



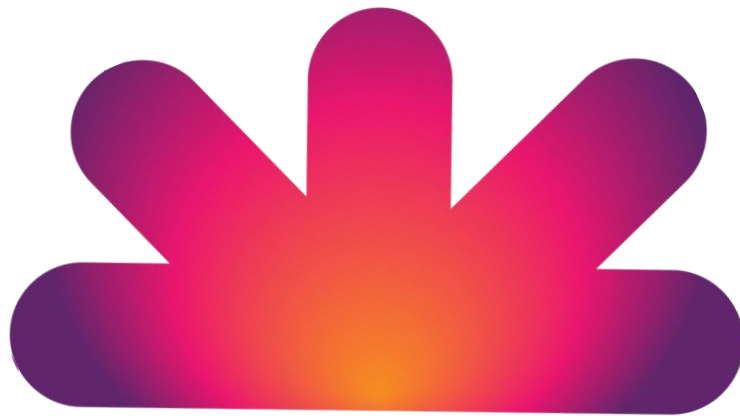
Australian Government
Australian Institute of
Family Studies



Estimating the costs of children

Literature review

Australian Institute of Family Studies



Maja Gorniak and Catherine Andersson

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Executive Summary

This review summarises literature published from 2005 to early 2024 on costs of children research. The purpose of this review was to:

- update the literature review undertaken for the 2005 Ministerial Taskforce on Child Support (Gray, 2007) and highlight any key recent methodological developments in the field
- identify and provide an overview of cost of children studies that estimate costs where children spend time in more than one household, costs under different patterns of care, costs where child care is utilised, and costs for different housing tenure and housing types.

Understanding the costs of children is a key component of the child support scheme, where estimates of the costs of children inform the child support formula. The formula provides the mechanism for the costs of children to be distributed between both parents. Gray (2007) identified different methods for estimating the cost of a child, each with its own strengths and limitations. He concluded that 'there is no unambiguous 'true cost' of a child and that, in the end it is a matter for judgment, but that this judgment needs to be informed by available empirical estimates'. Our review comes to a similar conclusion.

There are still many different methods that are used to estimate the cost of a child, with no obvious 'preferred' approach. The choice of method typically depends on the question being asked, and the methods generally fall into one of three main groups:

- approaches that use budget standards, which address the question of need.
- approaches that use self-reported measures of economic wellbeing, which address the question of equivalent living standards (that is, how much income a family with children requires to be as well off as a family with no children).
- approaches that use expenditure data, which can either address the question of how much parents spend on their children, or the question of equivalent living standards.

None of these methods are new since the original review. However, many of them have evolved in some way, such as the standard of living they apply, the way they collect and model data, and the way they address more complex family and household types. Overall, there continues to be ongoing discussion around the variation in the estimates produced by these different methods and whether one is more 'appropriate' or 'accurate' than the other.

As part of this review, we were also asked to investigate costs of children in respect of shared care across households, different patterns of care within households, child care costs and housing costs. We did not identify any studies that estimated costs of children experiencing different patterns of care within households.

Each of the studies that estimated the costs of children in shared care arrangements used a different approach to produce estimates (budget standards, self-reported economic wellbeing and the expenditure method). All came to the same conclusion, that the cost of a child who is receiving direct care by two separated parents is higher than a child residing in an intact household. Further, the costs experienced by a parent with minority care are disproportionately higher than the time spent caring for the child.

In relation to child care costs, given the high degree of variation in child care systems across countries, we only looked at how studies incorporated child care costs into their estimates for the costs of children in Australia. Both of the studies we reviewed constructed child care costs based on the different family scenarios they were modelling. They used parental labour force status and income to estimate expected child care usage and cost, though only one reported child care results separately. That study, using the expenditure method, found that child care

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costs as a proportion of total lifetime child-related spending increased as family income increased.

Although different types of housing costs were incorporated in some studies, the final estimates were typically aggregated into a single 'housing' line item, so it was not possible to determine the costs of children by housing type. The budget standards approach generally used the weekly rental costs of private dwellings to estimate housing costs and varied the size of the property depending on the size of the different households, with some extending this to account for eligibility for social housing for low-income families. In the expenditure studies reviewed it was unclear whether mortgage repayments were treated as expenses or as savings. None covered all housing types.

Introduction

The Australian Institute of Family Studies (AIFS) was commissioned by the Department of Social Services to conduct a literature review on costs of children research. This review is intended to support the Child Support Expert Panel in their review of the child support formula, which defines how child support amounts are calculated for separated families. Understanding the costs of children is a key component as estimates inform the cost of children table used in the child support formula. The table calculates the cost of a child 'net' of Family Tax Benefit Part A (FTB-A) paid to the family using fixed percentages of income and income bands decided by the 2004-05 Child Support Taskforce and informed by commissioned Australian research.

The review was conducted from May to June 2024. This document summarises AIFS' approach and findings.

The objectives of the review were:

- to provide an update on any key methodological developments in costs of children research from 2005 to early 2024 in Australia and other OECD countries
- to identify and provide an overview of cost of children studies that estimate costs where children spend time in more than one household, the costs under different patterns of care, costs where child care is utilised, and costs for different housing tenure and housing types.

The review was designed to capture and analyse literature relating to the two objectives. To ensure timely delivery of this report, the number of documents for the literature review was capped at 34. More information about the search strategy is available in the next section. The findings are reported separately against each of the two review objectives. A discussion about the results concludes the report.



Method

Defining the costs of children

There are both direct and indirect costs associated with raising a child. Direct costs consist of explicit expenditures on children (e.g., the cost of food, clothes, schooling, and housing). Indirect costs are the ‘opportunity costs’ or ‘time costs’ of children (e.g., the impact of time use by parents with the addition of a child to a family). Much of the literature focuses on direct costs.

In line with Gray (2007), our review focuses on the measurement of direct costs. We excluded studies that only included the indirect costs of raising children.

We used the following definition for the direct costs of children from Bradbury (2014, p.1486) when selecting literature for inclusion in our review:

The amount by which total resources would need to be higher in the household containing the child in order for parental living standards to be maintained at the level attained when there is no child in the household.

Literature search and selection

The search strategy adopted in this review aimed to identify key publications and prior works that have been pivotal to quantifying the cost of raising children in Australia and other OECD countries between 1st January 2005 and 30th April 2024. The review included relevant articles, conceptual papers, position papers and reports by government agencies and peak bodies using multiple databases and information sources, including the AIFS library catalogue, Catalogue Plus international databases, Google Scholar and a basic Google search. Our search strategy is outlined in Table 1.

Table 1: Search strategy for the literature review

Domain	Keyword
1 (outcome)	“cost* of children” OR “cost* of raising children” OR “expenditure on children” OR “spending on children” OR “expenditure* on children” OR “child care” OR “housing”
2 (quantification)	calculat* (calculate or calculating) OR develop* (develop or developing) OR estimat* (estimate or estimating) OR model or quantif* OR “Budget Standards” OR “equivalence scale*”
3 (population)	“separated families” OR “separated parents” OR “separated households”

Our search strategy identified 104 papers which we then screened for relevance according to the objectives of this review.

We selected 30 papers that estimated the direct total cost of raising children, with the goal of informing child-related policy. In addition to the 30 papers selected from the literature search, we included four additional papers due to their relevance, outlined below:

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- One study that was prior to the search period (i.e. pre-2005) as it provided the basis for the most recent Australian estimates for the costs of children in shared care arrangements (Henman and Mitchell, 2001).¹
- One cost of children study that is an unpublished 2024 OECD working paper, which AIFS was aware of through the Expert Panel meeting, and was included due to its relevance and recency (Rapp and Thévenon, unpublished).
- Two additional published papers provided by DSS:
 - One study estimated costs associated for non-resident parents in the UK (Hill and Hirsch, 2024)
 - One study estimated household equivalence scales using Australian data (Breunig and Cobb-Clark, 2005).

The full set of studies selected for this review is in the References section of this report.

¹ In this report we have used the term “shared care” to include any arrangements in which the care and costs of children are shared between separated parents.



Findings

Key methodological developments in estimating costs of children

In his original review, Gray (2007) framed the approaches according to the question the method was seeking address:

- i. The needs question: How much income does a family with children need compared to a childless family, in order to attain a specific standard of living? For example, to be above a poverty line, or to attain a modest but adequate standard of living.
- ii. The expenditure question: How much do parents spend on their children?
- iii. The iso-welfare (or equivalent living standards) question: How much income does a family with children require to be as well off as a family with no children?

Our review found no new approaches. The recent literature groups the approaches according to the data they use, rather than the question they address. These are summarised in Table 2. The remainder of this section looks at how these approaches have evolved from 2005 to early 2024.

Table 2: An overview of the types of approaches used in the literature to estimate the cost of children

Type of approaches used	Input(/s)	What do they do?
Budget standards method:	(1) Expert opinions on the needs of children – “normative” data	Create baskets of goods for different family types that provides each family with the same standard of living and value each basket to estimate differences between family types
Approaches based on normative judgments and ‘baskets of goods’	(2) Focus groups with members of different household types to develop consensual view of needs	
	(3) Prices of household goods	
Self-reported economic wellbeing:	Self-reported (subjective) measures of economic wellbeing, such as the ability to afford certain goods and services, or satisfaction with income as a proxy for standard of living	Calculate the levels of income at which utility is equal across different families, using proxies of living standards from survey data
Approaches based on subjective measures of economic wellbeing, or proxies of living standards		



Expenditure method: Approaches based on consumption	(1) Expenditure survey data for different types of households	One set of methods seek to estimate actual expenditures on children for different sets of households.
	(2) Assumptions about the standards of living that can be made from consumption patterns	Another set of methods seek to estimate expenditure indirectly by making assumptions about standards of living from the data.

Sources: Bradbury, 2014; Social Metrics Commission, 2019; Rapp and Thévenon, unpublished.

Budget standards approach

The budget standards approach consists of creating a basket of goods for different family types that achieves the same standard of living across families. A range of approaches are used to determine the ‘needs’ of different families. Some approaches rely on expert judgments (e.g., nutritionists), some rely on qualitative research with members of the public to form ‘consensual’ budget standards, and others use a combination of both (Social Metrics Commission, 2019). Once the basket is defined, it can be valued with current prices, and the cost of different family types estimated.

The main purpose of budget standards is to provide estimates of the level of income required to maintain a certain standard of living. Policymakers can use these estimates to inform decisions including the setting of the minimum wage, foster care allowances and levels of child support (Bradbury, 2014). A key advantage of this approach for child support is that it compares income allocation by household type. Policymakers can use these budgets to estimate the cost of a child by taking the cost of a couple with one child and subtracting the cost of a childless couple, measured at the same standard of living.

Although these methods are well regarded in the literature, intuitive and used in many countries as a national poverty measure (Deeming, 2020), there are drawbacks. Firstly, extensive judgment is required to identify and price the goods and services that are included in the budgets in the first place (Rapp and Thévenon, unpublished). Secondly, data can quickly become outdated and frequent revisions of the budget standards are required to keep them relevant and current (Social Metrics Commission, 2019). Budget standards are also typically estimated for a specific set of family types, and it can be challenging to apply this approach to estimate how costs vary for complex family arrangements, for example, separated or blended families (Rapp and Thévenon, unpublished).

Internationally

In 2008, researchers in the United Kingdom (UK) developed a Minimum Income Standard (MIS) with the aim to create an evidence-based benchmark of what income people in the UK require to meet their material needs and participate in society (Bradshaw et al., 2008). They used a consensual approach; shifting from expert-led decisions to using focus groups with the public to inform decisions around needs of children. They also applied the Minimum Income for Healthy Living (MIHL) as the standard of living, which had been developed in the UK public health literature (Morris and Deeming, 2004, as cited in Bradshaw et al., 2008).

Bedford and colleagues (2023, p.2) provide the central idea underpinning the MIHL:

The basic idea is that the budgets should allow each individual to lead a fully healthy life in all of its dimensions, in their roles as family members, workers and consumers. The MIHL standard is thus designed to ensure that each individual is

able to achieve levels of consumption (of food, clothing, medications, transportation, personal care, and so on) and participation (in lifestyle, exercise and social activities) that are consistent with healthy living.

Annual estimates of the MIS have been published since this first study in 2008, the most recent in 2023.

The MIS method has been adopted and modified by other European countries, including Ireland, France and Portugal (Deeming, 2020). Other European countries with national budget standards include the Netherlands, Sweden, Finland, Belgium, Norway and Denmark. There is variation in how these budgets are constructed, which costs they include, the types of households represented, and how they have been applied in policy settings (Deeming, 2020). Typically, the budget standards are used as a benchmark to study the adequacy of minimum income protection and to measure poverty. The European Commission has also piloted the use of budget standards to develop comparable budgets across countries (Goedemé et al., 2015) as a way of monitoring the adequacy of income support across Europe.

In Australia

Budget standards have a long history in Australia. They were used to set the basic wage in 1907, and they are still used today to guide the setting of the minimum wage (Fair Work Commission, 2023).

Gray (2007) provides a history of the modern budget standards developed in Australia by the Social Policy Research Centre (SPRC) in the late 1990s. In our review, we found two recent updates of the Australian budget standards. The 2017 update (Saunders and Bedford) changed the living standards that had been historically applied to the budgets – the low cost and modest but adequate - to align with the MIHL developed in the UK public health literature. Two standards were developed, unemployed (and looking for work) and low income (minimum wage) individuals and families. The family types examined include singles living alone, couples living as the only adults in a household, and selected couples and single parents with primary school aged children. Saunders and Bedford published the explicit costs of children arising from this study in an AIFS Family Matters article (2018).

The 2023 update prepared for the Fair Work Commission (Bedford et al., 2023) updated the basket of goods and prices of goods to 2022 for low-income families only. The living standard was pitched above the minimum wage at a median 'low wage' income. It was also the first update in Australia conducted following the COVID-19 pandemic and reflected the shift in ways of living in a post-pandemic world (for example, the rise in online learning and working from home). The 2023 update published budgets for 11 low-income family types (see Tables 5 and 6 in Appendix 1).

Self-reported economic wellbeing method

Examples of self-reported measures of economic wellbeing include survey questions around economic strain, satisfaction with income, and ability to purchase a home. These survey responses can be used as a proxy for measuring and equalising standard of living across different household types. There has been limited Australian research using this method. Breunig and Cobb-Clark (2005) constructed equivalence scales for Australia using this approach and the HILDA longitudinal survey. The costs of children using this approach produced significantly higher costs of children than expenditure-based methods. Below, we outline recent international applications of this method.



Internationally

Our review found that this approach was more commonly reported in the European literature (Martin, 2017; Morawski, Kalbarczyk-Stęclik, and Miśta, 2017; Martin and Perivier, 2018; Rapp and Thévenon, unpublished). Two reasons noted for its popularity are:

- the standard of living is based on a household's own experience of economic wellbeing and may reflect lived experience better than a statistical measure
- survey data on economic wellbeing are often captured at more frequent intervals than detailed household expenditure data, which makes analysis more accessible.

This approach also has drawbacks. Using subjective measures of economic wellbeing to compare across households is challenging as different families may have different reference points when evaluating their own wellbeing. Instead of comparing their experience to that of others in society, they may be comparing to their own previous experiences, or to other people that they know (Social Metrics Commission, 2019). Another challenge is determining which factors should be controlled for when modelling subjective wellbeing against income.

Rapp and Thévenon (unpublished) observe that large households, at all income levels, experience more financial strain than smaller households. They use this observation to argue that it is 'appropriate to assess the cost of children, based on the differences in responses to the questions on financial ease attributable to household composition and potentially other characteristics of family living arrangements' (p.16). However, the Social Metrics Commission (2019) highlights that, despite the appeal of these approaches, 'difficulties in measuring utility directly mean that such approaches have not moved beyond the realm of academic usage' (p.32).

Expenditure methods

There are a broad range of methods that use expenditure data to estimate the economic cost of children. These methods seek to examine and estimate differences in household expenditure for households with and without children. Bradbury (2014, p.1490-1491) explains the challenges associated with this:

...this is not as straightforward as simply observing the expenditures on child-related goods. First, many goods (such as housing) contain substantial public components which are shared by all household members. Second, even where goods are close to being purely private (such as many foods which do not require preparation), they are typically purchased at the household level, and so individual consumption cannot be observed.

Some studies attempt to estimate expenditure directly. A simple approach consists of aggregating child-specific expenses (i.e., clothing, childcare, and education) and allocating a fraction of shared household expenses (i.e., housing, food and transportation) to children based on assumptions or other survey data. The United States Department of Agriculture (USDA) has been publishing estimates of the costs of children using this approach since 1960, with the most recent estimates published using 2015 data (Lino et al., 2017). Bonke and Browning (2011) modify the Danish Household Expenditure survey to ask respondents directly about how household goods are allocated between household members. They find that 'the average Danish family allocated 44% of total assignable spending on non-food durables and services to children' (p.F123).

There is also a broad class of methods that estimate expenditure indirectly using econometric modelling to estimate the economic cost of children. This set of methods requires

comprehensive expenditure data, the development of a standard of living estimator and a range of assumptions to model household expenditure and estimate the costs of children. These methods include the Engel method, that most other methods have built upon, the Rothbarth method, the iso-prop method, expenditure systems and demand systems. Gray (2007) provides an overview of these methods and their associated benefits and drawbacks.

Our review found three developments in the field of expenditure methods:

- **Semiparametric techniques.** These are less restrictive than their predecessors. They allow the relationship between income and expenditure share to be non-linear (Bütikofer, 2012). Although they are more flexible, drawbacks include a reliance on selecting 'homogenous subsets of households' (Dudel, Garbuszus and Schmied, 2021).
- **Non-parametric or counterfactual techniques.** These techniques are the least restrictive in their underlying assumptions. They seek to formalise the household sample selection by undertaking a matching process prior to estimating equivalence scales (Szulc, 2009; Dudel 2015). Their key drawback is that, due to their non-parametric nature, they do not produce point estimates, rather, they produce an interval of estimates (Dudel et al., 2021). This means that, instead of producing a single estimate for an equivalence scale, such as 1.5, this method will produce an interval, such as [1.2 to 1.7], which can be difficult to apply to a policy question. Dudel and colleagues (2021) suggest that this can be circumvented by estimating the geometric mean; however, they state that doing so can lead to 'potentially biased estimates' (p.1639).
- **Indifference scale techniques.** These techniques seek to challenge the assumption that households are a single decision-making unit. Chiappori (2016) estimates both economies of scale of additional household members, but also the transfer of resources within a household. Rapp and Thévenon (unpublished) suggest that the key drawback of this technique is the reliance on data that allocates expenditure to different family members, which is often not readily available.

Internationally

Dudel, Garbuszus and Schmied (2021) conducted a comparison of techniques to estimate equivalence scales (a metric for costs of children output – see Appendix 1 for more detail) using German expenditure data. They applied a set of 'theoretically and empirically grounded criteria' to assess the plausibility of the estimates produced across the methods (including the three above) and found that 'the more plausible estimates are based on demand systems or newer semi- and non-parametric techniques'. Table 7 in Appendix 1 contains the results of this comparison.

In Australia

Our review did not find any studies that used any of the newer expenditure method techniques to estimate the costs of children. Phillips and colleagues (2013) used the ABS' Household Expenditure Survey data to estimate the costs of children using the iso-prop method covered in Gray (2007). However, unlike the expenditure-based study conducted by Percival and Harding (2005) for the Taskforce, Phillips and colleagues (2013) included the costs of child care. Percival and Harding (2005) estimated that, for low-income families, the cost of three children amounted to 44% of family income, and 24% of income for high income families. Despite the inclusion of child care costs, Phillips and colleagues (2013) come to a similar conclusion. They found that low-income families spend around 41% of their income on their children if they have three children, and high-income families spend around 21% of their income.



A comparison of the approaches

Estimates of the cost of children arising from these different methods vary, and the choice of method can have a significant impact on our understanding of the needs of different families (Social Metrics Commission, 2019). A UK study examined the variation between estimates produced by expert scales (see Appendix 1: Equivalence scales and expert scales), by two sets of budget standards approaches and by one expenditure data approach (Social Metrics Commission, 2019). The authors found that, across the methods, compared to a single adult living alone (with a need of 1) the estimates of equivalisation factors for a couple with 2 children varied between 2.00 (one expert scale) and 2.68 (an expenditure approach). In Australian dollar terms, this is a difference of around \$200 a week. The authors argue that the size of this difference means that the choice of scale 'has a significant impact on our understanding of poverty' (Social Metrics Commission, 2019, p.23). Table 8 in Appendix 1 contains the estimates from this study.

In the most recent set of Australian budget standards, Bedford and colleagues (2023) compared the budget estimates produced for a range of families with low-income earners with predicted expenditures based on a linear regression of the ABS' Household Expenditure Survey (HES). They found that the budget expenditures are generally lower than the average predicted expenditures, 'pointing to the frugal nature of these budgets' (p.46).

The original literature review (Gray, 2007), and its update (Gray and Stanton, 2010), acknowledged this variation in estimates, and applied a method that takes the average across a range of studies. This approach aimed to replicate the approach taken by Whiteford undertaking a similar review in 1985. Our review did not come across any studies that directly applied this averaging approach. One Canadian study argued that, instead of averaging the results, the selection of method should be based on the question the method is seeking to answer (Bazarkulova, Duncan and Frankel, 2017). The authors of this study assert that the budget standards approach should be used for 'public policy purposes that include determining poverty thresholds, social assistance, child benefit amounts, or foster care remuneration' (p.26). They argue that both the transparent and consensual nature of budget standards mean that they are effective at measuring the needs of low-income households (Bazarkulova et al., 2017).

In his review of child support guidelines for the state of Wisconsin, Robb (2019) argues that the guiding principle of continuity of expenditure should guide the choice of method. This principle means that 'a child's standard of living should not change significantly because his or her parents are no longer living together' (Robb, 2019, p.2). Based on this principle, Robb argues that direct expenditure-based methods should be used to estimate the cost of children for child support guidelines. However, in his original literature review, Gray (2007) argues that, for separated families, continuity of expenditure is unaffordable for low- and medium-income families.

Summary

There is still no consensus on the best way to estimate the cost of a child. As Gray (2007) found in his original review, there are many methods active in the literature that use different data and different assumptions to estimate the cost of raising a child, and each method has its own benefits and limitations.

The budget standards approach is used widely in setting minimum wage levels and in measuring poverty, both in Australia and internationally. Since Gray's review (2007), budget standards (or reference budgets, as they are called in Europe) have become more embedded in

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European measures of poverty. Recent updates of the Australian budget standards incorporate developments from the European literature, including the use of consensual focus groups, and the application of the MIHL as the standard of living.

The use of self-reported measures of economic wellbeing are gaining in popularity in the European literature, however, they have not moved from academia into any official poverty or cost of children measures.

Expenditure-based approaches are still widely used to estimate the cost of children. Advances in techniques were found in the international literature, including semi-parametric, non-parametric and indifference curve models. We did not find any studies that applied these newer techniques to estimate the costs of children in Australia.

There continues to be ongoing discussion around the variation in the estimates produced by these different methods and whether one is more 'appropriate' or 'accurate' than the other. Budget standards typically produce lower estimates than expenditure-based approaches due to the focus on unemployed and low-income households.

Patterns of care, shared care arrangements, housing, and child care

The second objective of our review was to describe if, and how, the following elements are considered in the costs of children literature:

- costs of children related to patterns of care
- costs where the children spend time in more than one household
- costs of children related to different housing types
- costs where child care is utilised.

Our review did not identify any literature that estimated the costs of children related to different patterns of care; for example, parents sharing care between themselves within a household, and making use of supports such as outside school hours care. The rest of this section focuses on the other three factors identified in the literature.

Given that the costs of shared care across households, child care costs and housing costs were not explicitly considered in the original Gray (2007) literature review (and noted as a gap in the research by Gray and Stanton, 2010), we have included some historical (i.e. pre-2005) findings where they are referenced in the literature in our review.

Costs of shared care across households

Estimating the cost of shared care or the costs of contact for parents with lower levels of care is not straightforward. Some child costs can be directly attributed to parents using the percentage of time spent with the parent (for example, food). However, other items, such as the costs of a bedroom, furniture, and even clothing, need to be provided at both households. Therefore, the total cost of a child cannot simply be allocated between parents.

Our review found one Australian study and four international studies that have estimated the costs associated with shared care of children across households.

Australian studies

Henman (2005) provides the most recent Australian estimates of the cost of contact for non-resident parents using the budget standards approach. He found that children in separated families cost more, and costs for non-resident parents are disproportionately higher than the time spent with the child (Henman, 2005).

This builds on Henman and Mitchell (2001), who estimated costs of contact for durations of 15, 20 and 30 per cent of the year and found that:

the cost of caring for children through ongoing and regular contact for a significant, but minority, proportion of the year is considerably greater than a pro-rata proportion of costs of caring for children for 100 per cent of the year. This is because of the cost of infrastructure – such as bedrooms, furniture and toys – that non-resident parents typically provide in order to care for contact children. (p.497)

Henman (2005) estimated costs in shared care arrangements for households living at a modest but adequate living standard (where both parents work full-time) and a low cost living standard (where the resident parent doesn't work and the non-resident parent does work). The study estimated that where both parents worked, a non-resident parent with 20% contact time with

their child faced 38% of the cost of the child in 100% care with a sole parent' (Henman, 2005, p.17). This increased to 60% of the cost of the child when the resident parent was not working. Table 3 shows the full set of Percentage of Costs for different shared care arrangements estimated by Henman (2005). Table 9 in Appendix 2 provides gross cost estimates from this study.

Table 3: Cost of Children when Contact Occurs as a Percentage of Costs with 100% care, Various Contact Arrangements (June quarter 2004)

Household & Contact Level	Syd	Melb	Bris	Ade	Perth	Hob	Dar	Can	Weight Ave
Modest but Adequate - Both parents work full-time									
Resident parent (80) %	98%	99%	99%	99%	99%	99%	99%	99%	99%
Non-res parent (20) %	31%	41%	44%	38%	38%	39%	43%	44%	38%
Resident parent (50) %	69%	74%	75%	73%	73%	73%	75%	75%	72%
Non-res parent (50) %	68%	73%	74%	72%	72%	72%	74%	74%	71%
Low Cost — Resident parent not in the labour force; Non-resident parent employed									
Resident parent (80) %	99%	99%	99%	100%	99%	100%	99%	99%	99%
Non-res parent (20) %	56%	63%	66%	57%	56%	66%	59%	68%	60%
Resident parent (50) %	86%	88%	89%	87%	86%	89%	86%	89%	87%
Non-res parent (50) %	87%	89%	90%	88%	87%	90%	87%	90%	88%

Source: Henman (2005), p.17, Table 7.

International studies

Our review found three European studies (Martin and Périvier, 2018; Rapp and Thévenon, unpublished; Hill and Hirsch, 2024) and one study from the USA (Osborne, Wu and Benson, 2021) that estimated costs for children in shared care arrangements. Like Henman (2005), all studies found that non-resident children have a 'non-negligible' cost for both couple and single parent families.

Martin and Périvier (2018) used two expenditure approaches (a multi-linear regression and a non-parametric model) to estimate this cost and found that the biggest drivers of cost for non-resident parents were transport, leisure and culture, housing and clothing. Table 10 in Appendix 2 contains estimates from this study.

Osborne and colleagues (2021) build on the USDA's annual estimate of families' expenditure on children (Lino et al., 2017) to estimate expenditures on children in shared care arrangements in Texas, USA. Under the assumption that the non-resident parent cares for their child for 37% of the time, the authors estimate that the total cost of a child living across two households is 31% higher than a child living with married parents, and that the non-resident parent bears 43% of the total cost of raising the child. The authors argue that the Texas Child Support guidelines should be modified to reflect the cost of raising children across two households, stating that 'it is particularly important for determining the adequacy of states' child support guidelines, because in most circumstances it is preferable for a child to spend time in both households' (p. 56).

Rapp and Thévenon (unpublished) used the self-reported economic wellbeing approach to estimate the cost of a child based on the type of attachment a child has with a household. A household is classified into three categories based on (1) a child living with one or both parents, (2) a child who is a resident in the household but has a 'parent away', and (3) a child who is a

non-resident, mainly living with their other parent. They do not distinguish by the proportion of time the parent provides care to the child. The authors estimated that a couple with one resident child spend 94% more than a single-person household, and a couple with a child living in another household spend 87% more than a single-person household (Rapp and Thévenon, unpublished). Table 4 contains estimates of equivalence scales for separated and blended families arising from this study. The authors conclude that ‘it is therefore important not to ignore that families’ living standards also depend on how the needs of non-resident children are covered’ (p.21).

Table 4: Equivalence scales calculated for single parents and cohabiting parents separately, for the pooled set of countries and France, 2021

	Europe, pooled *		France	
	Couple	Single parent	Couple	Single parent
1 adult		1		1
2 adults	1.39	-	1.33	-
1 child(ren) with two parents	1.94	-	1.56	-
1 child(ren) parent away	1.91	2.65	1.55	2.15
1 non-resident (children)	1.87	2.58	1.44	1.91
2 child(ren) with two parents	2.69	3.73	1.76	2.58
2 child(ren) parent away	2.63	3.65	1.73	2.53
2 non-resident child(ren)	2.50	3.46	1.54	2.13

Note: Equivalence scales are obtained from subjective data. Weights of “standard” resident children correspond to adult weights, for children with parents in other households and children in other households weights are estimated in a separate model. Results obtained from pooling across countries with country fixed-effects except column 2. Sample restrictions: Only households with head between 25 and 64 and non-negative income are included, as well as single households, couples, couples with children (all <25 years old), single parents with children (all < 25 years old), only households with maximally one child. *Observations from Germany and the Czech Republic excluded.

Source: Rapp and Thévenon, unpublished, p.22, Table 4.

Hill and Hirsch (2024) use the UK’s MIS to estimate costs for non-resident parents. They conclude that ‘a single person needs to increase their budget by around a quarter to look after a school age child every other weekend and during holidays, and by around a sixth in the case of a pre-school child’ (Hill and Hirsch, 2024, p.9).

Costs of housing

Our review found that estimates of the cost of housing were included in four studies based on the budget standards approach and the expenditure approach. None of our studies referencing the self-reported economic wellbeing approach directly accounted for specific expenditure buckets, including housing.

Budget standards approaches typically used weekly average private housing rental costs to estimate the costs of housing and adjusted these for household size and location. Expenditure approaches typically collected data on actual expenditures on housing, including private rental

costs for renters and mortgage and interest repayments for owner-occupiers. It was not specified whether the studies treated mortgage repayments as savings or as a housing expense. Estimates were typically aggregated up into a single 'housing' line item and did not differentiate costs for different housing types.

Australian studies

Our review found two Australian studies that incorporated housing in their estimates of the cost of children.

The first was Bedford and colleagues (2023), who use a rental threshold approach to develop a set of separate housing budgets. They applied the following assumptions, as outlined on page 42 of the report (there was no mention of housing type other than private rental):

- 'Households are assumed to be living in dwellings rented on the standard private rental market (rented from a real estate agent).
- The number of bedrooms in their dwelling is based on the Canadian National Occupancy Standard with one exception. They did not follow this standard for couple-only households. For those households, the Canadian standard ascribes only 1 bedroom, but they assigned 2 bedrooms based on the wide prevalence of this housing pattern in Australia. With this adaption, they assumed the following number of bedrooms for each household composition: single people (1), couples (2), couples and single parents with one child (2), couples and single parents with two children (3).
- Rents were estimated for several points on the rental income distribution (30th, 40th and 50th percentiles) and for the capital cities and non-capital cities in each state. These are calculated using the 2021 Census, updated to August 2022 values using the growth in the rent component for the Consumer Price Index. All dwelling types are included in the estimation. Further, these represent actual rents paid across the population, rather than rents for newly rented properties (which have been rising more steeply in recent years).'

The second was the 2013 AMP.NATSEM cost of children study (Phillips et al., 2013). This study used data from the ABS Survey of Income and Housing (SIH) to estimate the cost of children. Although the SIH asked respondents about their housing expenditure disaggregated by rent payments, rates payments (general and water) and mortgage repayments, it is unclear whether mortgage repayments were treated as expenditure or as savings in this study. In Percival and Harding's expenditure-based study for the 2005 Taskforce, repayment of mortgage principal on the family home was treated as a saving, rather than an expense.

International studies

Our review found two international studies that incorporated housing costs into the estimates of costs of children.

The first study incorporated the costs of housing in a budget standards approach to measuring the costs of children (Padley and Stone, 2023). The Minimum Income Standard (MIS) in the UK estimates the cost of housing based on a set of assumptions that were informed by consensual focus groups about minimum housing needs. These assumptions were that:

- households with children will be able to access appropriate social housing
- in reality, many families will be reliant on private rental housing.

The budgets apply these assumptions and use either the average weekly rental cost for social housing or the average weekly rental cost for private rentals depending on the family scenario

and their labour force participation status. The costs of a mortgage, or costs for owner-occupiers, are not considered.

The second study showed how an expenditure-based study measured the cost of housing. Dudel and colleagues (2021) used German expenditure data to estimate costs, where spending is captured for 12 commodity groups, one of which is housing. They do not disaggregate estimates for housing, by housing type.

Costs of child care

The cost of child care is an important factor for parental employment decisions. Given the variation in child care systems and funding structures between countries, this section focuses only on Australian studies.

Australian studies

Our review found two studies that estimated the costs of child care as part of their cost of children estimates. These were the same two studies that estimated costs of housing (above).

Bedford and colleagues (2023) estimated the costs of child care for a child aged 6 years attending outside school hours care and holiday care, under a series of assumptions outlined on pages 36-37 of the report, including the assumption that all families with children are entitled to receive a Child Care Subsidy that reduces their out-of-pocket costs. However, limiting family types to families with school-aged children means that the families most likely to be using significant child care are not examined. Further, in the final budget estimates outside school hours child care costs were bundled together with education costs so the child care costs are not separately identifiable.

The second study is Phillips and colleagues' (2013) expenditure-based study. Like housing, the authors use the SIH to estimate the cost of child care, with data based on the 2009-10 SIH. The SIH has data on child care use, cost and subsidies, using both reported and modelled data. The authors estimated the lifetime costs of a child for three different families: low income, medium income and high income. The proportion of spending going to child care increased with family income. For a low-income family with two children, 1.4% of total lifetime child spending went to child care, for a medium-income family, this increased to 6.6%, and for a high-income family this was estimated at 8.3%. However, given changes to the Child Care Subsidy as well as ongoing increases in the workforce participation of primary carers of children, care should be taken in interpreting this older expenditure-based research for the cost of children including child care costs.

Summary

Our review found studies with estimates of costs of shared care across households, child care and housing types, but not for care patterns within households.

Each of the studies that estimated the costs of children in shared care arrangements or low levels of care with contact costs, used a different approach to produce estimates (budget standards, self-reported economic wellbeing and expenditure), and all came to the same conclusion; the cost of a child who is receiving direct care by two separated parents is higher than a child residing in an intact household.

All studies that used either a budget standards approach or an expenditure approach estimated the costs of child care and housing. Studies that used self-reported economic wellbeing approaches did not incorporate estimates of these costs.

Estimating the costs of children

Although different types of housing costs were incorporated in the studies in our review, the final estimates were typically aggregated into a single 'housing' line item. Studies using the budget standards approach generally used the weekly rental costs of private dwellings to estimate housing costs and varied the size of the property depending on the size of the different households. Some of these studies extended this to account for eligibility for social housing for low-income families. The expenditure studies typically used data that disaggregated household spending by rent and mortgage repayments. However, it was not clear if mortgage payments were treated as saving or expense, and in their final estimates they aggregated and reported a single housing line item.



Discussion

This review focused on research from 2005 to early 2024 on the costs of children. The focus of the research was to update the earlier literature review by Gray (2007) and look at costs in respect of patterns of care, shared care, child care and housing types in relation to the costs of children.

We observe that there is still no consensus on the best way to estimate the cost of a child. As Gray (2007) found, there are many methods covered in the literature that use different data and different assumptions to estimate the cost of raising a child, and each method has its own benefits and limitations.

The most common approaches remain the budget standards and methods using expenditure data to estimate parental expenditure on children by income level. We observed a rising popularity in international studies for the approaches that use subjective measures of economic wellbeing, but that this had not yet translated into any official poverty or cost of children measures. We only found one Australian study, from 2005, that applied this method.

Budget standards approaches are used in other OECD countries in setting minimum wage levels and in measuring poverty. In Australia, budget standards approaches are used to inform annual reviews of the minimum wage. Since Gray (2007), budget standards (or reference budgets, as they are called in Europe) have become more embedded in European measures of poverty and income adequacy. Recent updates of the Australian budget standards have incorporated developments from the European literature, including the application of the MIHL as the standard of living.

Expenditure-based approaches are still widely used to estimate the cost of children internationally. Newer techniques for these methods have emerged in the international literature, including semi-parametric, non-parametric and indifference curve methods. We did not find any studies that applied these newer techniques to estimate the cost of children in Australia.

There continues to be ongoing discussion around the variation in the estimates produced by these different approaches. Recent studies that compared estimates from the different approaches concluded that the selection of the method can have a significant impact on our understanding of the needs of different households.

Our review found studies that considered the cost of children in shared care arrangements, as well as studies that incorporated child care and housing costs. We did not identify any studies that estimated the cost of children experiencing different patterns of care within the same household.

Each of the studies that estimated the costs of children in shared care arrangements used a different approach to produce estimates. One used the budget standards approach, another used expenditure data, and a third used the subjective economic wellbeing approach. All came to the same conclusion; the cost of a child who is receiving direct care by two separated parents is higher than a child residing in an intact household, and the costs experienced by a non-resident parent are higher than the proportion of time spent caring for the child. There was variation in the estimates produced for the cost of a child for a non-resident parent. The methods are not directly comparable as the studies took place in different years and in different countries.

In relation to child care costs, given the high degree of variation in child care systems across countries, we only looked at how studies incorporated child care costs into their estimates for

the costs of children in Australia. Both of the studies we reviewed constructed child care costs based on the different family scenarios they were modelling. They used parental labour force status and income to estimate expected child care usage and cost, though only one reported child care results separately. That study, using the expenditure method, found that child care costs as a proportion of total lifetime child care spending increased as family income increased.

Although different types of housing costs were incorporated in studies, the final estimates were typically aggregated into a single 'housing' line item, so we were unable to determine the costs of children by housing type. The budget standards approach generally used the weekly rental costs of private dwellings to estimate housing costs and varied the size of the property depending on the size of the different households, with some extending this to account for eligibility for social housing for low-income families. The expenditure studies typically used household costs for rent, and it was unclear whether they treated mortgage payments as savings or as a housing expense. None covered all housing types.

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Appendix 1: An update of estimation methods

Household equivalence scales and expert scales

Household equivalence scales provide a standardised way to measure how the relative needs of households vary according to family size and composition. Equivalence scales are typically expressed as a ratio in comparison to reference household with a single adult. The reference household is assigned a value of 1, and each additional member of the household is assigned a value that ranges between 0 and 1, to account for the expected economies of scale of a household with more than one person. Equivalence scales are estimated using either the methods outlined in the Findings section of this review, or via expert input.

For example, there are two widely-used scales in international income distribution, poverty and inequality research, the OECD-modified equivalence scale and the square root scale. The OECD modified scale assigns a value of 0.5 to each additional household member aged 14 years and over, and a value of 0.3 to each additional child under the age of 14. The square root scale sets the equivalence scale for a household as the square root of the household size. Both scales were developed using expert input, with a view to using a single scale to compare poverty across countries. However, as noted by the OECD “there is no accepted method for determining equivalence scales, and no equivalence scale is recommended by the OECD for general use” (OECD, year unknown)). For further information see OECD (2013).

Table 5. Single and couple household budgets by budget area (\$ per week, excluding housing costs), estimated using Australian budget standards

	Single person, FT	Single-earner couple	Single-earner couple, 1 child	Single-earner couple, 2 children	Dual-earner couple	Dual-earner couple, 1 child	Dual-earner couple, 2 children
Food	82	165	202	256	165	202	256
Personal Care	19	36	36	33	37	37	50
Clothing & Footwear	13	19	29	39	25	35	44
Recreation	37	48	78	95	48	78	95
Household goods and services	104	120	144	152	126	146	154
Health	11	22	33	44	22	33	44
Transport	111	186	217	218	186	217	218
Education	0	0	23	52	0	65	137
Total (exc housing and discretionary)	377	596	762	888	608	814	998
Housing	426	561	461	461	461	495	495
Discretionary	89	99	93	90	84	111	106
Total (incl housing & discretionary)	891	1,155	1,317	1,439	1,154	1,420	1,599

Notes: Housing costs based on 40th percentile Sydney rents. Discretionary expenditures allow for alcohol consumption at healthy threshold, average tobacco expenditures, average gambling expenditures, a small allowance for eating out and a travel allowance.

FT = working full-time

PT = working part-time

Source: Bedford and Saunders, 2023, p.45, Table 10.

Table 6. Single parent household budgets by budget area (\$ per week, excluding housing costs), estimated using Australian budget standards

Budget area	Single parent, FT 1 child	Single parent, 1 child	Single parent, FT, 2 children	Single parent, PT 2 children
Food	120	120	173	173
Personal Care	26	25	32	32
Clothing & Footwear	22	22	32	32
Recreation	67	67	83	83
Household goods and services	123	123	133	133
Health	22	22	33	33
Transport	140	138	141	141
Education	61	43	128	92
Total (excl housing & discretionary)	579	559	756	719
Housing	461	461	495	495
Discretionary	96	87	109	100
Total (incl housing & discretionary)	1,136	1,107	1,359	1,313

Notes: Housing costs based on 40th percentile Sydney rents. Discretionary expenditures allow for alcohol consumption at healthy threshold, average tobacco expenditures, average gambling expenditures, a small allowance for eating out and a travel allowance.

FT = working full-time

PT = working part-time

Source: Bedford and Saunders, 2023, p.45, Table 11.

Table 7. Equivalence scales estimated by Dudel, Garbuszus and Schmied (2021) using modern expenditure and demand systems

Approach	Single adult	Couple, no children	Two adults, one child	Two adults, two children	Two adults, three children
<i>Engel's approach</i>					
Engel (food)	1.00	1.72	2.66	3.63	4.67
Rothbarth (adult goods)		1.00	1.29	1.23	1.22
<i>Expenditure systems</i>					
Extended linear	1.00	1.71	1.79	1.99	2.24
Quadratic	1.00	1.90	2.03	1.97	2.17
<i>Demand systems</i>					
Almost ideal	1.00	1.20	1.25	1.31	1.39

Estimating the costs of children

Quadratic almost ideal	1.00	1.58	1.76	2.11	2.26
<i>Semiparametric</i>					
Original loss function	1.00	1.22	2.40	2.10	1.16
Modified loss function	1.00	1.76	1.62	1.89	2.15
<i>Counterfactual (nonparametric)</i>					
Matching	1.00	1.66	1.90	2.12	2.38
Partial identification	1.00	[1.54;1.72]	[1.67;1.84]	[1.90;2.08]	[1.76;1.88]
<i>Expert scales</i>					
Square root scale	1.00	1.41	1.73	2.00	2.23
Modified OECD scale	1.00	1.50	1.80	2.10	2.40

Dudel, Garbuszus and Schmied (2021), p. 1652-1,653, Table 8. See the paper for detail about each approach.

Table 8. A comparison of equivalence scales, conducted by the UK's Social Metric Commission in 2019

Family type	OECD modified	OECD modified (after housing costs)	OECD modified (after housing and childcare)	McClements* (after housing costs)	Square Root	US Supplemental
Single adult	1.00	1.00	1.00	1.00	1.00	1.00
Couple	1.50	1.72	1.72	1.82	1.41	1.41
Couple one child	1.84	2.14	2.18	2.25	1.73	1.90
Couple two children	2.18	2.56	2.62	2.68	2.00	2.16
Couple three children	2.52	2.98	3.12	3.11	2.24	2.40
Lone parent one child	1.34	1.42	1.72	1.43	1.41	1.51
Lone parent two children	1.68	1.84	2.20	1.86	1.73	1.79
Lone parent three children	2.02	2.26	2.71	2.29	2.00	2.06

Source: Social Metrics Commission, 2019, p. 22, Table 5. Details on each of the scales used here can be found in the original study.

Appendix 2: Costs of children in shared care arrangements

Table 9: Gross Costs of a 6 Year Old Child, Separated Households, Various Contact Arrangements (June quarter 2004, \$'000/year)

Household Contact Level	Syd	Mel	Bris	Ade	Per	Hob	Dar	Can	Weighted Average
Cost of child - Post separation — Modest But Adequate — Both parents work full-time									
Resident parent (100%)	9.27	11.42	10.98	9.51	10.13	10.65	10.80	11.95	10.36
Resident parent (80%)	9.13	11.28	10.83	9.39	9.98	10.51	10.64	11.80	10.21
Non-resident parent (20%)	2.87	4.67	4.86	3.65	3.88	4.16	4.63	5.21	3.95
Total (80%/20%)	12.00	15.95	15.70	13.04	13.86	14.67	15.26	17.01	14.17
Resident parent (50%)	6.42	8.42	8.24	6.97	7.35	7.78	8.06	8.94	7.51
Non-resident parent (50%)	6.33	8.28	8.16	6.82	7.25	7.64	7.96	8.80	7.40
Total (50%/50%)	12.74	16.70	16.40	13.79	14.60	15.43	16.02	17.74	14.91
Cost of child - Post separation — Low cost — Resident parent not in the labour force; Non-resident parent employed									
Resident parent (100%)	5.09	5.77	6.21	4.96	5.03	6.30	5.45	6.83	5.49
Resident parent (80%)	5.05	5.74	6.17	4.95	4.99	6.28	5.40	6.78	5.46
Non-resident parent (20%)	2.85	3.63	4.09	2.85	2.83	4.15	3.20	4.63	3.32
Total (80%20%)	7.90	9.37	10.26	7.80	7.82	10.43	8.60	11.41	8.78
Resident parent (50%)	4.36	5.09	5.52	4.31	4.32	5.62	4.71	6.10	4.79
Non-resident parent (50%)	4.40	5.15	5.56	4.36	4.36	5.68	4.76	6.16	4.84
Total (50%50%)	8.76	10.23	11.08	8.67	8.68	11.31	9.47	12.25	9.64

Source: Henman, 2005, p.15, Table 6.



Table 10: Estimates of additional expenses of non-resident single parents relative to single people, based on the two expenditure methods used, by Martin and Périvier (2018)

Consumption item	Estimation by multilinear regression of consumption expenditure (Euros per year)		Estimation by matching of differences in expenditure by consumption item (Euros per year)	
	Mean	95% confidence interval	Mean	95% confidence interval
Food	- 468*	[- 970, 34]	- 703*	[- 1,549, 143]
Drinks, tobacco, alcohol	- 133**	[- 380, 114]	- 344	[- 842, 154]
Clothing	+554*	[- 123, 1,231]	511	[- 230, 1,253]
Housing, water, gas, electricity	+787*	[- 76, 1 651]	+972*	[- 64, 2006]
Furniture and household items	212	[- 561, 984]	+ 605*	[- 120, 1,330]
Health	- 21	[- 338, 295]	76	[- 63, 415]
Transportation	+ 2,883*	[-54.5790]	2,208	[- 1200, 5616]
Communication	95	[- 30, 219]	52	[- 120, 224]
Leisure and culture	+ 2,495**	[60, 4,429]	+ 2,033*	[- 852, 4 917]
Education	17	[- 19, 54]	28	[- 61, 117]
Restaurants and hotels	479	[- 175, 1 134]	+ 383*	[- 610, 1,377]
Miscellaneous	+946*	[- 234, 2 127]	+ 1,102*	[- 194, 2 399]
Total consumer spending	+7,846***	[2286, 13728]	+ 6,924***	[198, 13,650]

Source: Martin and Périvier, 2018, p.329, Table 7.