Academic Achievement: Evidence for Reciprocal Causality. The Annual Meeting of the American Psychological Society; 2007.
152. Kirkcaldy B, Furnham A, Siefen G. The Relationship between Health Efficacy, Educational Attainment, and Well-Being among 30 Nations. *European Psychologist*. 2004;9(2):107-19.
153. El Ansari W, Stock C. Is the Health and Wellbeing of University Students Associated with Their Academic Performance? Cross Sectional Findings from the United Kingdom. *International Journal of Environmental Research and Public Health*. 2010;7(2):509-27.
154. Huebner ES. Correlates of Life Satisfaction in Children. *School psychology quarterly*. 1991;6(2):103.
155. Freeman RB, Machin S, Viarengo M. Inequality of Educational Outcomes: International Evidence from Pisa. *Regional and Sectoral Economic Studies*. 2011;11(3):5-20.
156. Feather NT, O'Brien GE. A Longitudinal Study of the Effects of Employment and Unemployment on School-Leavers. *Journal of Occupational Psychology*. 1986;59(2):121-44.
157. Patton W, Noller P. Unemployment and Youth: A Longitudinal Study. *Australian Journal of Psychology*. 1984;36(3):399-413.
158. Proctor CL, Linley PA, Maltby J. Youth Life Satisfaction: A Review of the Literature. *Journal of Happiness Studies*. 2009;10(5):583-630.
159. Lucey P. Social Determinates of Health. *Nursing economics*. 2007;25(2):103.
160. Cornwell EY, Cornwell B. Access to Expertise as a Form of Social Capital: An Examination of Race-and Class-Based Disparities in Network Ties to Experts. *Sociological Perspectives*. 2008;51(4):853-76.
161. Siedlecki KL, Salthouse TA, Oishi S, Jeswani S. The Relationship between Social Support and Subjective Well-Being across Age. *Social Indicators Research*. 2014;117(2):561-76.
162. Newsom JT, Schulz R. Social Support as a Mediator in the Relation between Functional Status and Quality of Life in Older Adults. *Psychology and Aging*. 1996;11(1):34.
163. Pinquart M, Sörensen S. Influences of Socioeconomic Status, Social Network, and Competence on Subjective Well-Being in Later Life: A Meta-Analysis. *Psychology and Aging*. 2000;15(2):187-224.
164. Stone W, Hughes J, editors. What Role for Social Capital in Family Policy and How Does It Measure Up? Family Futures: issues in research and policy, Australian Institute of Family Studies conference; 2000; Melbourne: Citeseer.
165. Zwi KJ, Henry RL. Children in Australian Society. *Medical Journal of Australia*. 2005;183(3):154.
166. Suldo SM, Huebner ES. Is Extremely High Life Satisfaction During Adolescence Advantageous? *Social Indicators Research*. 2006;78(2):179-203.
167. Fiori KL, Antonucci TC, Cortina KS. Social Network Typologies and Mental Health among Older Adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2006;61(1):P25-P32.
168. Kafetsios K, Sideridis GD. Attachment, Social Support and Well-Being in Young and Older Adults. *Journal of Health Psychology*. 2006;11(6):863-75.
169. Chu PS, Saucier DA, Hafner E. Meta-Analysis of the Relationships between Social Support and Well-Being in Children and Adolescents. *Journal of Social and Clinical Psychology*. 2010;29(6):624.
170. Lepore SJ, Glaser DB, Roberts KJ. On the Positive Relation between Received Social Support and Negative Affect: A Test of the Triage and Self-Esteem Threat Models in Women with Breast Cancer. *Psycho-Oncology*. 2008;17(12):1210-15.
171. Morrow-Howell N, Hinterlong J, Rozario PA, Tang F. Effects of Volunteering on the Well-Being of Older Adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2003;58(3):S137-S45.
172. Burr JA, Choi NG, Mutchler JE, Caro FG. Caregiving and Volunteering: Are Private and Public Helping Behaviors Linked? *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2005;60(5):S247-S56.
173. Wilson J. Volunteering. *Annual Review of Sociology*. 2000:215-40.
174. Hudson J. Institutional Trust and Subjective Well-Being across the Eu. *Kyklos*. 2006;59(1):43-62.
175. Helliwell JF, Layard R, Sachs J. World Happiness Report 2015: Sustainable Development Solutions Network New York; 2015.
176. Kim HK, McKenry PC. The Relationship between Marriage and Psychological Well-Being a Longitudinal Analysis. *Journal of Family Issues*. 2002;23(8):885-911.

177. Hawkins DN, Booth A. Unhappily Ever After: Effects of Long-Term, Low-Quality Marriages on Well-Being. *Social Forces*. 2005;84(1):451-71.
178. O'Brien DJ, Ayidiya S. Neighborhood Community and Life Satisfaction. *Community Development*. 1991;22(1):21-37.
179. Oktay D, Rüstemli A, Marans RW. Neighborhood Satisfaction, Sense of Community, and Attachment: Initial Findings from Famagusta Quality of Urban Life Study. *ITU A/Z Journal*. 2009;6(1):6-20.
180. Young AF, Russell A, Powers JR. The Sense of Belonging to a Neighbourhood: Can It Be Measured and Is It Related to Health and Well Being in Older Women? *Social Science & Medicine*. 2004;59(12):2627-37.
181. Farrell SJ, Aubry T, Coulombe D. Neighborhoods and Neighbors: Do They Contribute to Personal Well-Being? *Journal of Community Psychology*. 2004;32(1):9-25.
182. Sugiyama T, Ward Thompson C, editors. The Relationship between Older People's Quality of Life, Outdoor Activity and Outdoor Environments. The 4th Environmental Psychology in the UK Conference; 2005.
183. Thompson Coon J, Boddy K, Stein K, Whear R, Barton J, et al. Does Participating in Physical Activity in Outdoor Natural Environments Have a Greater Effect on Physical and Mental Wellbeing Than Physical Activity Indoors? A Systematic Review. *Environmental Science & Technology*. 2011;45(5):1761-72.
184. Nimrod G. Expanding, Reducing, Concentrating and Diffusing: Four Types of Postretirement Leisure Behaviour. Unpublished manuscript Available from the author. 2005
185. Cohen GD, Perlstein S, Chapline J, Kelly J, Firth KM, et al. The Impact of Professionally Conducted Cultural Programs on the Physical Health, Mental Health, and Social Functioning of Older Adults. *The Gerontologist*. 2006;46(6):726-34.
186. Lowis MJ, Jewell A, Jackson MI. Engagement in the Arts and Well-Being and Health in Later Adulthood: An Empirical Study. *Journal of Applied Arts & Health*. 2011;2(1):25-36.
187. Green G, Gilbertson JM, Grimsley MF. Fear of Crime and Health in Residential Tower Blocks. *The European Journal of Public Health*. 2002;12(1):10-15.
188. Skogan WG, Maxfield MG. Coping with Crime: Individual and Neighborhood Reactions. 1981
189. Lavrakas PJ. Fear of Crime and Behavioral Restrictions in Urban and Suburban Neighborhoods. *Population and Environment*. 1982;5(4):242-64.
190. Lewis DA, Salem G. Fear of Crime: Incivility and the Production of a Social Problem: Transaction Books New Brunswick, NJ; 1986.
191. Ross CE. Fear of Victimization and Health. *Journal of Quantitative Criminology*. 1993;9(2):159-75.
192. Sundaram V, Laursen B, Helweg-Larsen K. Is Sexual Victimization Gender Specific? The Prevalence of Forced Sexual Activity among Men and Women in Denmark, and Self-Reported Well-Being among Survivors. *Journal of Interpersonal Violence*. 2008;23(10):1414-40.
193. Hanslmaier M. Crime, Fear and Subjective Well-Being: How Victimization and Street Crime Affect Fear and Life Satisfaction. *European Journal of Criminology*. 2013;10(5):515-33.
194. Turner HA, Finkelhor D, Ormrod R. The Effect of Lifetime Victimization on the Mental Health of Children and Adolescents. *Social Science & Medicine*. 2006;62(1):13-27.
195. Greenfield EA. Child Abuse as a Life-Course Social Determinant of Adult Health. *Maturitas*. 2010;66(1):51-55.
196. Maniglio R. The Impact of Child Sexual Abuse on Health: A Systematic Review of Reviews. *Clinical Psychology Review*. 2009;29(7):647-57.
197. Michalos AC, Zumbo BD. Criminal Victimization and the Quality of Life. *Social Indicators Research*. 2000;50(3):245-95.
198. Cohen MA. The Effect of Crime on Life Satisfaction. *The Journal of Legal Studies*. 2008;37(S2):S325-S53.
199. Hanson RF, Kilpatrick DG, Falsetti SA, Resnick HS. Violent Crime and Mental Health. *Traumatic Stress: Springer*; 1995. p. 129-61
200. Breslau N, Davis GC, Andreski P, Peterson E. Traumatic Events and Posttraumatic Stress Disorder in an Urban Population of Young Adults. *Archives of General Psychiatry*. 1991;48(3):216-22.
201. Kilpatrick DG, Saunders BE, Amick-McMullan A, Best CL, Veronen LJ, et al. Victim and Crime Factors Associated with the Development of Crime-Related Post-Traumatic Stress Disorder. *Behavior Therapy*. 1989;20(2):199-214.
202. Resnick HS, Kilpatrick DG, Dansky BS, Saunders BE, Best CL. Prevalence of Civilian Trauma and Posttraumatic Stress Disorder in a Representative National Sample of Women. *Journal of Consulting and Clinical Psychology*. 1993;61(6):984.
203. Anand P, Santos C, Smith R. The Measurement of Capabilities. No 67, Open Discussion Papers in Economics. The Open University, Faculty of Social Sciences, Department of Economics; 2007.
204. Department of the Prime Minister and Cabinet. Aboriginal and Torres Strait Islander Health Performance Framework 2014 Report. Canberra: 2014. Available from:

<https://www.pmc.gov.au/sites/default/files/publications/indigenous/Health-Performance-Framework-2014/tier-2-determinants-health/210-community-safety.html>

205. Gilhooly M, Hamilton K, O'Neill M, Gow J, Webster N, et al. Transport and Ageing: Extending Quality of Life Via Public and Private Transport. ESRC Society Today. 2003

206. Browning C, Sims J. Ageing without Driving: Keeping Older People Connected. 2007