

A practical guide to  
understanding social costs:

*Developing the evidence  
base for informed social  
impact investment*

February 2016



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# Foreword

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It is my pleasure to introduce this work by Deloitte Access Economics: A practical Guide to understanding social costs: Developing the evidence base for informed social impact investment.

Thank you to the Deloitte Access Economics team for their commitment in producing this guide and for generously sharing their learning and experience in a document that will be useful to many. This is a substantive piece that will make a significant contribution.

Thank you also to those leaders who have participated in the working group that has informed this effort. Their active involvement has played a valuable role in delivering the Australian Advisory Board on Impact Investing's strategy to drive more focus on innovation and outcomes in how we tackle social issues.

It is the intention of the Australian Advisory Board on Impact Investing in inviting this work to start to unlock the power of cost data as a critical building block for understanding the financial and economic consequences of negative social outcomes. It is critical we do this, to look more holistically at the drivers and consequences of social issues as they affect people rather than start from a program lens. Understanding the cost of social issues is essential for demonstrating where there is room to do better. From a funding perspective, more robust information on costs informs assessment of the relative costs and benefits of different approaches. From an investor perspective it informs assessment of the relative risk, return and impact of an approach.

Cost data starts to show not only what the financial consequences are, but where they fall. Showing where the costs fall can highlight the different parties and budget areas affected. This can encourage different areas of Government and service providers to work together in different combinations and to build other non-traditional collaborations.

Cost data can contribute to effective dialogue between service providers and both Governments and investors for change. We need to move beyond the total cost of a problem to a more granular analysis of the costs that can be avoided, along with the particular costs that are avoided through any particular intervention. This Guide includes tools to assist organisations to tease out those elements and develop the data about the cost of issues and relative cost of different interventions to make it easier to explore options for reshaping services, increasing impact and reducing cost.

Deloitte Access Economics Practical Guide creates a useful and convenient tool to assist different players in the market to better plan, measure and learn more about the cost of social issues and of achieving defined social impact. The tools and practical guidance are illustrated with reference to two particular issues affecting people in our communities: homelessness and teen motherhood. While these are illustrative only, they bring to life the potential of the guide and how different elements of the cost story can be given substance.

The goal of this Guide is to spark dialogue. The guide will have different appeal to different users:

- For service providers it offers new tools to articulate the challenges they tackle and relative costs of their approach in a way they may not have had the guidance to do so previously.
- For Governments at all levels, it offers different tools for considering where costs fall in the system and how to connect this to more efficient and effective funding approaches as well as encouragement to bring greater visibility to cost data they hold.
- For investors it provides another input to making robust assessments of the cost of social issues rather than programs, along with the impact, risk and return of different service offerings.

# Foreword

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This Guide is the start of something. No doubt there will be much to learn from the work of organisations who apply the tools it contains. We anticipate new conversations will emerge and many of the questions raised will resonate with social institutions, Governments and investors wanting to take the next step for impact investing.

The work undertaken by Deloitte Access Economics has reinforced that cost data is hard to come by, everywhere. Even the data that is available is often in data repositories beyond the reach of many organisations in terms of cost or analysis or both. A part of the work yet to be done is to explore what practical steps could be taken to make critical data more readily available. The UK Government has already released unit cost data for over 600 different areas of programs and services in a unit cost database. NSW Government is exploring similar measures. The Australian Government is looking to actuarial and investment based approaches being utilized in other countries, such as, New Zealand. There is more to do to build the suite of data and tools that will enable better and deeper assessment of the relationship between particular interventions and pathways and costs.

Costs are one important part of the story. The end game is to demonstrate well informed decisions and direct funding and finance toward what works to improve people's lives. That means we need to know, track and build the evidence for what works to achieving better outcomes and greater impact for individuals, families and communities. This Guide references the importance of defining what success would look like by reference to outcomes and being able to relate analysis of costs to what is being achieved. Developing robust frameworks for outcomes and impact and the steps toward their achievement is another area deserving of exploration in its own right. We will continue to explore methods to help break through in these other areas.

Along with Deloitte Access Economics, we look forward to hearing your feedback about what is more useful and seeing the tools brought to life through the stories of your work they enliven and support.

**Rosemary Addis**

**Chair, Australian Advisory Board on Impact Investing**

# Acknowledgements

Deloitte Access Economics would like to thank and acknowledge the following contributors to the Guide.

Members of the Impact Investing Australia Outcomes and Innovation working group:

| Working group member  | Affiliation  |
|-----------------------|--|
| Rosemary Addis        | Impact Investing Australia                                 |
| Louise Sylvan         | SEFA, Bush Heritage Australia                              |
| Irene Godeau          | Impact Investing Australia                                 |
| Annette Chennell      | The Benevolent Society                                     |
| Wendy Haigh           | The Benevolent Society                                     |
| Jo Cavanagh OAM       | Family Life  |
| Jayne Meyer-Tucker    | JMTinc, formerly Good Beginnings part of Save the Children |
| Trevor Danos AM       | Corrs Chambers Westgarth                                   |
| Tracy Mackey          | Perspective Consulting, formerly Life Without Barriers     |
| Peter Achterstraat AM | University of Sydney                                       |
| Heather Smith         | Good Beginnings part of Save the Children                  |
| Robyn Kennedy         | Life Without Barriers                                      |
| Tom Sitek             | Formerly The Benevolent Society                            |

Organisations consulted in the preparation of the Guide:

| Organisation              | Position                                     | Representative   |
|---------------------------|--|------------------|
| SEFA                      | CEO  | Ben Gales        |
| Donkey Wheel Foundation   | CEO  | Paul Steele      |
| Lifefhouse                | Head of Patient and Stakeholder Relations    | Sally Muir       |
| Good Start Early Learning | General Manager, Strategic Communications    | Sara Parrott     |
| Mission Australia         | National Manager Media and Public Affairs    | Anne-Marie Baker |
| Centre for Social Impact  | CEO  | Dr Andrew Young  |
| NSW Treasury              | Director, Office of Social Impact Investment | Kirrin Winning   |
| Micah Projects            | CEO  | Karyn Walsh      |
| The Brave Foundation      | CEO and Founding Director                    | Bernadette Black |

# Definitions

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|                            |  |
|----------------------------|--|
| <b>Comparison group</b>    | A comparison group is a group of participants, with many demographic variables similar to the experimental group, that is exposed to all of the conditions of the study except the variable being tested           |
| <b>Counterfactual</b>      | An estimate of an outcome in the absence of a given intervention   |
| <b>Outcome</b>             | An ultimate end state as a result or consequence of an event or action, in the social context an outcome can be a change experienced by a person, family or community  |
| <b>Out-of-home care</b>    | Placement of a child by a public authority with another family or institution  |
| <b>Output</b>              | A good or service produced or delivered  |
| <b>Proxy measure</b>       | An indirect measure that provides a good indication of the actual measure of interest, sometimes used when the actual measure is difficult to assess*  |
| <b>Social benefit</b>      | The total increase in the welfare of society from an economic activity - the sum of the benefit to the agent performing the activity plus the benefit accruing to society as a result of the activity*             |
| <b>Social benefit bond</b> | A term used for social impact bonds commissioned by the Government of New South Wales and more recently in Queensland  |
| <b>Social cost</b>         | The total cost to society of an economic activity - the sum of the opportunity costs of the resources used by the agent carrying out the activity, plus any additional costs imposed on society from the activity* |
| <b>Social impact bond</b>  | A contractual arrangement between parties, which could include a commissioner, an investor and a service provider, where payments are dependent on the achievement of specified outcomes*                          |
| <b>Target population</b>   | A group of people that has been identified as having a set of shared characteristics and at whom an intervention is aimed*   |

\*Cabinet Office, Centre for Social Impact Bonds. (2015). Glossary, available online [https://data.gov.uk/sib\\_knowledge\\_box/glossary#letter\\_o](https://data.gov.uk/sib_knowledge_box/glossary#letter_o)



# Acronyms

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|              |  |
|--------------|--|
| <b>ABS</b>   | Australian Bureau of Statistics            |
| <b>AIHW</b>  | Australian Institute of Health and Welfare |
| <b>CPI</b>   | Consumer Price Index                       |
| <b>DALY</b>  | disability adjusted life year              |
| <b>DRG</b>   | diagnosis related group                    |
| <b>JDP</b>   | joint development phase                    |
| <b>JIRT</b>  | joint investigation response team          |
| <b>LBW</b>   | low birth weight                           |
| <b>MBS</b>   | Medicare Benefits Schedule                 |
| <b>NHCDC</b> | National Hospital Cost Data Collection     |
| <b>NSW</b>   | New South Wales                            |
| <b>SBB</b>   | social benefit bond                        |
| <b>SEFA</b>  | Social Enterprise Finance Australia        |
| <b>SIB</b>   | social impact bond                         |
| <b>UK</b>    | United Kingdom                             |
| <b>US(A)</b> | United States (of America)                 |



# Background

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## The case for change

**Many organisations struggle to define the outcomes they are seeking to achieve, and even fewer know if they are successful.**

The difficulty in separating outcomes from outputs or activities comes from the complex nature and timeframes usually associated with intangible results.

Outcomes can occur at various levels and for a multitude of beneficiaries. A wide array of benefits or outcomes can result from a particular program or an intervention, but deciding which outcomes matter most will ensure the program stays targeted and focused on its core objectives. Some programs have a wider range of beneficiaries, for example, the families or carers of the recipients provided with services, or employers.

The goal of this Guide is to assist in the identification of costs that occur in the absence of achieving desired outcomes. It is intended to facilitate a discussion around resource prioritisation in light of cost effectiveness in achieving outcomes, among other considerations in funding decisions, such as, equity objectives and overall budget impact.

This Guide provides a practical approach to understand and unlock the true cost of our complex social challenges. Without a shared understanding we cannot begin the conversation on how to potentially redirect investment to achieve real change. It is designed to improve the measurement and transparency of costs, allowing stakeholders to take advantage of increasing impact investment opportunities. It contributes to an improved openness about the costing of social issues to enable a dialogue that focuses on reinvestment in more innovative, efficacious and preventive programs. Given the extent of services contracted and funded by Governments and philanthropy, encouraging this shift is a key focus.

## Who can use the Guide?

**Anyone.**

This Guide is intended to provide a guide for those looking to understand the cost of social issues and to streamline the process for undertaking this assessment, it can be freely used for such a purpose. The success of this Guide will be in its application.

This Guide has not been designed with one particular stakeholder in mind. However, we believe that those most interested will be social entrepreneurs and social purpose organisations looking for new ways to engage with Government and investors.

Likewise, we expect both Federal and State/Territory Governments will find this Guide useful. It can be used as tool to identify the cost of a particular social issue and to connect with the sector in constructing new solutions with a clear emphasis on outcomes, rather than on inputs or outputs as traditionally occurred – sub-optimally.

Furthermore, investors who would like to build an understanding of risk, return and impact of potential investments will find this Guide of assistance.



# Background

The Guide can be applied in a number of ways. The two main applications include:

- To understand the social cost of a particular issue to inform realignment of investment to achieve more optimal social outcomes for that issue or problem, e.g. by intervening earlier
- To understand where the greatest costs are incurred across a range of social problems.

Figure 1 illustrates the value of this Guide for various stakeholder groups who desire outcomes-focused results.

## Principles of design

The Guide's design principles intend to:

- Provide insight into the process of quantifying the cost of a social issue;
- Enable a breakthrough approach in the impact investment market, through the application of the Guide;
- Differentiate the costs of each payer in regard to the social issue; and
- Act as a bridge between those tackling social issues, Government departments, and investors.

Figure 1: Value of this Guide to stakeholder groups



Source: Adapted from Bridges Impact+ and Bank of America Merrill Lynch (2014). Choosing social impact bonds: A practitioner's guide, available online [http://bridgesventures.com/wp-content/uploads/2014/10/ChoosingSocialImpactBonds\\_APractitionersGuide.pdf](http://bridgesventures.com/wp-content/uploads/2014/10/ChoosingSocialImpactBonds_APractitionersGuide.pdf)

# Background

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## Issues that the Guide will solve

**This Guide is designed in such a way that it can be applied to almost any social issue.**

It is straightforward in nature and allows for ease of application. The Guide focuses the stakeholder on the main costs in relation to a particular social issue. As such, highly complex tasks, for example, estimating transfer costs and associated deadweight losses as well as other sophisticated costing issues are not accounted for. The key ingredient is gathering evidence that supports and justifies the relationship between the issue and the realisation of its cost impacts. For instance, some costs may not be included – e.g. where impacts are small and the burden of gathering evidence is high – and the reader should be aware of this limitation at the onset.

It is worth noting that there are limitations in access to data and transparency of costs. As a result, there are limitations in the degree to which all issues can be costed. With this in mind, we might well have concluded “this is all too hard”. But, instead, this should serve as a challenge to continue to seek access to data and to share the successes and challenges in the monitoring of outcomes achieved.

Although this Guide is designed to be straightforward in nature, it does require a substantial amount of time and effort to complete. The entire Guide, Chapters 2 through 5, must be completed in their entirety to capture the cost of a social issue in a rigorous manner to present to Government or investors as part of, a funding proposal, for example. If an organisation is unsure whether or not it has the capacity or capability to complete every step, it is recommended that the organisation reconsiders the necessary resources before embarking on this process, rather than potentially compromising the quality of the costing analysis.

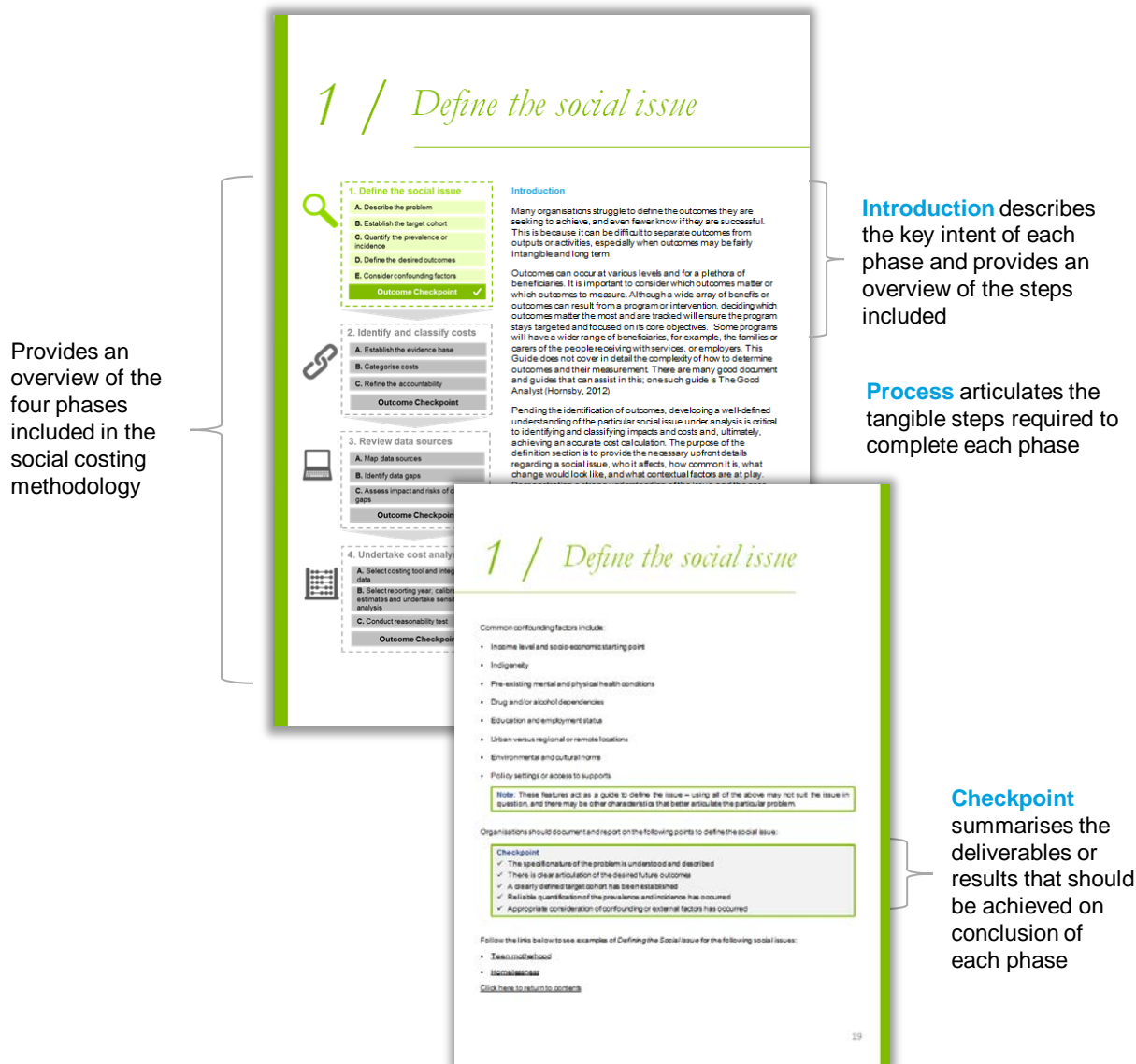
**By sharing this information we will get a better understanding of the true cost of social issues and of what works to enhance social outcomes.**



# Background

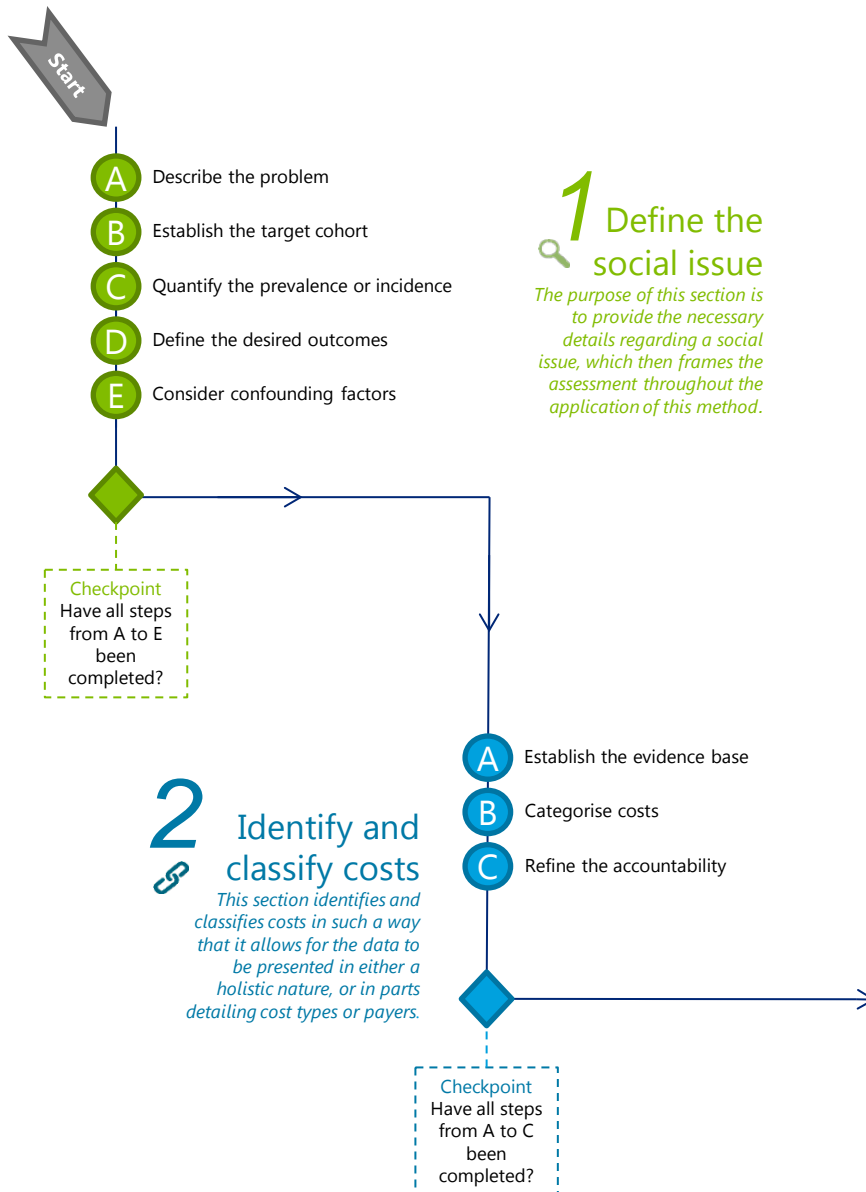
## How to use this Guide

This Guide has been structured according to the key four phases in the social costing methodology. The diagram illustrates the structure of each phase:

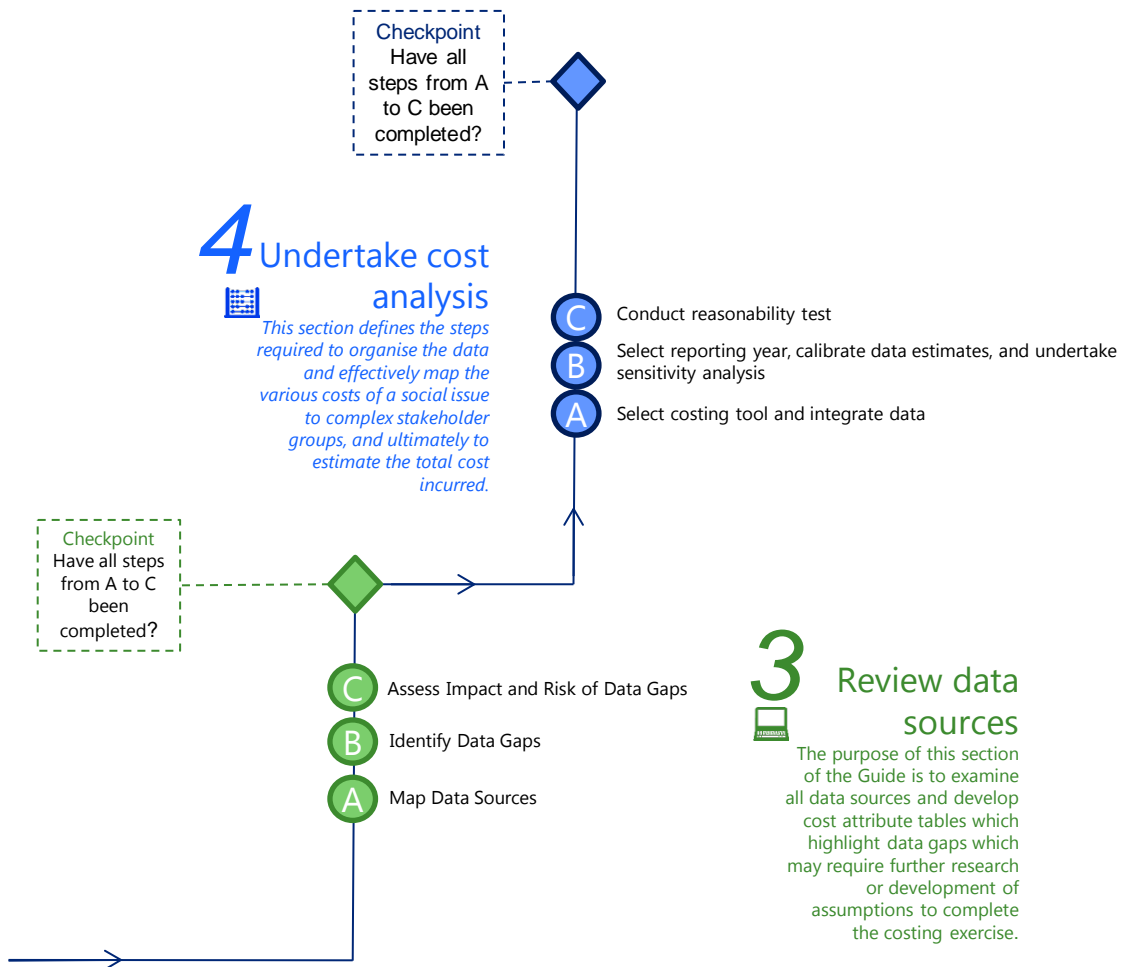


In addition to describing the methodology for costing social issues, applied examples have been included to guide and assist the reader and are included in Appendix A and Appendix B.

# Overview of the Guide



# Overview of the Guide



# 1 / Define the social issue



## 1. Define the social issue

- A. Describe the problem
- B. Establish the target cohort
- C. Quantify the prevalence or incidence
- D. Define the desired outcomes
- E. Consider confounding factors

Outcome Checkpoint ✓

## Introduction

Many organisations struggle to define the outcomes they are seeking to achieve, and even fewer know if they are successful. This is because it can be difficult to separate outcomes from outputs or activities, especially when outcomes may be fairly intangible and long term.

Outcomes can occur at various levels and for a plethora of beneficiaries. It is important to consider which outcomes matter or which outcomes to measure. Although a wide array of benefits or outcomes can result from a program or intervention, deciding which outcomes matter the most and are tracked will ensure the program stays targeted and focused on its core objectives. Some programs will have a wider range of beneficiaries, for example, the families or carers of the people receiving services, or employers. This Guide does not cover in detail the complexity of how to determine outcomes and their measurement. There are many good documents and guides that can assist in this; one such guide is *The Good Analyst* (Hornsby, 2012).

Pending the identification of outcomes, developing a well-defined understanding of the particular social issue under analysis is critical to identifying and classifying impacts and costs and, ultimately, achieving an accurate cost calculation. The purpose of the definition section is to provide the necessary upfront details regarding a social issue, who it affects, how common it is, what change would look like, and what contextual factors are at play. Demonstrating a strong understanding of the issue and the case for change should be an important focus throughout. Moreover, this will drive appropriate action and investment.

This section includes the five primary steps to complete when defining the social issue:

- A. Describe the problem
- B. Establish the target cohort
- C. Quantify the prevalence or incidence
- D. Define the desired outcomes
- E. Consider confounding factors.

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## 2. Identify and classify costs

- A. Establish the evidence base
- B. Categorise costs
- C. Refine the accountability

Outcome Checkpoint



## 3. Review data sources

- A. Map data sources
- B. Identify data gaps
- C. Assess impact and risks of data gaps

Outcome Checkpoint



## 4. Undertake cost analysis

- A. Select costing tool and integrate data
- B. Select reporting year, calibrate data estimates and undertake sensitivity analysis
- C. Conduct reasonability test

Outcome Checkpoint

# 1 / *Define the social issue*

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## Process

### A. Describe the problem

Describing the problem should provide an accurate and thorough description of the current situation. The following questions should be answered:

- What is the specific nature of the problem?
- What is the current situation?
  - Who are the stakeholders involved?
  - Has the situation changed over time?
  - What evidence is available to support the extent of the problem?

The scope of detail required when defining the problem will largely depend on the availability of reliable evidence describing and justifying the social issue or degree of social need. An appropriate balance should be struck between the effort required to collect this evidence and the level to which the problem is defined.

### B. Establish the target cohort

This step focuses on establishing and defining the target group of individuals who are either involved in or exposed to the issue in question.

In some cases this cohort will be broadly defined, for example, Australians 'sleeping rough' more than 50% of the year; or it may be very specific, such as, sexually active or pregnant Indigenous Australian teenagers. It depends on the issue in question. Additionally, there may be multiple cohorts or sub-cohorts, which may be defined by their differentiated experiences regarding the issue in question. For example, Australians 'sleeping rough' 50% of the year, in regional areas of Australia.

For a social purpose organisation, the target cohort will need to be defined to the level of specificity in line with how the beneficiaries of its programs are defined. The target cohort may also extend to potential future beneficiaries or others who may be impacted through the flow-on impacts of the organisation's activities, such as the children of beneficiaries.

An adequate description of the target cohort should include:

- Key characteristics or criteria which define the target cohort objectively. Common criteria include:
  - Age, sex, race, geographical location, or health status
  - Size and distribution of the target cohort.

**Note:** These features act as a guide to define the issue – using all of the above may not suit the issue in question, and there may be other characteristics that better articulate the particular problem.

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# 1 / Define the social issue

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## C. Quantify the prevalence or incidence

To determine the extent or size of a problem, it is necessary to first quantify the prevalence and/ or incidence (or the extent) of the issue. Prevalence typically drives the total cost incurred.

To calculate **prevalence**, three key inputs are required:

1. Define the timeframe under analysis - 1 year only, typically
2. The number of cases of the defined condition or situation during the specified time period regardless of when the condition or situation began. (This number includes both new cases and existing cases. Existing cases represent people who still have the condition or are in the particular situation during some portion of the specified time interval)
3. The size of the population at risk in which the condition or situation occurs.

Prevalence, which is a ratio, can then be determined by applying the following calculation:

$$\text{Prevalence} = \frac{\text{Persons with/in a given condition/ situation during a specified time period}}{\text{Total population at risk during the same time period}}$$

**Incidence** is a measure of the frequency in which a condition or situation occurs as a new case within a population over a period of time.

To calculate **incidence**, three key inputs are required:

1. Define the timeframe under analysis – 1 year only, typically
2. The number of new cases that occurred during the specified time period based on the issue definition
3. The population at risk based on the issue definition, for example, the number of people that could potentially be exposed to the condition or situation for the first time during the time period covered.

Incidence, which is again a ratio, can then be determined by applying the following calculation:

$$\text{Incidence} = \frac{\text{Number of new cases during a specified time period}}{\text{Total population at risk over the same time period}}$$

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# 1 / *Define the social issue*

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Data calculating the incidence and prevalence factors should be evidenced based. Evidence may come directly from publically available data sources, such as datasets from the Australian Bureau of Statistics (ABS) (either free or for a fee), or from publications analysing datasets, for instance, a report published by the Australian Institute of Health and Welfare (AIHW).

Prevalence and incidence may be reported as the number of cases or the percentage of individuals experiencing a condition or situation. Moreover, reporting should be at an appropriate level of geographic granularity in relation to the nature of the issue. For example, multiplying the prevalence ratio above by 100 to express it as a percentage e.g. “prevalence of homelessness is 5%<sup>1</sup> of the Queensland Indigenous single male adult population”.

## **D. Define the desired outcomes**

Articulating the desired future outcome is as important as the process of understanding the current issue. Depending on the issue in question, it may be appropriate to involve members of the defined cohort in determining their desired future outcome. ‘Co-design’ is one way this engagement process can occur. If it is difficult to define the desired outcome, organisations can workshop internally or ask others working on the same issue: how would you describe success?

Key steps include:

1. Defining desired outcomes to be achieved if the social issue was addressed or prevented
2. In focusing on the process by describing the steps in regard to achieving those outcomes, acknowledging the different pathways that may occur for individuals
3. Articulating the timeframe in which this would be likely to occur.

This step will help to understand the depth of the issue in question and some of the challenges that may be encountered along the way. Step 1 should really focus effort on one or two outcomes that the organisation is specifically targeting. Step 2 will help identify if there are alternative pathways that can achieve a particular outcome.

Consideration should be given to the difference between prevention measures (interventions that occur before the initial onset of a condition or situation and mitigate its occurrence), measures focused on early intervention (targeting people who display the early signs and/ or symptoms of a condition or situation, to mitigate its full ramifications), and ongoing or later stage measures that focus on treatment or care where the condition is well established.

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Private investors are less interested in robust outcomes measurement compared to Government.  
Ben Gales, CEO SEFA

<sup>1</sup> Hypothetical percentage used in this example.

# 1 / *Define the social issue*

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A useful tool in Step 3 for defining the desired future state is to use 'SMART' goals to specify outcomes:



Specific. What is the specific goal?



Measurable. Is the goal measurable? (How will you know the goal has been achieved?)



Achievable. Is the goal achievable?



Relevant. Is the goal relevant to the desired outcomes?



Timely. Is the goal time bound?(By when will this goal be accomplished?)

Source: Massachusetts Institute of Technology (2015).

## **E. Consider confounding factors**

Given the complex nature of many social issues, there are often numerous confounding or external factors which can impact the likelihood or severity of the outcome for the target cohort and, in turn, the resulting costs incurred.

While it is unrealistic to identify and quantify the impact of all external factors, it is vital that those which may substantially impede or facilitate success are considered. The reason why we want to identify these is that their existence in some populations may result in differential outcomes. As much as possible, it is advantageous to understand these relationships. Academic literature and research can provide insight and assistance in comprehensively identifying the confounding factors.

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# 1 / *Define the social issue*

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Common confounding factors include:

- Income level and socio-economic starting point
- Indigeneity
- Pre-existing mental and physical health conditions
- Drug and/or alcohol dependencies
- Education and employment status
- Urban versus regional or remote locations
- Environmental and cultural norms
- Policy settings or access to supports.

**Note:** These features act as a guide to define the issue – using all of the above may not suit the issue in question, and there may be other characteristics that better articulate the particular problem.

Organisations should document and report on the following points to define the social issue:

#### **Checkpoint**

- ✓ The specific nature of the problem is understood and described
- ✓ There is clear articulation of the desired future outcomes
- ✓ A clearly defined target cohort has been established
- ✓ Reliable quantification of the prevalence and incidence has occurred
- ✓ Appropriate consideration of confounding or external factors has occurred

Follow the links below to see examples of *Defining the Social Issue* for the following social issues:

- [Teen motherhood](#)
- [Homelessness](#)

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# 2 / Identify and classify costs



## 1. Define the social issue

- A. Describe the problem
- B. Establish the target cohort
- C. Quantify the prevalence or incidence
- D. Define the desired outcomes
- E. Consider confounding factors

Outcome Checkpoint ✓

## Introduction

The purpose of this section is to identify evidence in relation to the impacts of a social issue, based on the higher incidence of particular impacts among the target cohort and more widely, as well as what this higher incidence costs society.

The mechanism through which social issues are defined involves identifying and classifying the costs that exist as a result of the social issue. As mentioned previously, there are many types of costs that can be associated with social issues. These include, among others, fiscal (budget) costs, economic costs, and personal costs:

- A **fiscal cost** is when a government payer makes a financial payment or experiences forgone revenue, e.g. lost taxation revenue or welfare payments.
- An **economic cost** is the total net cost to society including opportunity costs and taking into account gains and losses in money, time and resources e.g. lost earnings of informal carers who reduce workforce participation to provide care to a family member with a disability.
- A **personal cost** is the cost to an individual, for example the reduction in quality of life for a person with schizophrenia.

For the purpose of this Guide, we have a special focus on government (fiscal) costs, since this is typically of interest in public funding submissions. This Guide could be used to calculate all types of costs, assuming sufficient and reliable evidence is available.

This section of the Guide outlines the process to identify and classify costs. There are three core dimensions to be considered:

1. **Impacts** that would not occur in the absence of the social issue under consideration. As with the nature of any causal relationship, evidence must exist to understand the degree to which the impact may or may not have existed in the absence of the issue. For example, someone experiencing domestic violence is at higher risk of depression and anxiety (Braaf and Barrett Meyering, 2013), although many people have depression or anxiety who did not experience domestic violence.

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## 2. Identify and classify costs

- A. Establish the evidence base
- B. Categorise costs
- C. Refine the accountability

Outcome Checkpoint ✓



## 3. Review data sources

- A. Map data sources
- B. Identify data gaps
- C. Assess impact and risks of data gaps

Outcome Checkpoint



## 4. Undertake cost analysis

- A. Select costing tool and integrate data
- B. Select reporting year, calibrate data estimates and undertake sensitivity analysis
- C. Conduct reasonability test

Outcome Checkpoint

# 2 / *Identify and classify costs*

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2. **Cost categories** – impacts are organised into cost categories and then measured, to understand the magnitude and size of various costs. For example, intimate partner violence is responsible for 5.5% of the total burden of disease (one cost category, measured in disability adjusted life years or DALYs) caused by mental health conditions and could thus be assumed to account for this share of the health system expenditures (another cost category, measured in dollars) on these conditions (Begg et al, 2007) .
3. **Payer** – each type of cost identified can result in multiple payers and this identifies who is impacted by each cost. For example, individuals bear the DALY burden of disease costs of mental health conditions, while governments, individuals and others in society (e.g. private health insurers) bear the health system costs of these conditions.

Identifying and classifying costs in this way enables data to be presented in either a holistic way e.g as a matrix of the cost categories by payer, or from the perspective of a particular cost type or payer. The following sections explore the process of identifying each of the above dimensions to understand the cost of a particular social issue. It includes three primary steps to incorporate when identifying and classifying costs:

- A. Establish the evidence base
- B. Categorise costs
- C. Refine the accountability

## Process

### A. Establish the evidence base

This step links events or impacts occurring as a result of a social issue, quantitatively, in order to calculate the cost of each impact and who bears the cost. The impacts give a sense of the volume, timeframe and reach of a social issue. It is important to incorporate the timing of impacts and their occurrence either as one off or ongoing.

The process for capturing the main impacts associated with a social issue includes three main steps:

1. **Identify evidence and data through undertaking a data scan.** In order to begin the process of building an evidence base, a general literature review and data scan should be conducted to first identify the evidence both specific to and associated with the topic in question. This will help to start identifying data gaps and also rule out some costs that may be assumed to be associated with a particular social issue but literature has shown to be otherwise. For example, intimate partner violence might be postulated to reduce workplace participation for victims, but in fact it does not, potentially, since victims want to get out of the domestic situation for safety reasons and work is a place they can go to obtain this distance and protection (Access Economics, 2004).

---

There is a challenge in establishing causality and determining statistical significance

Sarah Parrot, Good Start Early Learning

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# 2 / *Identify and classify costs*

---

- 1. Identify evidence that the social issue is correlated with a higher or lower likelihood of a particular event occurring.** Although it is often assumed that a population may be more likely to experience certain events due to a particular social issue, to the extent possible, evidence should be found to support this assumption. In the first instance, evidence of a causal relationship is preferable, meaning evidence indicating that a particular impact/event (e.g. depression) was caused at least in part by a particular issue (e.g. obesity), rather than both being caused by another factor (e.g. low physical activity) or there being reverse causation (the depression led to comfort eating which resulted in weight gain) or a two-way relationship (obesity increases the risk of depression and depression also increases the risk of obesity). A causal relationship can be indicated by significant correlation between events after controlling for other factors (e.g. physical inactivity, calorie intake) and using time lags in regression analysis, for example.
- 2. Identify evidence of the prevalence of the event for a given cohort.** Once there is a robust link drawn between an event/impact and a social issue, the elevated occurrence of the impact should be identified. This stage builds on the prevalence/incidence work completed in Section 1. The changed prevalence or incidence of the impact can be reported at an appropriate level of granularity for the impact in question and will commonly be drawn from literature or Government agency datasets.

The totality of this information can demonstrate the number of individuals experiencing various events in a particular year that result as impacts of a particular social issue – e.g. the number of Australians who have diabetes, cardiovascular disease, osteoarthritis or bowel cancer as a result of obesity. Note that the link between obesity and these conditions must be established by comparing the target population (obese Australians) to a counterfactual population (Australians who are not obese). The comparator can be either cross-sectional (groups of obese and non-obese Australians at a single point in time, and whether or not they have these conditions after controlling for other factors), or longitudinal (observing obese Australians over time and their development of these conditions), or – best of all – panel data (observing obese and non-obese Australians over time and measuring their relative likelihood of developing the conditions).

Finally, when gathering evidence, it is critical to understand the robustness of the methods used to derive the evidence. The evidence's statistical validity should be assessed (e.g. by reviewing confidence intervals and conducting statistical tests). Statistical validity is influenced by the sample size of the data from which the evidence was drawn, the lack of bias (or 'representativeness') of the sample, the correct specification of models analysing the data, and whether the analysis had a comparator ('control') that was randomly selected and 'blinded' (participants did not know if they were part of an intervention or part of the comparator). It is often difficult to obtain such high quality evidence in social literature, but nonetheless important to obtain the highest quality evidence available and to recognise any potential limitations in the evidence base.

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# 2 / *Identify and classify costs*

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## **B. Categorise costs**

The purpose of the cost categorisation section is to help understand the type of costs which will be incurred as a result of the issue in question. This will help better classify the costs and determine the appropriate metrics which can be used to measure the costs. Typical cost categories are health, aged or disability care costs, justice system costs (e.g. police, courts, prisons), education or child/family program costs, other Government costs (e.g. housing, welfare), productivity losses (e.g. due to reduced workforce participation, absenteeism, presenteeism, or premature death), informal care costs, and loss of wellbeing (DALYs). Identification of the cost categories is guided by the events anticipated or observed in the previous stage of the process (the evidence base).

Once a stakeholder identifies a series of events likely to form part of a life course, the next step is to determine the touch points that give rise to specific costs. Particular events will give rise to particular interactions with one or more social services. For example, the loss of employment (an event) can trigger a periodic dependence on publicly funded welfare support such as Newstart. The cost of the lost employment generates impacts on the individual (who loses an income stream), the Government (who loses taxation revenue and has to pay welfare) and potentially others (e.g. employers who have to search for a replacement worker and pay the costs of search and new hire, while also either suffering the impacts of reduced production or else having to pay others – possibly overtime – to meet production targets).

Diving as deep as possible into the cost categories and who bears the impacts of each type of cost will yield the best opportunities to conduct meaningful analysis around the cost of a social issue. It is important to consider all potential payers – individuals, Government or private stakeholders. The process for identifying the specific payers of a social cost is analysed further in the next Section.

## **C. Refine the accountability**

The purpose of refining the accountability is to link cost categories to the individuals or organisations that bear the cost. This demarcates the relationship between events that occur with respect to a particular social issue, what type of costs are incurred as a result, and who is responsible from a financial perspective.

The process of identifying payers is similar to a stakeholder mapping exercise. Considering the parties who would be directly or indirectly involved in an event resulting from a particular social issue will yield a long list of stakeholders at many levels. For example, the types of cost incurred may be borne by a range of stakeholder groups, including but not limited to:

- Individuals and their families and/or kinship communities
- Private sector (e.g. employers, insurers)
- Government at different levels
- Non-profit sector (e.g. as service providers)

---

**Until investors pay for outcomes,  
funds will be misallocated**  
Andrew Young, CEO, Centre for Social Impact

The objective of defining who bears the cost is to reveal how a particular social issue can have many touch points which affect and drive cost across society. This section of the Guide helps to define the accountability for costs and ultimately, who pays.

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# 2 / Identify and classify costs

**Table 1: Costs and who may bear them – a hypothetical matrix example**

| Bearer of cost*   | Health care                                 | Reduced employment participation      | Justice System               | Lost wellbeing |
|---|---|---------------------------------------|------------------------------|----------------|
| Individuals   | Out of pocket costs                         | Reduced income                        | Legal costs                  | DALYs          |
| Private sector (excluding costs borne by individuals)   | Private health insurer costs                | Employer search & hire costs          | -                            | -              |
| Government (all tiers)  | Federal MBS/PBS costs, State hospital costs | Tax revenue forgone                   | State police and court costs | -              |
| Non-profit sector (excluding costs borne by government funding, or private sector or individual philanthropy) | Unfunded community outreach services        | Subsidised employment search services | Philanthropic representation | -              |

\*Categories are mutually exclusive, costs must only be attributed to one of the four groups

The next level of cost refinement reveals exactly which segment of individuals, Government jurisdictions or private businesses are responsible for the cost burden. Some cost burden groups will need to be refined multiple times, often reflecting the layers of bureaucratic complexity that might be inherent to a particular social issue. For instance, Government as a key cost stakeholder group can be refined by jurisdiction (i.e. local, state or federal) and agency (i.e. Department of Health, Department of Education, etc.).

To complete this step it is necessary to document and report on the following points:

### Checkpoint

For every cost there is:

- ✓ Evidence linking the impact to the social issue of interest
- ✓ Evidence quantifying the changed occurrence of that impact for the target group (relative to a counterfactual population)
- ✓ Evidence of the cost of each impact difference
- ✓ A category associated with each cost
- ✓ A specific payer or payers who bear the cost
- ✓ A clear and succinct articulation of this information (e.g. using a cost-payer matrix)

Follow the links below to see examples of *Identify and classify costs* for the following social issues:

- [Teen motherhood](#)
- [Homelessness](#)

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# 3 / Review data sources



## 1. Define the social issue

- A. Describe the problem
- B. Establish the target cohort
- C. Quantify the prevalence or incidence
- D. Define the desired outcomes
- E. Consider confounding factors

Outcome Checkpoint ✓

## Introduction

The purpose of this section of the Guide is to examine all data sources and develop the cost attribute tables. This process includes reviewing the currency, relevance, and appropriateness of the data in relation to the issue in question. Through this method it is anticipated that the review of the cost attributes will highlight data weaknesses and gaps which may require further research or development of assumptions to complete the costing exercise.

The following sections explore the process for reviewing data sources. This section includes three primary steps to be completed when reviewing data sources:

- A. Map data sources
- B. Identify data gaps
- C. Assess impact and risks of data gaps.

## Process

### A. Map data sources

This task involves mapping the data identified throughout the application of the Guide to the appropriate field in the cost attribute table. This will include identifying the source of the data, year of relevance and making an assessment of its quality. The purpose of this process is to assist in understanding the inherent risk of costing the issue in question, and to appropriately undertake the cost analysis in the next stage. For example, some cost data may be sparse (unreliable, time-delayed) and expensive and the likely cost impact small, in which case a decision may be made to omit the estimation of this cost impact.

To map data sources, it is useful to develop a tool such as the table illustrated in Figure 2 for each cost identified. The cost attribute table is a means of defining the components of each of the costs, including:

1. **Evidence related attributes** – these are the features that describe and document how the cost is linked with the issue in question and the reliability of this evidence. It is drawn from activities undertaken in Section 2A.

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## 2. Identify and classify costs

- A. Establish the evidence base
- B. Categorise costs
- C. Refine the accountability

Outcome Checkpoint ✓



## 3. Review data sources

- A. Map data sources
- B. Identify data gaps
- C. Assess impact and risks of data gaps

Outcome Checkpoint ✓



## 4. Undertake cost analysis

- A. Select costing tool and integrate data
- B. Select reporting year, calibrate data estimates and undertake sensitivity analysis
- C. Conduct reasonability test

Outcome Checkpoint

# 3 / Review data sources

2. **Volume related attributes** – these are features of the cost impact that relate to the volume of the issue e.g. higher prevalence of a negative impact (e.g. criminal conviction) or lower prevalence of a positive impact (such as high school completion) relative to the counterfactual. The volume of the impact should also note the year of the evidence and any expected change in the impact over time.
3. **Cost categorisation attributes** – this is the process of nominating how each cost is categorised. At a high level it could be a sector, such as health or justice system cost. It could include identifying the cost type as an economic or fiscal cost, although this is not absolutely necessary. Finally, the direct payer(s) of the cost must be identified to complete the categorisation.
4. **Unit cost attributes** – these are the cost features used to measure the total cost. It takes into account what is the cost per person per event and what year the cost data is sourced. This information is used to identify the cost in the present and forecast costs into the future.

Figure 2 below provides an outline of a cost attribute table, which is one way of approaching the mapping of data sources and can be developed simultaneously when researching the evidence basis and classifying costs. A cost attribute table or a similar tool or process should be followed to link all cost data back to the source social issue and make the pathways clear.

**Figure 2: Outline of a cost attribute table**

**Cost Attribute Table**

|            |                                |
|------------|--------------------------------|
| Name       | <short name of cost>           |
| Definition | <long description of the cost> |

|                                    |   |
|------------------------------------|---|
| <b>Evidence related attributes</b> |   |
| Event relationship                 | <what event is this cost linked to>   |
| Evidence of cost relationship      | <evidence gathered in relation to the social issues to the identified cost> |
| Reliability of evidence            | <assessment of the reliability of the evidence>                             |
| Ongoing cost or once off cost      | <ongoing or once off cost>  |

|                                  |   |
|----------------------------------|---|
| <b>Volume related attributes</b> |   |
| Annual volume of event           | <evidence in regard to the volume of the event> |
| Year of the evidence             | <relevant year of the data report>              |
| Expected annual escalation       | <expected annual growth, positive or negative>  |

|                                       |   |
|---------------------------------------|---|
| <b>Cost categorisation attributes</b> |   |
| Category                              | <category of the cost, eg: health, justice, education>            |
| Type                                  | <description of the type of cost e.g. fiscal, transfer, economic> |
| Payer                                 | <describe the direct payer of the cost>                           |

|                             |   |
|-----------------------------|---|
| <b>Unit cost attributes</b> |   |
| Metric for the cost         | <measure that is used to estimate the total cost> |
| Year of the cost metric     | <relevant year of the data report>                |
| Expected annual escalation  | <expected annual growth, positive or negative>    |

# 3 / *Review data sources*

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**Note:** The expected annual escalation of the volume and unit cost attributes will in most cases need to be calculated using historic trends and should take into account the need to discount future costs using an accepted discount rate. For example, if someone dies from a suicide, the value of their lost future income stream could be discounted using the historical average trend growth in Average Weekly Earnings – a data item available from the Australian Bureau of Statistics (ABS).

This process ensures that as information is reviewed or collected over time, the cost estimate can be updated to reflect changes. At the end of this step, all data sources should have been reviewed and any data gaps that may need to be addressed should then become apparent.

## **B. Identify data gaps**

This task involves assessing the cost attribute table for data gaps. Data gaps may include:

- **Poor availability of credible evidence.** This could be a lack of evidence of causal links or correlation between a social issue and an event. The lack of data could extend to the occurrence or volume of a particular impact, or a lack of unit cost data. In other instances, data at the correct level of granularity may not be available. For example, only national data is available when local data is preferable, or when it is only possible to quantify impacts for the target group in question, but not for the comparator, or vice versa. Judging of evidence as 'credible' must be made on a case by case basis. The next Section 3C below further discusses the impact and risks of these data gaps
- **Conflicting information or a lack of consensus.** There may be 'data gaps' due to an abundance of information that is conflicting or lacks consensus. For example, if Government statistics or cost data on child abuse is not publically available, as a consequence, a range of other literature sources may be identified that contain varying estimates
- **The available evidence has an inadequate sample.** In this instance, inadequate could mean that a particular study has a small sample size or a sample is not representative of the population that is being addressed. For example, differences that illustrate a study is not representative could mean geography, demographics (such as ethnicity, age or gender), or economic differences. For example, the Australian Longitudinal Study of Women's Health could contain information on female victims of violence but not males, or the Longitudinal Study of Indigenous Children does not have sufficient data points to assess educational milestones among Indigenous Tasmanian boys
- **An inability to identify the cost attributes.** This could include an inability to identify who bears the cost or being able to convert some social and economic costs into financial units. An example of the former would be that the Federal Government provides funding to a non-profit organisation toward addressing a particular social issue, but it may not be known if the 'actual costs' of funding a particular program are covered by the Government or general fundraising revenue by the non-profit organisation. An example of the latter is the difficulty of placing a societal or personal cost (in financial units) on an event, such as leaving school prior to Year 12 completion.

Caution must be exercised that not too much weight is put on data with any of the aforementioned limitations. Although a reasonability test should be conducted as part of Section 4C, conservative estimates are more appropriate, and all assumptions and data limitations should be clearly stated throughout. Sensitivity analysis around findings can also be useful to ascertain how the ultimate findings might be different if different data gap solutions were adopted.

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# 3 / *Review data sources*

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## C. Assess impact and risks of data gaps

As a general rule, where data gaps are evident, any estimates or use of sources of lower quality must be transparently identified in the costing exercise.

- **Poor availability of credible evidence.** If evidence from Australia is not available, international evidence could be used to fill the gap. However, when using data from international sources, countries that most closely align to Australia's political economy should be selected. Alternatively, other countries may nonetheless be useful when analysing a particular service. Either way, the reason for selecting a particular jurisdiction should be justified. If a direct causal link or reasonable correlation between a social issue and an event is unavailable, then the appropriateness of the inclusion of these costs should be considered – while also identifying qualitatively what the key drivers of these costs are and how they relate to the social issue. For data gaps in costs, estimates can be made using appropriate evidence from any available sources and acknowledging imperfections as a limitation, noting that an estimate based on some source is likely better than an estimate of zero. In the instance that no unit cost data can be found and credible estimates are not possible, a particular cost may be excluded. This should be noted in the final presentation of the cost estimate.
- **Conflicting information or a lack of consensus.** Government or 'official' sources of data should be considered in the first instance. In cases where this is not available, reports and other data from Government agencies or papers from peer reviewed sources are the next most credible sources. Where there is contention in the literature around evidence, such as a causal link, it should be transparently discussed in the presentation of the costing. Meta-analysis or other techniques can also be applied to find 'average' estimates, if such sophisticated techniques are possible within the data limitations.
- **The available evidence has an inadequate sample.** Although a small or misrepresentative sample is not a barrier against using a particular piece of evidence, it is important to understand how the populations might differ. For example, it may be possible to identify if the volume, prevalence or cost for the reported sample should be higher or lower than the population to which the cost is being applied. In the examples in the previous section, other sources could be considered for male victims (e.g. the ABS Personal Safety Survey), or the Longitudinal Study of Indigenous Children could review educational milestones among all Indigenous Australian boys, compare larger jurisdictions where the sample size is adequate to avoid large standard errors, and then use an appropriate larger robust jurisdiction(s) together with Tasmania to find a more robust average rate of milestone completions.

Documentation and reporting should include the following points:

### Checkpoint

- ✓ A cost attribute table or similar map has been prepared for each cost impact
- ✓ Gaps in the costs attribute table are identified along with any other limitations in the analysis and data
- ✓ The impact of the data gaps is clearly highlighted where remedies cannot be applied
- ✓ A clear and succinct articulation of this information is provided

Follow the links below to see examples of *Review data sources* for the following social issues:

- [Teen motherhood](#)
- [Homelessness](#)

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# 4 / Undertake cost analysis



## 1. Define the social issue

- A. Describe the problem
- B. Establish the target cohort
- C. Quantify the prevalence or incidence
- D. Define the desired outcomes
- E. Consider confounding factors

Outcome Checkpoint ✓

### Introduction

The purpose of this section is to use the information gathered to estimate an annualised cost for the social issue for a particular payer or payers, and conduct sensitivity analysis and a reasonability test on the estimate.

### Process

The ability to evidence data and quantify impact is critical. This section defines the steps required to organise the data and effectively map the various costs of a social issue to complex stakeholder groups, and ultimately to estimate the total cost incurred.

Each stage of this Guide addresses the multiple layers of costing a social issue. By defining the issue, identifying the affected cohort, and estimating likely 'events' (or touch points with Government and other service providers), this Guide constructs a map of all the potential types of costs that can be incurred as a result of the defined social issue. Systematically classifying this information creates a structure which each respective cost can be isolated. As such, information must be tracked and managed in such a way that the costs are dissected and evaluated dynamically without compromising the integrity of the analysis. This means avoiding duplication, omission, and ensuring that monetary transfers (such as welfare payments) are not mis-specified as real costs, but rather simply net out as financial flows from one payer (e.g. Government) to another (e.g. individuals).

The first step to achieving systematic organisation of key information is to collate the assumptions and cost information as outlined in the previous section. Ideally, categorical (qualitative assumptions or key information about a data point), volumetric (quantitative but not monetary data, such as the number of pregnancies per year) and cost assumptions (monetary data that is used to estimate unit costs) should be aggregated separately before undertaking any analysis. The next section discusses the attractiveness of using Microsoft Excel, or a similar tool, to capture multiple layers of dynamic information in one place.

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## 2. Identify and classify costs

- A. Establish the evidence base
- B. Categorise costs
- C. Refine the accountability

Outcome Checkpoint ✓



## 3. Review data sources

- A. Map data sources
- B. Identify data gaps
- C. Assess impact and risks of data gaps

Outcome Checkpoint ✓



## 4. Undertake cost analysis

- A. Select costing tool and integrate data
- B. Select reporting year, calibrate data estimates and undertake sensitivity analysis
- C. Conduct reasonability test

Outcome Checkpoint ✓

# 4 / *Undertake cost analysis*

---

## **A. Select costing tool and integrate data**

Excel and other spreadsheet-based applications allow users to organise data and manipulate calculations in a multi-dimensional way. These tools allow for sectioning data based on dependencies or other variables contingent on the requirements of the analysis. In this way, the user may collate multiple cost attribute tables and then aggregate similar components of the table in one place, for instance, volume of events, or cost to particular stakeholders.

As a first step, all costing attribute tables should be migrated into either Excel format or another spreadsheet based reporting tool. If these were completed in Word format, simply copy and paste into the spreadsheet, limiting one costing attribute table per 'tab' or spreadsheet. Ensure that the top left corner of each attribute table is pasted into the same cell and column on the different sheets (i.e. A1). This will make it easier to create references and conduct analysis with greater efficiency.

The next step is to collate or aggregate similar information, starting with the most basic units possible. Ensure that a new spreadsheet is started for each similar volumetric data set, and similarly for cost data. For example, annual volumes can be aggregated into one spreadsheet if they are from a similar cost category. Figure 3 provides an example of how the cost attribute tables can be arranged in Excel.

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# 4 / Undertake cost analysis

Figure 3: Example: Integration of cost attribute tables into excel

|    | A                                     | B   | C  | D |
|----|---------------------------------------|---|--|---|
| 1  | <b>Cost Attribute Table 1</b>         |   |  |   |
| 2  | <b>Name</b>                           | Low Birth Weight Births   |  |   |
| 3  | <b>Definition</b>                     | There are higher costs associated with the birth of low birth weight babies which is correlated with teen births              |  |   |
| 4  | <b>Evidence related attributes</b>    |   |  |   |
| 5  | <b>Event relationship</b>             | Low birth weight babies require more hospital resources and low birth weight babies are more prevalent among teenage mothers. |  |   |
| 6  | <b>Evidence of cost relationship</b>  | AllHW reports and data, along with cost data from National Hospital Cost Data Collection                                      |  |   |
| 7  | <b>Reliability of evidence</b>        | See Table 6.3 and Table 6.5 for a description of the limitations associated with each data source.                            |  |   |
| 8  | <b>Volume related attributes</b>      |   |  |   |
| 9  | <b>Annual volume of event</b>         | 273   | National Perinatal Data Collection   |   |
| 10 | <b>Year of evidence</b>               | 2012  | Volume using rate of lowbirth weight babies from 2009 (2.4 percentage points more likely to have low birthweight babies) |   |
| 11 | <b>Expected annual growth</b>         | 2.00%   | Assumed growth with general population growth*   |   |
| 12 | <b>Cost categorisation attributes</b> |   |  |   |
| 13 | <b>Category</b>                       | Health  |  |   |
| 14 | <b>Type</b>                           | Fiscal cost   |  |   |
| 15 | <b>Payer</b>                          | Public and private hospitals  |  |   |
| 16 | <b>Unit cost attributes</b>           |   |  |   |
| 17 | <b>Metric for the cost</b>            | \$54,366  | per event per year   |   |
| 18 | <b>Year of the cost metric</b>        | 2011-12   |  |   |
| 19 | <b>Expected annual escalation</b>     | 2.50%   | CPI (unless a more specific consumer/producer price index is   |   |
| 20 |                                       |   |  |   |

Tab for each event

Keep quantitative information isolated to its own cell



# 4 / Undertake cost analysis

## B. Select reporting year, calibrate data estimates and undertake sensitivity analysis

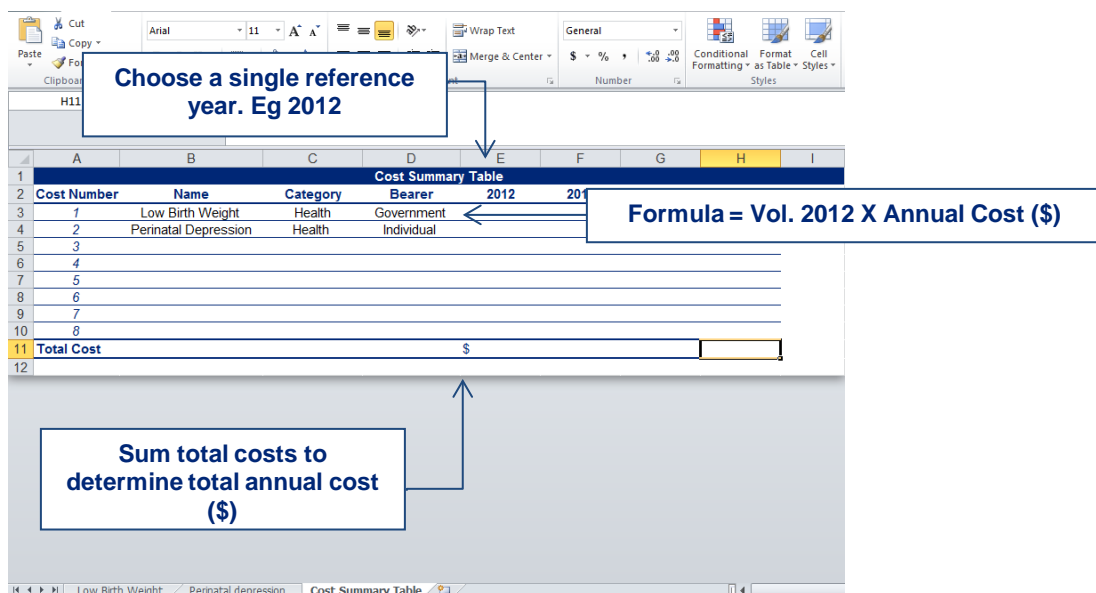
Information on costs or volumes are often sourced from differing years, depending on where the data or research comes from. It is important to document where the research was undertaken if using proxy values to estimate unit costs e.g. a peer reviewed article from the United States (US) and when it was conducted (i.e. the article may have been published in 2015, but unit costs may be in 2013 US dollar terms).

We recommend all costs and volumes to be aligned to the same year to ensure the highest degree of accuracy and transparency in analysis. Ensure each unique cost attribute table captures the appropriate year in which the cost or event occurred (e.g. an instance of trauma or interaction with service provider).

Based on Figure 3, a reference year needs to be selected for reporting purposes. Volumes can be adjusted to the desired year based on historical trends, or by applying per capita rates to the population in the later base year. Similar techniques can be used for cost data e.g. inflating unit costs by an appropriate inflator – such as the ABS Consumer Price Index (for general products), Average Weekly Earnings growth (for wages), and specific inflators (such as the AIHW health inflators published annually in the Institute's publication Health Expenditure Australia for health system costs).

The product of volumes and unit costs naturally gives the overall cost for each cost type. This calculation should be performed in a separate sheet in Excel and completed for each cost with reference to the payer and type of cost. Using a pivot table in Excel will allow for summing of costs by payer, type, and so on, so that analysis can be undertaken in relation to who bears the greatest costs from the issue, for example. Figure 4 illustrates an example of how this may look in Excel.

Figure 4: Cost summary table



# 4 / Undertake cost analysis

**Tip:** If cost or volume data is not calibrated to a single reference year, the formula to escalate one year from 2012 to 2013, for example, would be:

$$= \text{Vol. 2012} \times (1 + \text{Annual Vol. Escalation rate}(\%)) \times \text{Annual Unit Cost} (\$) \times (1 + \text{Annual Cost Escalation Rate}(\%))$$

## Sensitivity analysis

It is good practice to conduct a sensitivity analysis on the final cost estimated, to establish the extent to which a particular assumption impacts the final cost. Sensitivity analysis should be informed by the evidence collected and its variability and reliability and can take the form of:

- High/low estimates around a particular base case assumption; or
- Probabilistic sensitivity analysis using a software tool such as @Risk.

## C. Conduct reasonability test

Once the analysis is undertaken, it is important to conduct what is often referred to as a 'reasonability test'. This is a common sense measure of 'how likely the analysis is to have approximated its true value.' Often an order of magnitude test is enough to gauge whether the costing is as expected. For example, a costing is undertaken for one discrete activity and the end result is in the millions, but a quick check against the total budget reveals that expenditure is only in the hundreds of thousands, so it is clear that the order of magnitude is not correct. A few simple ways to 'sense check' end results is to examine public expenditure data, such as, annual budgets or publically available reports, and/or to triangulate with findings from overseas or from similar Australian analyses in the past.

Documentation and reporting should include the following points:

### Checkpoint

- ✓ The data sources are clearly documented and summarised
- ✓ A particular tool or application for completing the costing has been selected and data inputs have been completed
- ✓ Costs and volumes have been aligned to a reference year
- ✓ A reasonability test has been conducted and documented
- ✓ A clear and succinct articulation of this information is provided

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# What next?

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The goal of this guide is to assist in the identification of costs that occur in the absence of achieving desired outcomes. This document aims to be a practical Guide to understanding and unlocking the true cost of complex social challenges, in order to understand the social cost of a particular issue, who bears the costs and how they compare in terms of realigning investment priorities to achieve optimal social outcomes.

In order for these applications of the Guide to be finalised, further steps are required beyond the scope of this Guide.

## **Next steps for using this Guide.**

The next step is to use the analysis and findings from this process to initiate conversations on how the current costs of social issues can be revised or altered to achieve outcomes. For a social purpose organisation, this will likely feed into a proposal to Government or to other potential funders. Furthermore, these costings could also provide a valuable consultation tool to engage with other providers or affected stakeholders to collaborate and optimise solutions for these complex social issues.

The examples included in this Guide are confined to the two social issues of homelessness and teen motherhood. They are not intended to be an exhaustive list of costs for each issue but rather, a highly simplified example of how to embark on two applications of the Guide. The scope of this Guide has not extended to actually estimating the cost of each condition but rather focuses on the process and methods in a simple manner. As such the examples and analysis cannot be relied upon as an actual evidence base but, rather, the examples are indicative only in order to provide more substance around the processes that should ultimately be followed in more detail.

## **Next steps for the costing of social issues.**

Costing social issues often highlights where data and evidence gaps exist that, in turn, informs action on how these gaps can be filled. Over time, investment in increasing the transparency of data and compiling useful longitudinal datasets, as well as mainstreaming and embedding the monitoring and evaluation of social interventions, can help build evidence on understanding the real cost of social issues and evidence of what works to achieve optimal social outcomes.

The Guide demonstrates the importance of the quality and availability of data. Although there has been some progress made in recent times with initiatives such as the NSW Treasury unit costing project, there is still progress to be made in relation to the open data agenda.

Each social issue is different and this Guide has only been applied to two social issues. As such, sharing future applications of this Guide's processes is encouraged. This will help others see the value in its application and inform future social policy and investment choices.







# Appendix A: Applied example

## Teen motherhood

---

### 1. Define the social issue

#### A. Describe the problem

Teenage motherhood in Australia has decreased considerably over the last four decades. This reduction is primarily due to an increase in the availability of contraception and a change in education and career prospects for women. However, in 2012, 11,373 Australian teenagers gave birth. While some teenage pregnancies are planned, there are a number of risks associated with teen motherhood (note that association does not indicate causality):

- **Health** – Teenagers are at greater risk of complications during pregnancy (AIHW, 2011:p90) and delivery and of post-natal depression (AIHW, 2012).
- **Education** – It may be more challenging to complete education (Bradbury, 2011; Evans, 2007), with associated risk of later unemployment, lower paying jobs, welfare reliance and difficulty affording adequate health and basic necessities for mother and child (Francesconi, 2008).
- **Social** – Teenage mothers may experience alienation from their peers and family. A teenage pregnancy can place a great deal of strain on young relationships (Department of Health Western Australia, 2008) with a significant proportion of mothers left with no male partner when the baby is born (Evans, 2007).
- **Generational** – Children born to a teenage mother relative to older mothers are more vulnerable to neglect. This is due to a range of possible factors including relative poverty, social isolation and being in an unhealthy relationship, for instance, the existence of domestic violence. These children are more likely to become teenage parents themselves. However, in this context the teen pregnancy is a symptom of the confounding factors, not an independent risk factor for child abuse (Department of Health Western Australia, 2008).

#### B. Establish the target cohort

In establishing the target cohort, the following key characteristics are used:

- Females aged under 20 years who have borne a child or children in calendar year 2015; and
- Located in Australia.

It is worth noting that the issue of teen motherhood is not just restricted to young women. Teen fathers and children of teen parents are considered 'at risk groups' for some of the educational, social and inter-generational reasons listed in the problem description above. The following costing exercise focuses predominantly on the *fiscal* costs of teen motherhood. It contains a strong evidence base for a causal link between teen motherhood and fiscal cost. As a result, the cohort is restricted to teen mothers due to a lack of reliable evidence linking costs to teen fathers and their children. However, the lack of evidence and the likelihood of significant impacts for teen fathers suggests there is a need for further research in this area in Australia, potentially through a longitudinal study.

In addition, the age group of 'under 20' is selected due to the common understanding of 'teen' and availability of data e.g. the ABS and AIHW typically can identify statistics for individuals under 20 years old. However, it is noted that births to girls aged 12 years and younger may not be commonly thought of as 'teens', but would be included in this definition, albeit the prevalence of this is likely to be very low in Australia in 2015.

It is also important to note that there are many contextual issues that affect the life pathways for individual teen mothers. There is not a one-size-fits-all approach that is appropriate and, therefore, the needs of individuals must ideally be considered on a case by case basis. Cohorts more granular than the overall target cohort could thus be considered, such as Indigenous teen mothers, or teen mothers from rural and remote areas. This would be dictated by the type of organisation using the Guide and their operations, but for the purpose of this exercise a broad group has been defined.

# Teen motherhood

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## C. Quantify the prevalence or incidence

Data from official sources in Australia is limited to fertility rates, which are calculated using live births recorded. This means that the statistics do not account for induced abortions, extra-uterine pregnancies, spontaneous miscarriages or still births. For the purposes of this costing exercise, an estimate of the number of teenage mothers giving birth in 2015 has been made using two data sources, the 2012 National Perinatal Data Collection (AIHW, 2013) and the ABS publication, *Births, Australia, 2013*. These sources enable estimates that there were approximately 25,000 teenage pregnancies and 11,373 live births to teen mothers in 2012, with an associated fertility rate of 15 babies per 1,000 females aged up to 19 years. The ABS includes births to mothers under 15 years in this group but, due to very small numbers in the younger group, uses the 15-19 year group as the population denominator.

Depending on how evidence is presented it may be necessary to adapt how this data is applied. For example, in some instances it may be appropriate to make calculations using the teenage fertility rate (e.g. to discuss trends) and in other circumstances the number of teen pregnancies may need to be used (e.g. as the basis for current costs).

## D. Define the desired outcomes

The desired future outcome is improving the health and social outcomes of teenage mothers and their children – including outcomes in education, health or other social indicators (e.g. workforce participation, mother-child separation, welfare dependency), compared to older mothers and their children, after controlling for confounding factors (e.g. Indigenous status, socioeconomic status).

*Bernadette Black, CEO of Brave Foundation, a national charity that assists those facing teenage pregnancy and parenthood states, 'If a teenage pregnancy does happen, these young women and their families need to know that there is a way forward to find support and educational opportunities that will enhance health and well-being for the person experiencing the teenage pregnancy and their baby.'*

In order to achieve the outcomes identified above, organisations will need to identify the steps or processes in regard to achieving the outcome. For some organisations this will be identified as part of a 'Theory of Change' or 'Program Logic'. For the example of teen motherhood, the Brave Foundation identifies a range of strategies that can be implemented to achieve the desired outcomes. These are drawn from the successful Oregon Youth Sexual Health Plan implemented in Canada.

# Teen motherhood

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The strategies include (Brave Foundation, 2010):

- Comprehensive school and community based sexuality education and youth development programs through values based learning;
- School and community based health and support services;
- State level co-ordination of youth sexual health;
- Resources and technical support for program development; and
- Research, evaluation and enforcement of education packages.

Any one organisation addressing the social issue of teen motherhood would likely only focus on one or two of these types of strategies to form part of the steps to achieving desired outcomes. Alternatively they may focus on a different set of priorities e.g. accommodation, support and outreach services.

The timeframe for addressing and seeing outcomes from a social issue must be evidence based and relevant at the level of the defined cohort. The cohort is teen mothers in Australia, so the timeframe for analysis should come from a nationally authoritative source, such as a Government agency or peak body. As no local suggested timeframe has been identified, we can utilise the Oregon Youth Sexual Health Plan from Canada which suggests that desired outcomes can be measured on a timeframe of five years plus (Oregon Department of Human Services, undated). A five-year timeframe would be able to capture a number of variables such as child and maternal health outcomes, but may be insufficient to capture ultimate impacts on educational achievement (e.g. university completion), employment participation or welfare use over the longer term, or mother-child separation. These might better be tracked over ten years or even longer.

## E. Consider confounding factors

It is particularly difficult to establish causal relationships between teenage motherhood and other impacts (such as education, health, employment, welfare dependency) because of confounding factors relating to the socioeconomic status of teen mothers, who are more likely to be from disadvantaged backgrounds than older mothers – and lower socioeconomic status is itself correlated with all the outcomes of interest.

Apart from socioeconomic disadvantage, there are a number of other contributing or external factors that should be considered in the target group, with the aim of matching the comparator group of older mothers:

- Truancy and juvenile justice system encounters by the mother;
- Family situations, for example, domestic and family violence;
- Lack of affordable housing; and
- Relationship status – current and historical, for instance, past pregnancies and abuse.

An Australian study has confirmed international findings that suggest, after controlling for the low socioeconomic status of teen mothers, along with other background characteristics, there is no evidence of an adverse impact of young childbirth on education, labour market, income or locational outcomes later in life (Bradbury, 2011). While this is good news, the finding could well reflect the social investment supports now provided to mitigate risks (as identified in Appendix A Section 1), and thus underscore the importance of continuing to invest in such supports. Moreover, there is still much work to be done to address the root causes themselves, pointing to a need to invest in mitigating the confounding factors of family violence, poverty, access to affordable housing and multifactorial layers of disadvantage.



# Teen motherhood

## 2. Identify and classify costs

### A. Establish the evidence base

The following table includes a range of events relevant to the life of a teen mother and her child. This list is not exhaustive, but rather an illustration of the types of events and data that can be drawn upon for a social issue, with estimates of volumes for the year 2012. Events where some evidence is available, but not conclusive, are included to illustrate data or research gaps.

**Table 2: Events associated with teen motherhood**

| Event  | Prevalence  | Evidence  | Validity/<br>Limitations   | Estimated<br>volume for<br>2012 |
|--|---|---|--|---------------------------------|
| <b>Health and wellbeing</b>                            |   |   |  |                                 |
| Foetal, neonatal, and perinatal deaths of teen mothers | 15 foetal, 4.9 neonatal and 19.8 perinatal deaths per 1000 births in Australia in 2011  | AIHW (2011) report: Australia's mothers and babies 2011   | Rate assumed to be relatively constant over time                 | 451.5                           |
| Low birth weight babies among under 20s                | Babies born to younger mothers (mothers aged under 20) are more likely to be of low birthweight (8.6% are of low birthweight)                             | 2009 data from the AIHW National Perinatal Data Collection  | Rate assumed to be relatively constant over time                 | 978                             |
| Low birth weight babies across all ages                | 6.2% babies born in 2009 were low birth weight  | 2009 data from the AIHW National Perinatal Data Collection  | Prevalence is for all women not just women over 20 years old     | NA                              |
| Low birth weight babies linked to teen motherhood      | Percentage of low birth weight babies among under 20s (8.6%) minus the percentage of low birth weight babies among over 20s (6.2%)<br>Total: 2.4%         | 2009 data from the AIHW National Perinatal Data Collection  | As per two rows above. Does not control for confounding factors. | 273                             |
| Perinatal depression of under 25s                      | 13.5% of under 25 mothers experienced perinatal depression  | AIHW report: Perinatal depression Data from the 2010 Australian National Infant Feeding Survey (AIHW2012) | Prevalence is for women under 25 not under 20.                   | NA                              |
| Perinatal depression across all ages                   | On average 10% of mothers (across all age groups) experience perinatal depression   | AIHW report: Perinatal depression data from AIHW (2012)   | Prevalence is for all women not just women over 20 years old     | NA                              |
| Perinatal depression linked to teen motherhood         | Percentage of under 20 year old mothers with perinatal depression (13.5%) minus percentage of all mothers with perinatal depression (10%).<br>Total: 3.5% | AIHW report: Perinatal depression data from AIHW (2012)   | As per two rows above. Does not control for confounding factors. | 398                             |

# Teen motherhood

| Event   | Prevalence   | Evidence   | Validity/ Limitations  | Estimated volume for 2012             |
|---|--|--|--|---------------------------------------|
| <b>Education</b>  |  |  |  |                                       |
| Low year 10 completion for teen mothers   | One study shows almost a quarter (23.6%) of the mothers who were teenage mothers did not complete year 10 (compared to only 2.4% for those whose first birth was in their 30s).<br>Difference is 21.2% but not causal link | Using data on Australian mothers aged 30-34 in 2001 who were teen mothers from the ABS Census, analysed by Bradbury in the Australian Journal of Labour Economics (Bradbury, 2006) | This data is for women who were in secondary school in the mid-1980s. The assumption that the rate would be the same 30 years later is tenuous | 2,411 (21.2% of teen mothers in 2012) |
| Year 12 completion rate   | There are no large effects of mother's birth age on school completion outcomes   | Bradbury (2011) uses HILDA to control for confounding factors (all fixed characteristics of families) by comparing the outcomes of siblings  | The sample size in HILDA is insufficient to rule out modest impacts of birth age   | NA                                    |
| Low attainment of a tertiary degree   | One study shows that only 2.3 % of teenage mothers had a degree or higher by the age 30 (compared to 30.5% for those whose first birth was in their 30s)   | Using data on Australian mothers aged 30-34 in 2001 who were teen mothers from the ABS Census, analysed by Bradbury (2006) in the Australian Journal of Labour Economics           | Does not control for confounding factors<br>Relates to teen pregnancies around a quarter century ago   | Data considered too limited           |
| <b>Employment and welfare</b>   |  |  |  |                                       |
| Welfare benefits  | Around 90 % of teenage mothers are receiving income support  | Using data on Australian young mothers around the year 2001 from the ABS Census, analysed by Bradbury (2006)   | Only covers new teen mothers in a twelve month period; may resolve longer term   | 11,373 *<br>0.9 = 10,236              |
| Under 20s receiving parenting payment who are single                                  | 8,116 single on June 30 2013   | DSS (2013b): income support customers: a statistical overview  | Snapshot volume not an indication of volume over a period of time  | 8,116                                 |
| Under 20s receiving parenting payment who are partnered                               | 2,815 partnered on June 30 2013  | DSS (2013b)  | Snapshot volume not an indication of volume over a period of time  | 2,815                                 |
| Propensity for under 20s to be receiving income support aside from parenting payments | Not identified due to DSS and ABS data combining 15-25 year olds. This number is not useful as it includes all university students on youth allowance  | Data gap   | Data gap   | No valid data available               |
| Welfare benefits  | About 80% of teenage mothers receiving income support are receiving income support seven years later (though not necessarily continuously)   | Using data on Australian mothers aged 30-34 in 2001 who were teen mothers from the ABS Census, analysed by Bradbury (2006)   | Data gap: no comparison group  | 11,373 *<br>0.8 = 9,098               |

# Teen motherhood

Preliminary research shown in Table 2 indicates that there are a number of data gaps linking higher rates of social disadvantage among teen mothers with the fact that they are teen mothers. A more extensive literature and data review would be required to provide robust and reliable evidence. Moreover, the lack of evidence in this preliminary review does not indicate that teen mothers do not face additional disadvantage that places costs on society. Additional costs could be created by the ongoing mental health of teenage mothers in relation to social inclusion and stigma, which would be in addition to the cost of perinatal depression included above<sup>2</sup>.

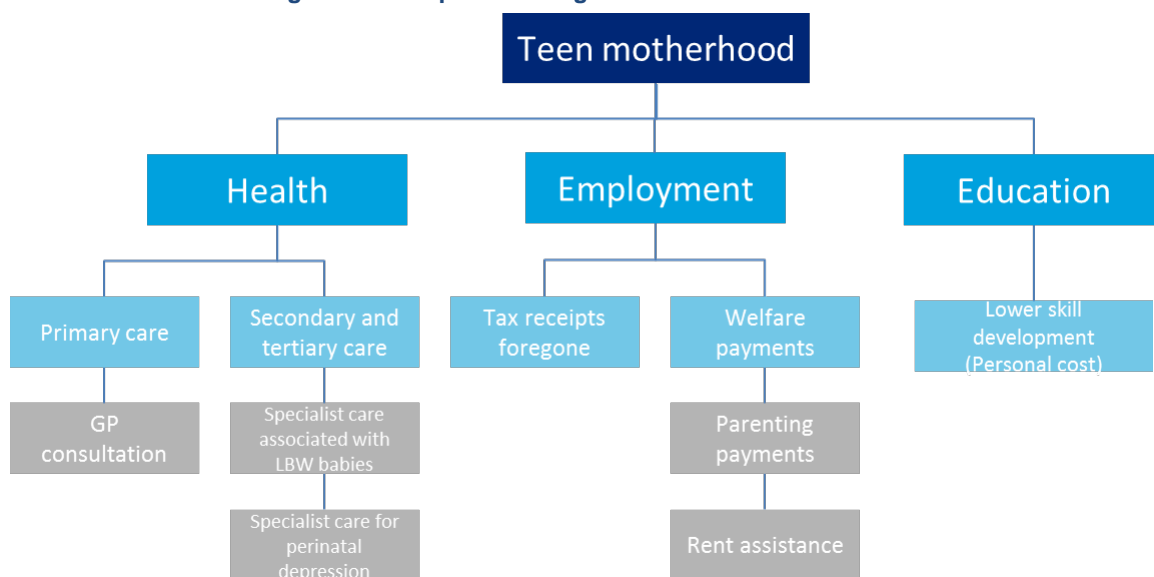
## B. Categorise costs

The preliminary literature and data review in the previous section were organised into three cost categories:

- Health and wellbeing;
- Education; and
- Employment and welfare.

These categories will continue to be used for the purposes of this indicative example. Following this, a deeper examination of each cost is presented to gain a more granular perspective in Figure 5. Although evidence was not located for all included costs, they demonstrate the types of costs that may be relevant, including for other social issues. If a social issue has costs related to both education and employment it will be important to ensure that there is no data overlap. As mentioned previously, this Guide has focused on predominantly Government (fiscal) costs, but this could be expanded to other types of costs, evidence and time permitting.

Figure 5: Example of more granular cost detail for teen motherhood



Source: Deloitte Access Economics. Note: LBW = low birth weight; GP = general practitioner

<sup>2</sup> In the US, studies show early age at first birth was associated with greater depression among males and females (Mirowsky and Ross, 2002).

# Teen motherhood

Depending on the cost data available, it may be necessary to include more detailed or granular costs than those highlighted in Table 3. For demonstrative purposes, only detail on the nature of secondary and tertiary care costs (hospital costs) associated with low birth weight babies is included below. However, ultimately this granularity is not needed, since the National Hospital Cost Data Collection provides the cost per case of low birth weight neonatal care in a manner that combines all the individual aspects of the episode of care.

**Table 3: Example of additional granularity potentially included for low birth weight hospital cost**

| Cost driver                                | Costs   |
|--|---|
| Hospital costs for low birth weight babies | <ul style="list-style-type: none"><li>• In-hospital specialist costs, e.g. paediatrician, neonatologist, surgeon</li><li>• Other hospital costs, e.g. humidicribs, monitors, surgical equipment, operational Neonatal Intensive Care Unit (NICU) overheads</li><li>• Hospital-provided nursing and allied health outreach costs e.g. physiotherapist</li><li>• Medical costs, e.g. blood diagnostics, imaging</li><li>• Pharmacotherapy and consumables (e.g. saline drips)</li></ul> |

## C. Refine the accountability

Health system costs associated with teen motherhood are typically most relevant to individuals and government, although private health insurance may sometimes apply. For teen motherhood, unit costs for particular events derive from a wide range of sources. An example includes the National Hospital Cost Data Collection Australian Public Hospitals Cost Report 2011-2012, Round 16 (IHPA, 2012). Table 4 below highlights this and some of the other cost data associated with the impacts in Figure 5.

# Teen motherhood

**Table 4: Costs associated with impacts of teen motherhood**

| Event  | Volume   | Unit cost                            | Source   | Year      | Validity/ limitation   | Bearer   |
|--|--|--------------------------------------|--|-----------|--|--|
| <b>Health and wellbeing</b>  |  |                                      |  |           |  |  |
| Low birthweight neonatal care  | 273  | \$54,966 <sup>3</sup>                | National Hospital Cost Data Collection (NHCCDC) (IHPA, 2012)           | 2011-12   | Mid point of data from hospital costing on low birth weight babies.  | State and Federal Governments share hospital costs         |
| Postnatal depression (financial cost i.e. not DALYs or hospital costs) | 398  | \$730 cost for one year <sup>4</sup> | Deloitte Access Economics (2012)                                       | 2012      | Average cost per person (not specific to women under 20)   | Federal & State Governments share of other financial costs |
| <b>Employment</b>  |  |                                      |  |           |  |  |
| Parenting payment  | 8,116 single   | \$683.50* per fortnight              | DSS (2013a)  | June 2013 | This does not account for those mothers who would likely have been receiving income support had they not become a teen parent (due to lack of data). In addition a portion of these would be on part payments not full payments  | Federal Government   |
| Parenting payment  | 2,815 partnered  | \$448.70 per fortnight               | DSS: A guide to Australian Government payments March 30 – June 30 2013 | June 2013 | This does not account for those mothers who would likely have been receiving income support had they not become a teen parent (due to lack of data). In addition, a portion of these would be on part payments not full payments | Federal Government   |
| Average rent assistance for those on single parenting payments         | *Assume that all under 20s on the parenting payment also receive rent assistance | \$121 per fortnight                  | DSS: A guide to Australian Government payments March 30 – June 30 2013 | June 2013 | Rent assistance is a proportion of rental costs – this average may not be representative of the rent received by the under 20 cohort   | Federal Government   |
| Average rent assistance for those on partnered parenting payments      | *As above  | \$138 per fortnight                  | DSS: A guide to Australian Government payments March 30 – June 30 2013 | June 2013 | Rent assistance is a proportion of rental costs – this average may not be representative of the rent received by the under 20 cohort   | Federal Government   |

<sup>3</sup> Calculated using Diagnosis related group (DRG) codes P04Z identified for low birth weight babies.

<sup>4</sup> The report finds that the direct costs to the healthcare system, borne by the government, of postnatal depression to be \$40.52 million. This cost is spread over 55,530 people with postnatal depression.

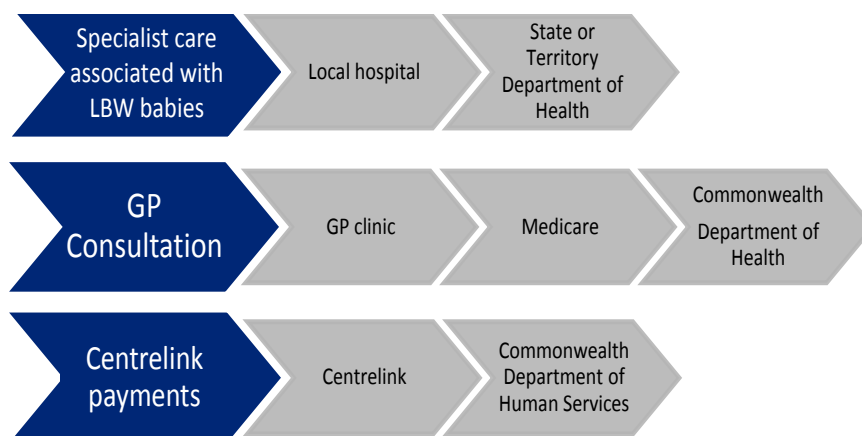
# Teen motherhood

| Event  | Volume                        | Unit cost   | Source  | Year      | Validity/ limitation   | Bearer           |
|--|-------------------------------|---|---|-----------|------------------------|------------------|
| Education  |                               |   |   |           |                        |                  |
| Early school leavers – cost saving through reduced education participation | Data on volume not available. | \$12,445 per secondary school student                         | APH (2013): Average Government School Recurrent Costs | 2012 rate | Data gap on volume     | State Government |
| Low year 10 completion for teen mothers                                    | 2,411                         | Cost to society of low year 10 completion rate not available. | Data gap  |           | Data gap on unit price | NA               |

Understanding who bears the cost can be problematic especially when it comes to provision of services by Government or non-profit agencies. This is because the provider of a service (e.g. a public hospital run by a non-profit provider) is not always the ultimate financier. Moreover, services provided in the hospital – such as accommodation for the teen mother at Ronald McDonald House – may be provided by a non-profit provider but not counted in the NHCDC dataset.

However, it can be useful to identify which specific departments or agencies are involved as funders. For example, for services provided at the Westmead Hospital the relevant immediate funder would be the Western Sydney Local Hospital District, although NSW Health and the Commonwealth Department of Health would provide other tiers of Government funding. This can help social purpose organisations to start the conversation around Government costs with the appropriate Government payer. An example of cost mapping from the initial payment to the ultimate government fund holder is shown in Figure 6.

**Figure 6: Example of government cost mapping**



# Teen motherhood

## 3. Review data sources

### A. Map data sources

Some components of the cost attribute table for teen motherhood are included:

#### Example 1

**Name:** Low birth weight health (hospital) costs

**Definition:** There are higher costs associated with the birth of low birth weight babies which is correlated with teen births.

| Evidence related attributes   |  |
|-------------------------------|--|
| Event relationship            | Low birth weight babies require more hospital resources and low birth weight babies are more prevalent among teenage mothers.  |
| Evidence of cost relationship | AIHW reports and data, along with cost data from NHCDC   |
| Reliability of evidence       | See Table 2 and Table 4 for a description of the limitations associated with each data source. In addition, the NHCDC data is used without subtracting the cost of a hospital stay for a normal weight baby. |

| Volume related attributes |      |   |
|---------------------------|------|---|
| Annual volume of event    | 273  | National Perinatal Data Collection  |
| Year of evidence          | 2012 | Volume using rate of low birth weight babies from 2009 (2.4 percentage points more likely to have low birthweight babies) |
| Expected annual growth    | 2.0% | Assumed growth with general population growth*  |

\*Where possible historic trends should be used, and consider contributing factors where necessary

| Cost categorisation attributes |                              |
|--------------------------------|------------------------------|
| Category                       | Health                       |
| Type                           | Fiscal cost                  |
| Payer                          | Public and private hospitals |

| Unit cost attributes       |          |   |
|----------------------------|----------|---|
| Metric for the cost        | \$54,966 | per event per year                            |
| Year of the cost metric    | 2011-12  |   |
| Expected annual escalation | 4.3%     | Hospital cost inflation data from AIHW (2015) |

#### Example 2

**Name:** Perinatal depression

**Definition:** There are costs associated with perinatal depression, and there is a correlation between perinatal depression and teen births.

| Evidence related attributes   |   |
|-------------------------------|---|
| Event relationship            | Perinatal depression is more prevalent among teen mothers.                          |
| Evidence of cost relationship | AIHW (2012) and Deloitte Access Economics (2012)                                    |
| Reliability of evidence       | Table 4 outlines a description of the limitations associated with each data source. |

# Teen motherhood

| Volume related attributes |      |   |
|---------------------------|------|---|
| Annual volume of event    | 398  | Rate from AIHW (2012) applied to data on live births from the National Perinatal Data Collection        |
| Year of evidence          | 2012 | Using depression rates from 2010 study (3.5 percentage points more likely to have perinatal depression) |
| Expected annual growth    | 2.0% | Assumed that the rate will grow with teenage population growth  |

| Cost categorisation attributes |  |
|--------------------------------|--|
| Category                       | Health   |
| Type                           | Health system costs including primary care, psychiatrist & allied health services, pharmaceuticals, hospital costs, community care cost. |
| Payer                          | Governments (state/territory and federal)  |

| Unit cost attributes       |       |   |
|----------------------------|-------|---|
| Metric for the cost        | \$730 | cost for one year <sup>6</sup>                |
| Year of the cost metric    | 2012  |   |
| Expected annual escalation | 4.3%  | Hospital cost inflation data from AIHW (2015) |

## B. Identify data gaps

The following data gaps have been identified and their impact and risks are discussed Section C below:

1. The year in which the rates for each cost are not aligned with the year of the volume of births.

2. In calculating the perinatal depression rate, the higher likelihood of women under 20 experiencing perinatal depression is found by comparing the rate for women under 20 with that of the rate of all women (i.e. including women under 20). Ideally, the second rate would be for women over 20 only. Moreover, the unit cost of perinatal depression is an average for all people. Preferably, it would be specific to women under 20.
3. Ideally it would be good to know the volume of teenage births at private vs public hospitals to be able to separate this costing in terms of who bears the costs. It is likely that the majority are at public hospitals due to the socioeconomic factors that pre-dispose teen motherhood.

## C. Assess impact and risks of data gaps.

In relation to each of the data gaps in the previous section:

Additional data may be found to align the years, if time and resources permitted. Specifically, data relating to the health of mother and child as a result of a teen motherhood is available through the AIHW; however, for granular statistics, a data request and payment is required. In this instance, it is a low risk option to assume that the rate of low birth weight babies to women under 20 would not have changed by a significant amount between 2009 and 2012, given that the birth rate is falling for this group but the population size is increasing. More caution is needed when rates and volumes are separated by a greater number of years.

This is assumed to be of low impact to the overall costing, since the differences between the true age-specific parameters and the proxies are likely to be small.

While this might be desirable, it is not necessary for a robust total costing.

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<sup>6</sup> The report (Deloitte Access Economics, 2012) finds that the direct costs to the healthcare system, borne by the government, of postnatal depression to be \$40.52 million. This cost is spread over 55,530 sufferers of postnatal depression.



# Appendix B: Applied example

## Homelessness

### 1. Define the social issue

#### A. Describe the problem

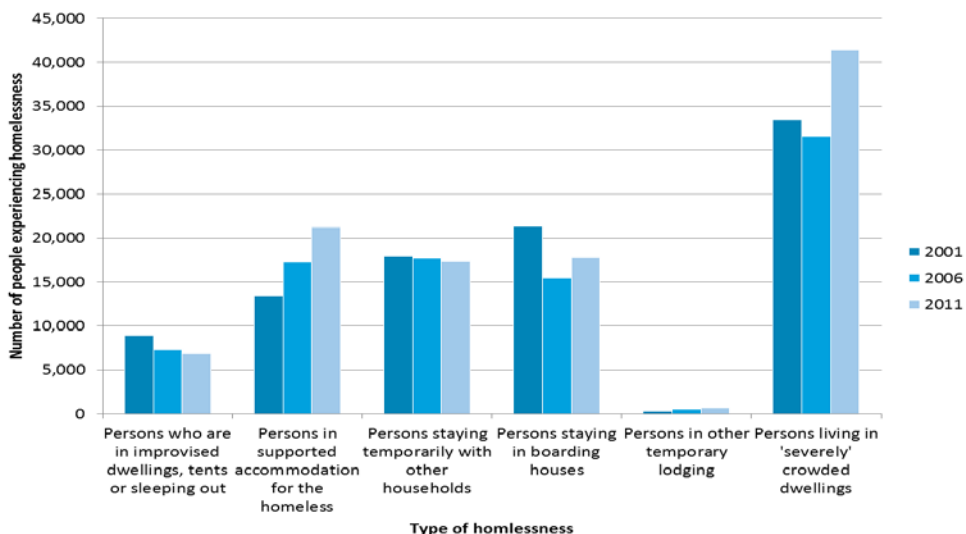
Adequate housing is a key enabler for participation in society at many levels. However, in the 2011 Census, 105,237 Australians were considered homeless, around 0.5% of the population (ABS, 2012). Homelessness affects different people in different ways, and is often accompanied by compounding problems, such as mental illness, domestic violence, and drug and alcohol abuse. The compounding effects can be particularly problematic for people who come from vulnerable groups such as people living with a disability or Indigenous Australians. As shown by Chart 1, the traditional view of homelessness – people sleeping rough in improvised dwellings, tents or sleeping out, forms a relatively small proportion of the homeless population. The most common category, covering over 40,000 people in 2011, is the cohort living in ‘severely’ crowded dwellings. Although there was a reported decline in the number of people sleeping rough between the 2001 and 2011 Censuses, there was an increase in those people staying in supported accommodation and living in ‘severely’ crowded dwellings.

#### B. Establish the target cohort

The ABS defines a person as homeless if they do not have suitable accommodation alternatives and their current living arrangement is in a dwelling that is inadequate, has no tenure, or if their initial tenure is short and not extendable, or does not allow them to have control of and access to space for social relations (ABS, 2012).

When measuring the costs of homelessness, research shows that people experiencing the different types of homelessness will have different cost patterns. For example, people who sleep rough are less likely to access primary care than the general population, but access secondary and tertiary care at much higher utilisation levels (Brodie et al, 2013). Ideally the costs for each type of homelessness would be identified separately; however, in this perfunctory example the target cohort is all Australians who are homeless as per the whole ABS definition (i.e. including all of the ABS sub-groups).

Chart 1: Prevalence and types of homelessness in Australia



# Homelessness

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Social purpose organisations working with people experiencing homelessness may need to establish a more specific cohort that reflects the nature of services they provide and their own target groups. Examples could be young people who are couch surfing for extended periods of time in a particular region, or people in overcrowded dwellings in a particular jurisdiction, or young males in crisis accommodation services, or homeless women and children.

## C. Quantify the prevalence or incidence

There are challenges associated with identifying the prevalence of homelessness due to the fact that people experience homelessness for various periods of time. Therefore, any single count of the homeless population is associated with a particular snapshot in time.

The most current estimate of Australia's homeless population from the ABS is calculated from Census night in 2011. The ABS estimates that there were 105,237 classified as homeless on that night, which is a rate of homelessness of 49 persons for every 10,000 persons in Australia.

In addition, the AIHW annual 'Specialist homelessness services' 2013-14 report estimates that approximately 254,000 Australians access specialist homelessness services. Of these people, at the beginning of the first support period, 45% are classified as homeless and 55% 'at risk' of homelessness. This results in an estimate of 114,300 homeless people over that time period accessing specialist homelessness services.

The prevalence rate of 0.5% of the population experiencing homelessness will be used for estimates throughout this report example.

## D. Define the desired outcomes

The desired outcome for the issue of homelessness is access to an appropriate and suitable home, if desired, for all Australians. In this future state, people who are at risk of becoming homeless would receive support services to prevent this occurring and those experiencing long term homelessness would have the ability to move to stable housing. While this is the overarching outcome for the social issue of homelessness, a social purpose organisation will need to be more specific in the outcomes that it intends to achieve in partnership with Government or other funding body.

### Describing the steps or process in regard to achieving those outcomes

In 2008 the Australian Government released a Homelessness White Paper, entitled *The road home: A national approach to reducing homelessness*. Published by the then Department of Family, Housing, Community Services and Indigenous Affairs (now known as the Department of Social Services) the paper provides a comprehensive overview of the homelessness sector in Australia and set out a national approach to reducing homelessness.

This document was the result of an extensive consultation process and is the most recent document defining a desired outcome for homelessness in Australia.

The main goals listed in the paper were to:

- Halve overall homelessness by 2020; and
- Offer supported accommodation to all rough sleepers by 2020.

Although these goals do not describe the final future desired state, they can be considered steps to achieving the final outcome in a longer timeframe.

# Homelessness

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The three main strategies to achieve the desired outcome were:

**Focus on strategies to prevent those at risk of homelessness from becoming homeless in the first place.** Those at increased risk include older people in housing stress, women and children leaving violence, Indigenous Australians and people leaving state care.

**Improving the service that those experiencing homelessness receive from both mainstream agencies and from agencies that deliver services specifically to homeless people.** Agencies will also become more integrated to make it easier for homeless people to receive all the services they need without having to repeat their story over and over again.

**Reducing the proportion of people who experience repeat periods of homelessness.** Those at risk need 'wrap around support' that addresses all their needs and helps them participate in their community (AIHW, 2015a).

A social purpose organisation will ideally link policy goals to its own activities and desired outcomes based on the objective of the policy. It would also be important to acknowledge that individuals experiencing homelessness or at risk of homelessness may follow different pathways to successful outcomes and require varying levels of support. Finally outcomes should ideally be developed using the SMART criteria highlighted in Section 1D, with timeframes for the outcome measures identified. For the purposes of this report example, a one-year timeframe is adopted.

## **E. Consider confounding factors**

External factors in relation to homelessness are varied. Some of the most relevant external factors that impact access to affordable housing and homelessness include:

- Government policy, house prices, rental prices, and interest rates, among other economic factors;

- Financial stress, impacted by the unemployment rate, tax rates, government payments and the business cycle;
- Community prevalence of family breakdown or domestic violence;
- Prevalence of drug and alcohol abuse in the community;
- Levels and types of support for people with mental health issues, disability, poor physical health and comorbidities; and
- Transition planning for people leaving institutional settings, such as, prison.

## **2. Identify and classify costs**

### **A. Establish the evidence base**

A wide variety of research is available on the drivers and consequences of homelessness both in Australia and internationally. Some of the most authoritative sources on the issue in Australia include:

- The Australian Housing and Urban Research Institute;
- The ABS and AIHW; and
- The Household, Income and Labour Dynamics in Australia (HILDA) Survey.

From this base of evidence in Australia, and other sources, it is possible to link homelessness with a number of costs, including the cost to Government of homelessness services directly and the cost of a variety of non-homelessness services.

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## Cost to government of non-homelessness services

From Zaretsky et al (2013) *The cost of homelessness and the net benefit of homelessness programs: a national study, Findings from the Baseline Client Survey*, we know that homelessness can lead to a much higher use of mainstream public support services, for instance, health and justice services, than is evident in the general population. This report identifies the cost to Government for the provision of such services. A sample of the evidence from Zaretsky et al (2013) relating to cost impacts associated with various events is provided in Table 5.

**Table 5: Examples of homelessness-associated events from the Zaretsky et al (2013) report**

| Event   | Prevalence   |
|---|--|
| Higher rates of unemployment leading to tax receipts forgone and welfare payments   | 28% unemployed<br>65% not in labour force  |
| Greater use of Government funded health services than the non-homeless population (including more nights in hospital, mental health institutions and drug and alcohol facilities) | Mood disorders: 44.2% for survey compared to 15% lifetime prevalence among the Australian population<br>Anxiety disorders: 38.7% for survey compared to 26% for Australian population<br>High and very high stress (on the Kessler 10 instrument): 62.4% of survey compared to 12% for Australian population |

**Note:** In this instance, calculating the prevalence is achieved by comparing the percentage of the homeless population experiencing an event, to the percentage of the Australian population experiencing that event. In this case information has been sought from separate sources. For example the 28% unemployment rate and 65% 'not in labour force' can be compared to ABS statistics from that year.

For many social issues, the counterfactual (comparison point) will not be the general Australian population. For example, in this instance it could be preferable to compare the rates of mood disorders or anxiety to a population experiencing financial stress but not at risk of homelessness.

It is of paramount importance to recognise that the relationship between homelessness and these events has not been established as causal. Indeed in many cases the causality lies in the opposite direction; for example, the pre-existence of mental health and substance abuse issues precipitates homelessness. This reverse causality and controlling for these confounding factors has not been undertaken in this simple example, but should definitely be undertaken in a fulsome costing.

A sample of the evidence from the report relating to the costs of the events associated with health and justice is included in Table 6.

# Homelessness

**Table 6: Example of the units costs and prevalence of a selection of health and justice services**

|   | Average population incidence/year | Single men in supported accommodation incidence/year | Single women in supported accommodation incidence/year | Tenancy support incidence/year | Street-to-home incidence/year | Day Centre incidence/year | Average incidence for people experiencing homelessness/year | Government cost/incident per year \$2010-11 |
|---|-----------------------------------|--|--|--------------------------------|-------------------------------|---------------------------|---|---|
| <b>Health services</b>                    |                                   |  |  |                                |                               |                           |   |   |
| GP consultation                           | 5.30                              | 10.63  | 9.00   | 12.13                          | 8.50                          | 5.57                      | 9.17  | \$44  |
| Medical specialist                        | 1.09                              | 3.84   | 1.96   | 2.58                           | 0.00                          | 1.36                      | 1.95  | \$70  |
| Psychologist consultation                 | 0.13                              | 6.33   | 3.88   | 4.64                           | 5.67                          | 0.00                      | 4.1   | \$102                                       |
| Nurse or allied health professional       | 0.82                              | 2.34   | 3.32   | 11.65                          | 1.5                           | 3.57                      | 4.48  | \$71  |
| Casualty or emergency                     | 0.27                              | 1.43   | 0.86   | 0.71                           | 2.67                          | 0.36                      | 1.21  | \$475                                       |
| Outpatient or day clinic                  | 1.90                              | 1.43   | 8.32   | 3.20                           | 1.83                          | 0.14                      | 2.98  | \$144                                       |
| Ambulance                                 | 0.13                              | 1.37   | 0.82   | 0.50                           | 0.33                          | 1.00                      | 0.80  | \$784                                       |
| Nights admitted to hospital               | 0.67                              | 10.78  | 3.14   | 1.68                           | 2.33                          | 0.86                      | 3.76  | \$1,556                                     |
| Nights admitted to mental health facility | 0.12                              | 2.61   | 5.79   | 0.54                           | 0.00                          | 0.00                      | 1.79  | \$750                                       |
| Nights in alcohol detox/rehab centre      | 0.02                              | 7.37   | 7.42   | 0.18                           | 0.33                          | 0.00                      | 3.06  | \$354                                       |

# Homelessness

|  | Average population incidence/year | Single men in supported accommodation incidence/year | Single women in supported accommodation incidence/year | Tenancy support incidence/year | Street-to-home incidence/year | Day Centre incidence/year | Average incidence for people experiencing homelessness/year | Government cost/incident per year \$2010-11 |
|--|-----------------------------------|--|--|--------------------------------|-------------------------------|---------------------------|---|---|
| <b>Justice services (police contact)</b>       |                                   |  |  |                                |                               |                           |   |   |
| As victim of assault/ robbery                  | 0.07                              | 0.48   | 1.07   | 1.55                           | 0.50                          | 1.07                      | 0.93  | \$2,197                                     |
| Stopped in street or visited by officer        | 0.32                              | 6.10   | 0.92   | 0.80                           | 1.33                          | 1.43                      | 2.21  | \$163                                       |
| Stopped in a vehicle                           | 0.83                              | 0.32   | 0.37   | 1.13                           | 0.00                          | 0.71                      | 0.51  | \$82  |
| Apprehended                                    | 0.002                             | 1.32   | 0.23   | 0.63                           | 0.33                          | 1.00                      | 0.70  | \$369                                       |
| Held overnight                                 | 0.0005                            | 0.74   | 0.14   | 0.35                           | 0.17                          | 0.50                      | 0.38  | \$270                                       |
| Court  | 0.06                              | 1.33   | 0.53   | 1.05                           | 0.33                          | 1.86                      | 1.02  | \$842                                       |
| Nights in prison                               | 0.37                              | 17.83  | 0.00   | 0.30                           | 0.00                          | 0.36                      | 3.7   | \$291                                       |
| Nights in detention/remand/correction facility | 0.11                              | 8.06   | 0.00   | 0.28                           | 0.00                          | 0.14                      | 1.70  | \$270                                       |

Source: See Zaretsky et al (2013) Appendix 3 for details of the method used to calculate the estimates along with the data sources.

**Note:** The Zaretsky et al (2013) report calculates costs per event for one person in a year. This is converted to an average cost to Government through the use of non-homelessness related services above what is used by the general population. Again, note this does not control for confounding factors, which is sub-optimal and should occur in a fulsome costing. It is also important to note the reporting year so that appropriate adjustments can be made, if using multiple data sources, to inflate costs to the same year.

# Homelessness

The outputs from this Report needed to calculate the cost of homelessness to society are included in Table 7 below. Zaretsky et al (2013) have divided groups experiencing or at risk of experiencing homelessness into five main categories, based on 2004 Baseline Client Surveys:

- Single men in supported accommodation (69 clients, also referred to as case managed clients);
- Single women in supported accommodation (74 clients);
- Individuals in street-to-home programs providing long-term supported accommodation to those leaving primary homelessness with mental health and/or drug and alcohol needs (6 clients);
- Individuals in tenancy support programs – these are early intervention programs assisting persons who have an existing public or private tenancy to maintain that tenancy (41 clients); and
- Attendees of day centres who are experiencing homelessness or a state of precarious living but are not receiving case managed support (14 clients).

**Table 7: Annual cost difference between clients and population average for use of mainstream public support services (2010-11)**

| Type of cost                        | Single men | Single women | Tenancy support | Street-to-home | Day centre | Average |
|-------------------------------------|------------|--------------|-----------------|----------------|------------|---------|
| Health                              | 22,824     | 13,247       | 4,254           | 4,575          | 877        | 9,155   |
| Justice                             | 10,684     | 2,749        | 4,536           | 1,302          | 4,393      | 4,733   |
| Welfare*                            | 10,482     | 4,558        | 3,503           | 8,937          | 12,523     | 8,001   |
| Welfare**                           | 6,899      | 2,946        | 2,342           | 5,975          | 8,372      | 5,307   |
| Child placed in out of home care*** | 8          | 2,734        | 5,908           | -101           | -101       | 1,690   |
| Eviction per public tenancy         | 2,387      | 803          | -13             | -13            | 4,787      | 1,590   |

\* Newstart expenditure and taxation forgone (average weekly wage) per person

\*\* Newstart expenditure and taxation forgone (minimum wage) per person available to work

\*\*\*Calculates cost of out of home care specifically due to unstable accommodation circumstances, reports cost per person over 17 rather than per child or family

**Note:** For demonstrative purposes in this simple example, the average (final column in Table 7 above) of the costs for the various types of homelessness has been used which can then be applied to the national prevalence of homelessness. Ideally, the cost categories would be compared to specific prevalence types. The two welfare categories illustrate that often judgements and assumptions must be made regarding the calculation of costs. The welfare category is calculated using the average weekly wage and is the preferred option of Zaretsky et al (2013). The second welfare category is calculated using the minimum wage and would be considered a more conservative, or lower bound choice.

# Homelessness

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## Costs that have not been included

There are additional costs to society that would not exist if homelessness interventions prevented people reaching that state. Some of these costs include reactive Government and privately funded services, such as crisis shelters and emergency food provision (food hampers and soup vans). Some of these costs are outlined below.

- The Federal Government providing grants of \$115 million per year to homeless service organisations – these are transfers so it is important not to double count them if the expenditure by homelessness service organisations is also included in the costing
- State and Territory governments pledging approximately \$230 million. Note pledges are not costs
- In 2006, there were 59 million hours spent by people volunteering for community and/or welfare groups which include homelessness services. These could be included and valued using opportunity cost methods. However, this is not done here due to taking the fiscal perspective
- Homelessness service organisations source money aside from government funding for their homelessness programs including revenue and private donations. For example, in 2008 the Salvation Army sourced only 48% of its income from Government, the rest derived from trading revenue, investment income, and donations. Of the \$342.4 million in expenditure for that year, 17% was dedicated to housing and homelessness. Again this is very important from the social cost perspective, but does not enter the fiscal cost perspective.

However, these costs to society encompass two different types of costs:

- Costs that would not exist if homelessness did not exist, which should be included in the cost of homelessness in total to society; and

- Costs that contribute to the prevention of homelessness. Most homelessness organisations and their associated financial costs and volunteer time include services that help prevent homelessness such as: financial counselling assistance, employment programs, social programs/activities, and domestic violence support. Costs of services preventing homelessness are not a cost of homelessness per se, since they may still exist if homelessness were eradicated, and indeed may form part of such eradication.

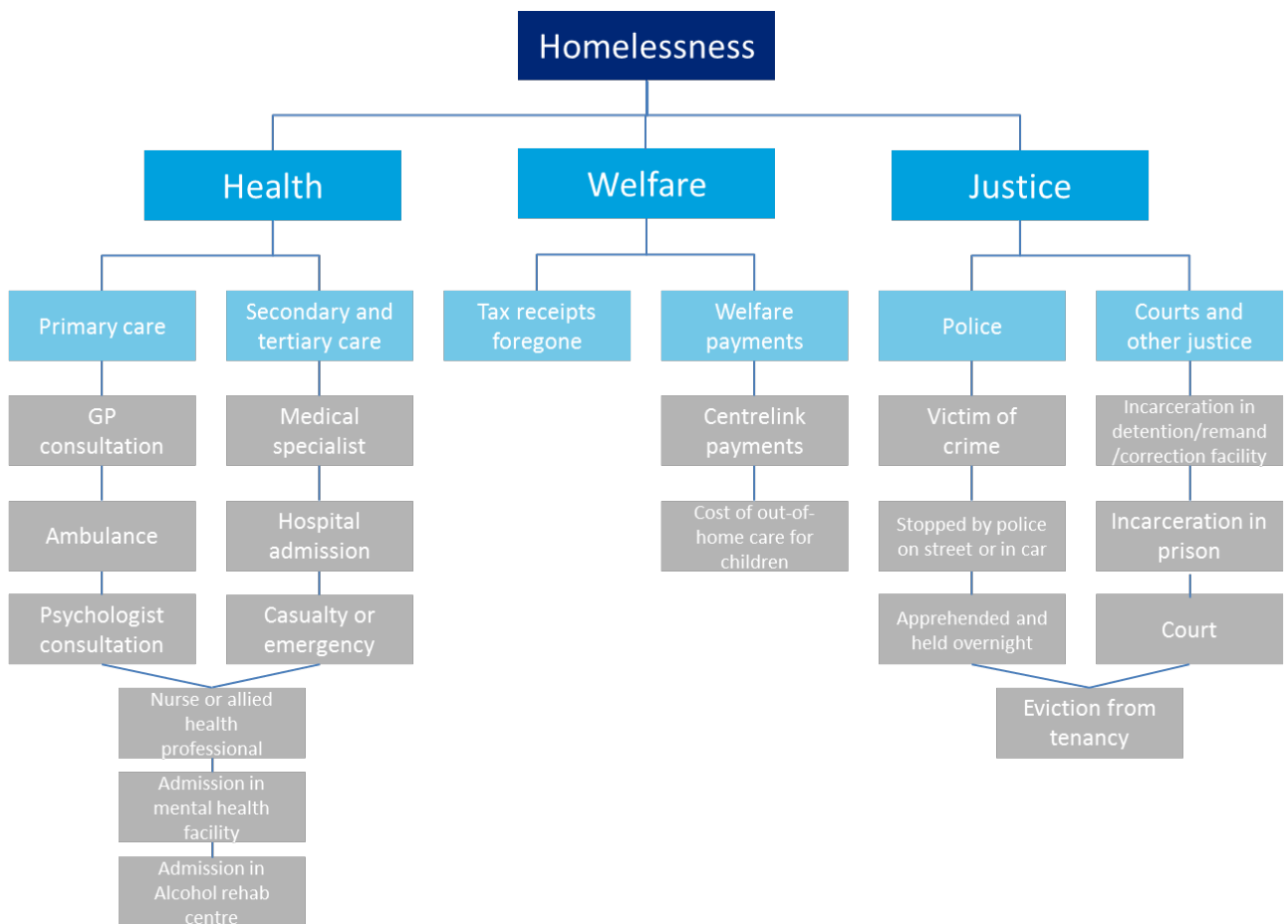
## B. Categorise costs

The costs associated with homelessness predominantly fall into three main categories: health, welfare, and justice. These costs are further refined to their various components in Figure 7. They also demonstrate that not all similar costs are consistently categorised but, rather, they are setting-dependent. For example, in some instances, the services of a nurse or allied health professional is considered primary care (if the service occurs in a community setting and in a primary health context), and at other times it is classified as secondary or tertiary care (if it occurs in a hospital inpatient, emergency or hospital-funded outreach setting).



# Homelessness

Figure 7: Categorising costs for homelessness

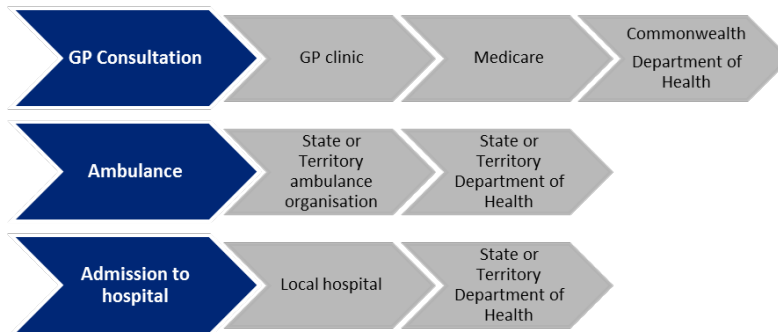


# Homelessness

## C. Refine the accountability

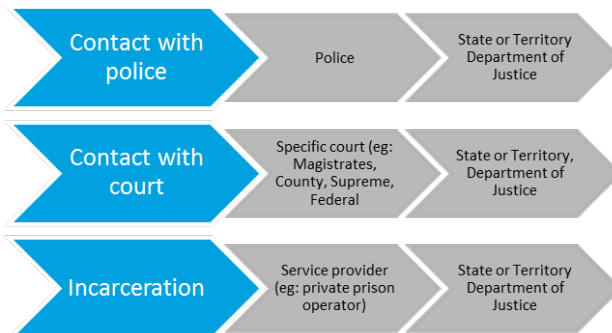
Most of available evidence for the cost of homelessness is focused on the cost to Government. The figures below illustrate the flow of these costs, from where they are first incurred to the payer that is ultimately responsible for meeting each cost.

**Figure 8: Health cost accountability**

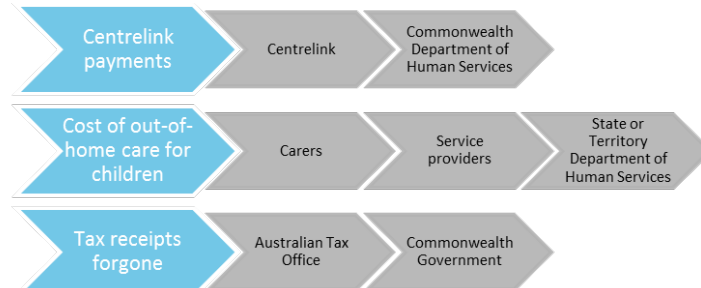


Note: This identification of accountability should be completed for every cost identified. Only three are included here for illustrative purposes.

**Figure 9: Justice cost accountability**



**Figure 10: Welfare cost accountability**



# Homelessness

**Note:** In this instance we focused on costs to Government. However, an example of a cost accountability diagram for actors in the non-profit sector is included in Figure 11 below. Of particular note here is that there may be a number of payers for a particular service, and the share of costs by who bears them should be split in accordance with the share of funding that each payer provides the non-profit service.

**Figure 11: Non-profit cost accountability example**



### 3. Review data sources

#### A. Map data sources

Some components of the cost attribute table for homelessness are included:

##### Example 1

**Name:** GP Costs

**Definition:** There are higher costs associated with an increased use of GP consultations by the homeless population compared to the general population (in the absence of controlling for confounding factors).

| Evidence related attributes   |  |
|-------------------------------|--|
| Event relationship            | Higher incidence of health problems can result in higher use of GP services for some types of homelessness   |
| Evidence of cost relationship | Zaretsky et al (2013)  |
| Reliability of evidence       | Zaretsky et al (2013) is a reliable source from a peer reviewed journal. Further details of the data sources used by Zaretsky, K., et al. (2013) is available in Appendix 3 of that paper. However, there may be other confounding factors, such as pre-existing mental health issues, which contribute to both homelessness and increased use of GP services. In a fulsome costing, these factors should be controlled for, for example by making the comparator for GP services use the Australian population that has pre-existing mental health conditions, or – most desirably – through detailed regression analysis to ascertain the fraction of higher GP service use that is attributable to homelessness as an independent risk factor over and above any pre-existing conditions. |

| Volume related attributes |             |  |
|---------------------------|-------------|--|
| Annual volume of event    | 3.87        | Average population incidence/year of GP consultations is 5.30 and for the homeless population it is 9.17. The difference in the rates is the increased usage (3.87). |
| Year of evidence          | 2011 (June) |  |
| Expected annual growth    | 2.0%        | Assumed growth with general population growth  |

# Homelessness

| Cost categorisation attributes |  |
|--------------------------------|--|
| Category                       | Health                                       |
| Type                           | Fiscal cost                                  |
| Payer                          | Commonwealth Government Department of Health |

| Unit cost attributes       |            |  |
|----------------------------|------------|--|
| Metric for the cost        | \$44       | Cost per incident (Medicare benefits schedule (MBS) item number 23) (Department of Health, 2015) |
| Year of the cost metric    | 2011 (May) |  |
| Expected annual escalation | 4.3%       | Hospital cost inflation data from AIHW (2015)  |

## Example 2

**Name:** Psychologists consultation costs

**Definition:** Higher incidence of mental health problems among people experiencing homelessness can result in higher use of psychologists.

| Evidence related attributes   |   |
|-------------------------------|---|
| Event relationship            | Higher incidence of mental health problems among people experiencing homelessness can result in higher use of psychologists |
| Evidence of cost relationship | Zaretsky, K., et al. (2013)   |
| Reliability of evidence       | As per GP cost.   |

| Volume related attributes |             |   |
|---------------------------|-------------|---|
| Annual volume of event    | 3.97        | Average population incidence/year of psychologist consultations is 0.13 and for the homeless population it is 4.1. The difference in the rates is the increased usage (3.87). |
| Year of evidence          | 2011 (June) |   |
| Expected annual growth    | 2.0%        | Assumed growth with general population growth   |

| Cost categorisation attributes |   |
|--------------------------------|---|
| Category                       | Health                                  |
| Type                           | Fiscal cost                             |
| Payer                          | State or Territory Department of Health |

| Unit cost attributes       |             |   |
|----------------------------|-------------|---|
| Metric for the cost        | \$102       | Cost per incident (AIHW, 2011b)               |
| Year of the cost metric    | 2011 (June) |   |
| Expected annual escalation | 4.3%        | Hospital cost inflation data from AIHW (2015) |

# Homelessness

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## **B. Identify data gaps**

The following data gaps are identified (with their impact and risk discussed in Section C below).

1. This analysis does not include longer term economic impacts more broadly across society (i.e. to the non-profit sector and individuals), such as the cost to individuals of lower educational attainment due to youth homelessness, or productivity impacts due to extended periods out of the workforce. Personal wellbeing costs could be estimated using a burden of disease methodology (measured in DALYs) for health impacts that develop due to homelessness, for example, poor dental hygiene causing dental decay
2. The analysis does not appropriately control for confounding factors
3. The costs in this model are based on a single study of homelessness. It would be preferable to use a wider sample to estimate the utilisation of services by people experiencing homelessness and more specific data that can align service use with homelessness type, as defined by the ABS.

## **C. Assess impact and risks of data gaps.**

The impact and risks of the data gaps identified in Section B are discussed:

1. The gap identified in point one above means that the results are a conservative estimate of the cost of homelessness to society. Or more specifically, this analysis identifies the cost to government only. This does not negatively impact the reliability of the information for that purpose, but it should be clearly communicated that the analysis is not intended to reflect the full impact on Australian society. Moreover, the study would not be of much value to social purpose organisations seeking private philanthropic funding sources
2. Adjustment for confounding factors should definitely be addressed to ensure a robust full study
3. Triangulating using other sources would assist in validating estimates and would help mitigate the 'fatal flaw' identified as the gap in (2) above.

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# Contact us

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Deloitte Access Economics authors



**Lynne Pezzullo**

Partner, Deloitte Access Economics

Tel: +61 2 6175 2000

[Lpezzullo@deloitte.com.au](mailto:Lpezzullo@deloitte.com.au)



**Natasha Doherty**

Director, Deloitte Access Economics

Tel: +61 7 3308 7225

[Ndoherty@deloitte.com.au](mailto:Ndoherty@deloitte.com.au)



**Josephine Tucker**

Associate Director



**Simone Cheung**

Associate Director



**Mike Stuart**

Manager



**Tessa Caton**

Manager



**Jemma Swan**

Analyst



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## Contact us

Deloitte Access Economics  
ACN: 149 633 116

Level 1  
9 Sydney Avenue  
Barton ACT 2600  
PO Box 6334  
Kingston ACT 2604 Australia

Tel: +61 2 6175 2000

Fax: +61 2 6175 2001

[www.deloitteaccesseconomics.com.au](http://www.deloitteaccesseconomics.com.au)

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