NDIS Review – Costs, benefits and frameworks

Final report

20 September 2023

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Foreword

Taylor Fry and the CIE are happy to provide our report on the NDIS costs, benefits and potential future performance frameworks.

The NDIS has proven transformational for many people, who have access to supports and services that were not possible under legacy schemes. Properly understanding these benefits, with the ability to compare them to associated cost of supports, is an important question.

We also acknowledge that articulating the full benefits of the scheme, while important, is hard to do. We recognise that many supports provided today will improve outcomes in the future, consistent with the insurance principles of the scheme; these benefits ultimately require long time periods to observe and are hard to measure. In other cases, the benefits are more immediate but difficult to measure due to data or definition issues. We hope that this report helps lay out these challenges with useful principles for improved data and frameworks.

The scope of the work is broad, and we have attempted to reflect this in our approach to looking at costs and benefits, with a significant amount of work done to explore different domains. In these areas, particularly benefit quantification, the potential future work remains large. We have attempted to flag areas where future work may further complete the picture of how the NDIS is impacting the lives of people with disability.

We trust that the work will assist the work of the broader work of the NDIS Review as it considers to how best to support Australians with disability.

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Glossary

Term	Definition
ABS	Australian Bureau of Statistics
ADS	Australia's Disability Strategy
AEDC	Australian Early Development Census
AFSR	NDIS Annual Financial Sustainability Reports
AHDN	Additional health and developmental needs
AIHW	Australian Institute of Health and Welfare
AN-ACC	Australian National Aged Care Classification
ARD	Adjusted Risk Difference
ARR	Adjusted Risk Ratio
ASCOT	Adult Social Care Outcomes Tool
BCC	Basic Community Care
CI	Confidence interval
COPM	Canadian Occupational Performance Measure
Counterfactual	A view of the world without the NDIS
COVID-19	Infectious disease caused by the SARS-CoV-2 virus
CRPD	UN Convention on the Rights of Persons with Disabilities
DES	Disability Employment Services
DRC	Disability Reform Council
DSP	Disability Support Pension
DSS	Department of Social Services
ECEC	Early Childhood Education and Care
GAS	Goal Attainment Scaling
GGFCE	General Government Final Consumption Expenditure
GSS	ABS General Social Survey
HACC	Home and Community Care
HCP	Home Care Package
HILDA	Household, Income and Labour Dynamics in Australia
IEP	Investment Effectiveness Program
IHACPA	Independent Health and Aged Care Pricing Authority
KPI	Key Performance Indicator
Legacy schemes	Disability support programs that existing in Australia prior to the rollout of the NDIS – most importantly those funded under the National Disability Agreement
LoF	Level of function
MADIP	Multi-Agency Data Integration Project
NDA	National Disability Agreement
NDDA	National Disability Data Asset
NDIA	National Disability Insurance Agency
NDIS	National Disability Insurance Scheme
OECD	Organisation for Economic Co-operation and Development
PC	Productivity Commission
PBS	Positive Behaviour Support
PMC	Department of Prime Minister & Cabinet
PSS	ABS Personal Safety Survey
QALY	Quality-Adjusted Life Year
RoGS	Report on Government Services
SBB	Newpin Social Benefit Bond
SCHADS	Social, Community, Home Care and Disability Services
SDA	Specialist Disability Accommodation
SDAC	ABS Survey of Disability, Ageing and Carers
SIL	Supported Independent Living
UNCRPD	United Nations Convention on the Rights of People with Disability

Executive summary

Introduction

The National Disability Insurance Scheme (NDIS) aims to improve the wellbeing of Australians by providing reasonable and necessary supports for people with disability and supporting them to achieve their goals and better participate in the community and economy. In recent years the Scheme has continued to grow in coverage and costs: at 31 March 2023 there were just over 592,000 people in the Scheme, and the 2023-24 Federal Budget projects 2022-23 Scheme costs to be $35.1 billion, with average annual cost growth of 13% over the following three years.

The NDIS Review has been commissioned to review the operation of the NDIS and the market for disability services and workers. The Terms of Reference[1] are relatively broad; this report focuses on the aspects of effectiveness and sustainability of the Scheme. Taylor Fry ('We') has been engaged by the NDIS Review Secretariat ('Secretariat') to:

- Estimate the **net costs** of the NDIS, where we examine spending after allowing for the disability support programs it replaced ('legacy schemes') plus cost substitution effects, where NDIS spending has led to reduced spending for other government services.
- Estimate the **net benefits** of the NDIS, compared to outcomes under legacy schemes, to the extent possible with current data. This includes a broad view of social and economic benefits across a range of domains.
- Assist with the development of a **measurement framework**, exploring Scheme outcomes, benefits and investments. The revised framework will improve the ongoing monitoring and evaluation of the Scheme's effectiveness.

Key considerations in estimating costs and benefits

Estimation of costs and benefits is fraught – in part because of the complexity but also because design choices can significantly affect the calculation and presentation of results:

- We only estimate **incremental** benefits and compare those to incremental cost increases. **Gross** benefits (difference in outcomes compared to a world where there are no government-funded disability supports) will be much larger. The vast majority of participants report the NDIS has 'helped' in one or more areas. See section 5.3.8 for further discussion of gross benefits.
- One of the largest cited benefits of the scheme is better access to disability supports – more supports for more people. Our approach does not put an intrinsic value on this access, rather looking at subsequent benefits such as improved life satisfaction, health and employment outcomes.
- The relationship between costs and benefits over time is complex. We focus on a simple one-year window – the costs and benefits visible in 2022-23. However, in reality:
  - Many benefits visible in 2022-23 will relate to supports provided in previous years.
  - Current spending potentially improves outcomes in future years. In some cases, the timeframes of impacts are greater than the current duration of the Scheme (for example, improved year 12 attainment and employment for children given early intervention).

  These two effects may partly offset, but it seems plausible that the second effect is larger, given the relatively short duration of the Scheme and the large number of children receiving support with an emphasis on early intervention. We do not attempt to model this dynamic. We do note that one form of future benefit is reduced need for supports, and we have found no evidence of increased supports leading to lower payments in later years.

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[1] https://www.ndisreview.gov.au/about/terms-of-reference

- Counterfactual legacy costs are ultimately artificial. While the relatively lean growth in funding in this scenario (compared to NDIS cost growth) reflects the trends in legacy schemes, it is easy to believe that gaps in coverage and supports would have been untenable to maintain through to 2022-23 and then on to 2026-27. See Section 3 for further discussion.
- We do not estimate the substitution effects related to NDIS costs that have replaced pervious household and charitable spending on disability supports, nor the value of unpaid care that has been replaced by formal paid care. These components are likely to be substantial – see Section 4.3.2.
- Our modelling allows for disability group and level of function bands since expected outcomes vary significantly across the Scheme population. However, recorded level of function varies significantly over time – more so than we would reasonably expect. Fully accepting reported falls in level of function could lead to overstated benefits, and so we have fixed level of function scores to control for this – see Section 2.2.
- We include recognition of non-market benefits, most prominently a dollar value attached to improvements in subjective wellbeing. This is compatible with the Productivity Commission's original view that subjective wellbeing would be the largest benefit of the Scheme, but we recognise that approaches to valuing improved wellbeing can vary significantly.
- There are a range of 'unmeasured' benefits, where data availability or time restrictions have not allowed us to make estimates. Key areas are listed in the 'Reliances and limitations' subsection of the Executive Summary.
- We do not include the economic costs associated with the deadweight loss of taxation in our main presentation, which focuses on actual NDIS spending on disability supports. This feels the most natural measure when comparing to benefits. However, costs would be larger if the deadweight loss of increased taxation is recognised. Conversely, the Productivity Commission (2011) looks at only the deadweight loss, giving much lower net costs. While we do not regard this approach as appropriate, we do explore in the report – see sections 4.2.2 for further discussion and 6.1.2 for alternative estimates.
- Some design decisions have been made to avoid double counting. For example, we see evidence of reduced financial distress among households with a NDIS participant. While it is conceivable to put a utility or other benefit on this shift, it potentially overlaps with improvements in life satisfaction; rather than count both with adjustment, we have prioritised life satisfaction benefits.
- There are alternative approaches for estimating benefits that we have judged less suitable:
  - Fiscal multiplier impacts, where a dollar spent in disability support is assumed generate have further downstream economic activity
  - Attaching benefits to a larger disability support subeconomy
  - Additional benefits that derive from the redistributive nature of the NDIS (since households with people with disability tend to have lower incomes).

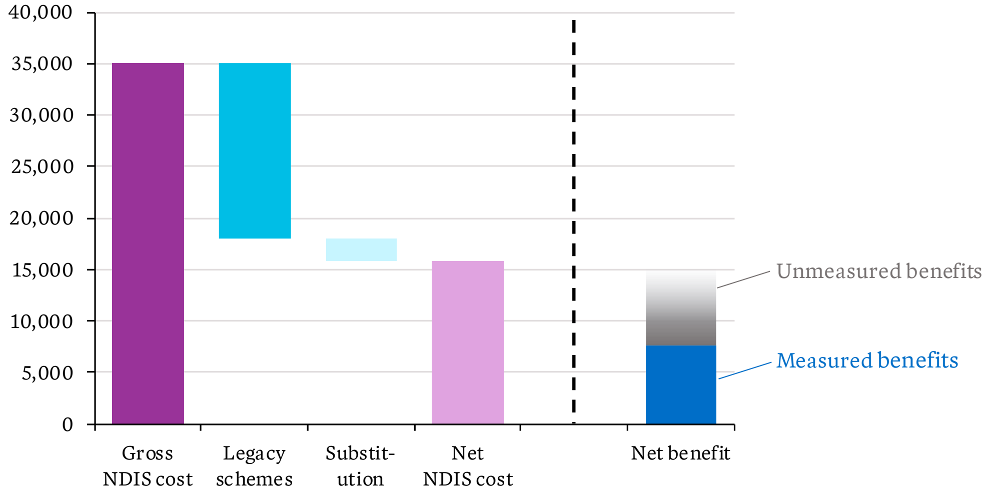
  Our full commentary on why we do not recognise these benefits is given in Section 5.3.8.

Finally, we observe that the NDIS is subject to a high degree of scrutiny – more so than many other government-funded schemes. Some of this increased accountability is due to its size and cost growth, but much of it is by design; the NDIS Act (2013) sets out principles such as the right to participate in and contribute to social and economic life, and so it is appropriate to review progress against some of these principles. Insurance principles of examining long-term costs and monitoring financial sustainability similarly warrant review of Scheme performance. The uniqueness of the NDIS means there are not equivalent estimates of costs and benefits for other government programs, so we cannot immediately judge the relative merit of the NDIS against other programs. In blunt terms, Scheme benefits being lower than costs does not automatically mean the Scheme is operating poorly.

Overall results – estimates of net costs and benefits of the NDIS

Figure 1 compares net NDIS costs with net benefits. The left of the chart illustrates the decomposition of gross NDIS costs into legacy scheme, substitution (from government spending) and net NDIS cost components. Measured scheme benefits are shown on the right.

Figure 1 – Costs and benefits of the NDIS in 2022-23 ($ million)



Gross NDIS costs are estimated to be $35.1 billion for the 2022-23 year, consistent with 2023-24 Federal Budget figures. We estimate legacy schemes would have cost $17.1 billion and substitution effects $2.2 billion, leading to net NDIS costs for the 2022-23 year are estimated to be $15.8 billion. Measured net benefits of the Scheme are $7.6 billion[2]. About five-sixths of this benefit relates to non-market benefits (improved subjective wellbeing for participants and their family/carers).

Figure 1 does **not** include the operating expenses of the NDIS. We estimate gross costs for 2022-23 to be $1.8 billion, and the net costs (increase compared operating costs of the legacy schemes) of $1.2 billion – see Section 4.2.7.

Our measured benefit estimate is most likely an underestimate of broader benefits. Some longer-term benefits (for example, increased educational attainment and employment for children assisted early in their lives) are not yet directly observable. Other benefits we have not attempted to measure due to data or other limitations. We expect that benefit measurement will become easier over time with improved data, outcomes measurement and longer time windows.

We discuss each of the above components of Figure 1 in the following sections.

Estimation of legacy scheme costs

Figure 2 illustrates historical (blue columns) and projected legacy scheme costs (blue line).

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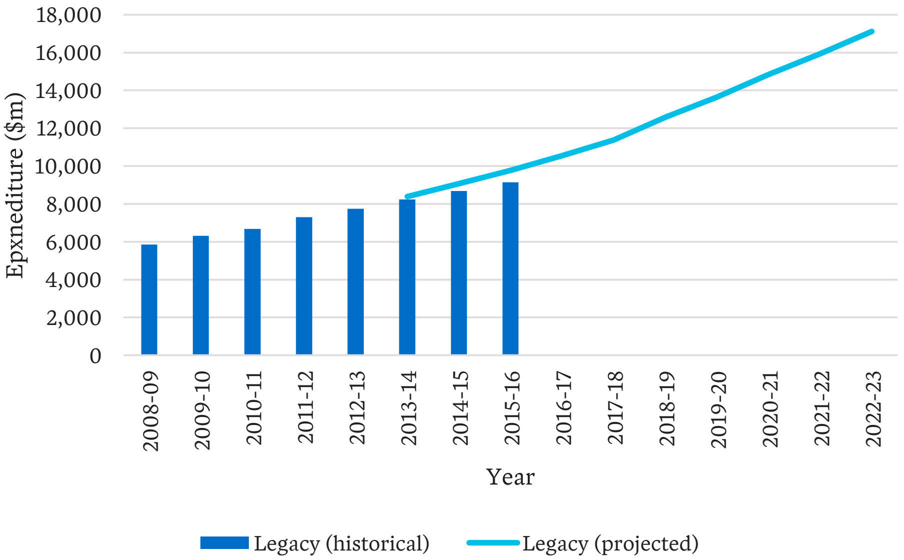
[2] While this is an estimate for the 12 months to March 2023 (1 April 2022 to 31 March 2023), we have applied directly to 2022-23 (1 July 2022 to 30 June 2023) for comparability, without inflation.

Figure 2 – Projection of legacy costs



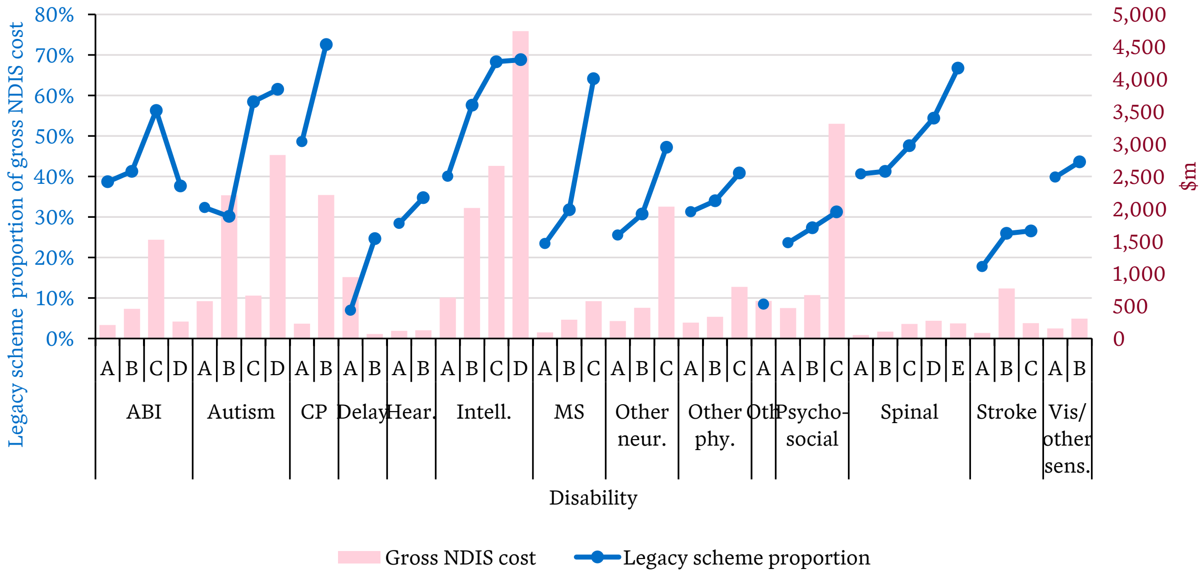
Legacy costs span disability support programs that were discontinued or substantially reduced after the NDIS rollout. The largest component is expenditure under the National Disability Agreement (three quarters of the total), with additional contributions from other programs such as Home and Community Care, Aids and appliances, and early intervention programs such as Helping Children with Autism.

Legacy costs are estimated at $5.8 billion in 2008-09 (largely based on Productivity Commission data) growing to $9.1 billion in 2015-16. We assume that total legacy costs would have grown at an average rate 6.5% p.a. and by 2022-23, the legacy costs are projected to be $17.1 billion. This rate is consistent with prior trends, with roughly half relating to increased numbers of people supported and the remainder increasing costs per person. Full details of the methodology and data sources are provided in section 3 of our report.

We have also examined how the coverage and average support level changed for participants under legacy schemes when they transitioned to the NDIS. Figure 3 shows gross NDIS costs (pink columns) and the fraction of costs we estimate would have been covered under legacy programs (blue markers). These are segment-level results, where we have divided the NDIS population into 41 segments cased on combinations of disability group and level of function (aligned with NDIS practice).

On average, estimated legacy costs are almost 50% of gross NDIS costs. Within each disability group, legacy schemes represent a higher proportion of gross NDIS costs for lower level of function segments. That means groups with higher level of function have seen larger relative increases in funding under the NDIS. Relative funding increases are also larger for some disability groups, such as Delay, Psychosocial and Stroke-related disabilities.

Figure 3 – Gross NDIS cost by segment and proportion covered under legacy schemes



Notes: Disability groups are split into level of function subgroups, which are slightly aggregated versions of those used in NDIS financial modelling. Segment A represents highest level of function (highest LoF) for each disability group.

Substitution effects

We have estimated the effect of substitution, where NDIS spending reduced or replaced previous government spending on people with disability. Table 1 shows our estimate of $2.2 billion split by source of substitution. We have also estimated a potential upper bound for the substitution impact using different assumptions to illustrate the uncertainty. This shows, under more generous assumptions, substitution of government spending could be as high as $3.9 billion.

Section 4.2.7 provides full details on our approach, limitations and uncertainty.

Importantly, we do **not** attempt to estimate the substitution from private spending to government spending, where households that previously paid for disability supports now how it funded through the Scheme. Similarly, NDIS costs may have substituted for previous charitable spending and the work of not-for-profits. We believe these would be a material figure.

Table 1 – Summary of substitution effects that impact the net cost of the NDIS

Substitution effect	**Estimate for cost over year to March 2023 ($m)**	**Potential upper bound ($m)**
Residential aged care – younger people	408	598
Residential aged care – older people	66	289
Home care packages	336	672
Palliative care	2	12
Housing and homelessness	92	233
Healthcare costs	292	586
Early childhood and positive behaviour supports	n/a	n/a
Justice	n/a	n/a
School transport	162	243
Personal care in schools	174	232
Participants with chronic health conditions	677	1,004
Attendant care, allied health and other therapy	n/a	n/a
Total	**2,209**	**3,870**

Net benefits

Table 2 summarises our estimate of net benefits for the year to 31 March 2023. The term 'net' refers to our focus on measurable improvements since entry into the NDIS – so in addition to supports under legacy schemes. Total estimated benefits, of those components attempted, are $7.6 billion:

- About 85% of benefits are non-market (that is, not visible as actual dollars in the economy), related to improved life satisfaction for scheme participants and their family and carers. This is not altogether surprising – improved wellbeing is arguably the key reason for providing supports and the largest impact identified by the Productivity Commission. However, the figure relies on an assumed dollar quantification for life satisfaction scores.
- Of the $1.0 billion in identified market benefits, three quarters accrues to government in the form of lower hospital costs, higher taxes and lower welfare payments. The remaining quarter relates to increased personal income for participants and their carers.
- Zeros in the table indicate where we have searched for benefits but not found them. For instance, we have not found evidence of improved school readiness or Year 12 attainment on available data; benefits such as these may emerge over longer time periods.
- We see some evidence of greater benefits for groups less well supported under legacy schemes. For example, the improvement in participant employment is greater for participants who did not transition from legacy schemes.
- Some modelling of outcomes has been done where we have not monetized out of concern of double counting or lack of evidence on economic implications. One example is access to suitable transport, which shows good improvement with time in scheme for those requiring support but does not have a specific benefit recognised. This is marked 'n/a' in the table.

Section 5 provides full details on our analysis of each outcome and quantification of corresponding benefit.

Table 2 – Summary of economic estimates of benefits for the year to 31 March 2023

Benefit	**Market benefits, Households ($m)**	**Market benefits, Government ($m)**	***Total market benefits ($m)***	**Non-market benefits, households ($m)**	**Total ($m)**
Health & Wellbeing					
Mortality improvements				0	0
Improved physical health				0	0
Reduced hospital use		625	*625*		625
Participant life satisfaction				4,255	4,255
Carer life satisfaction				2,259	2,259
Employment and financial security					
Higher participant employment	29	22	*51*		51
Higher participant life satisfaction from employment				22	22
Higher carer employment	250	90	*341*		341
Increased hours or wages – participant	0	0	*0*		0
Increased hours or wages – carers	0	0	*0*		0
Inclusive homes & Communities					
Higher satisfaction with housing	13	2	*15*		15
Access to transport	*n/a*	*n/a*	*n/a*		
Community participation	*n/a*	*n/a*	*n/a*		
Safety, rights and justice					
Improved safety-participants	0		*0*		0
Improved safety – carers	0		*0*		0
Education and learning					
Improved school readiness	0	0	*0*		0
Improved Year 12 attainment	0	0	*0*		0
Total	**292**	**739**	***1,032***	**6,536**	**7,568**

The uncertainty of benefits estimation is somewhat greater than costs, explored in Section 5.2.2. For example, the largest component is participant life satisfaction at $4,255m. Using our lower estimate for impact and a lower assumption for the monetisation of life satisfaction gives benefits of $1,842m, less than half our point estimate; similarly, an indicative high estimate for the component is $6,370m.

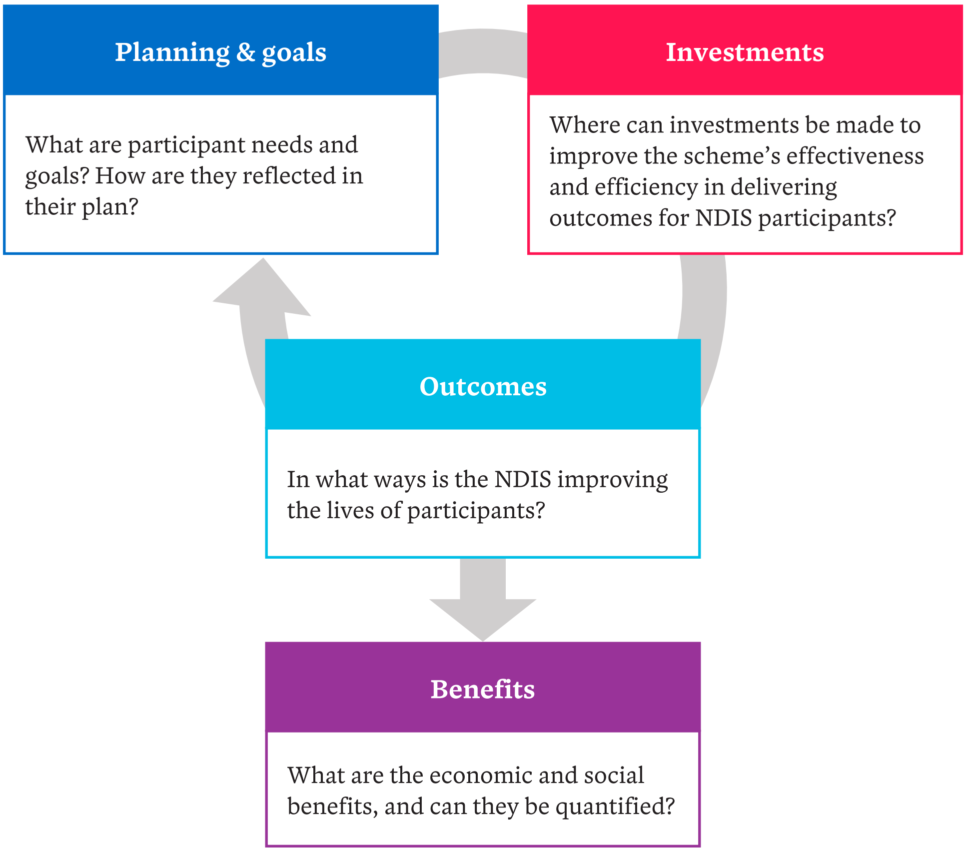
Future measurement framework

The nature and design of the NDIS warrants ongoing measurement. The NDIS Act (2013) notes the object of the Scheme as supporting the independence and social and economic participation of people with disability, and section 4 sets out principles such as the right to participate in and contribute to social and economic life. This aligns with broader aims for supporting people with disability such as Australia's commitments under the United Nations Convention on the Rights of People with Disability. An outcomes framework, plus surrounding enablers, ensures this progress against these principles to be measured.

There are potential areas for improvement in the way outcomes and benefits are measured in the Scheme and how these relate to Scheme goals and supports. This view stems from the review of comparable frameworks (both in Australian and overseas) as well as expert consultations.

We suggest a future measurement framework based around four components, given in Figure 4.

Figure 4 – Summary of the measurement framework components



Planning & goals

What are participant needs and goals? How are they reflected in their plan?

Investments

Where can investments be made to improve the scheme's effectiveness and efficiency in delivering outcomes for NDIS participants?

Outcomes

In what ways is the NDIS improving the lives of participants?

Benefits

What are the economic and social benefits, and can they be quantified?

The four components are related but distinct:

- Effective **planning and goals** are key to understanding how well a package of supports is tailored to participant needs.
- The **investments** component recognises the role supports play – particularly capacity building and capital spending – in bridging the gap between goals and outcomes. Building the evidence base around effective supports will enable the Scheme to become more efficient and effective over time. The concept applies at both a participant level (better interventions) and at a Scheme level (understanding how best to improve outcomes through supports for different cohorts).
- Good **outcome measurement** remains vital to ensure the Scheme is delivering for participants and their carers.
- Improved outcomes can be recognised as **benefits**. We expect the Scheme to deliver a broad range of benefits, and we explore many of these in our report.

The first three components naturally form a cycle, focused on participants and their carers. As outcomes are realised, participant goals and plans can be reviewed, which in turn leads to different investments.

Our advice on a future measurement framework centres on the following principles (not in priority order):

1. **There is value in aligning a framework with existing NDIS and Australian Disability Strategy (ADS) Outcomes Framework.** This will enable the future framework to leverage the advantages of existing frameworks. The NDIS outcomes provide a longitudinal series since Scheme entry and are already incorporated in the ADS, while there is significant government and stakeholder buy-in for the ADS. We envisage the vast majority of future outcomes coming from the existing set of NDIS and ADS lists. Consistency enhances flexibility, comparability and makes good use of the existing consultations undertaken.
2. **Outcomes for carers and family are needed as part of the framework.** Some outcomes (such as financial wellbeing) are best considered at a household level. Also, benefits will accrue across the household (for example, subjective wellbeing and workforce participation are likely to improve for carers if the person with disability has appropriate disability supports). The NDIS outcomes framework already has a strong emphasis on carers and families.
3. **There is value in having outcomes that can be tied to economic benefits, including those that are broader than core NDIS services.** For example, the NDIS outcomes framework and ADS can be improved by including measures to consider child protection, justice (in the form of reduced offending), housing and homelessness and mortality and morbidity. While many aspects of these are outside of the Scheme's direct influence, we still believe disability supports can improve outcomes across a broader range of areas and the principle ensures a more holistic picture.
4. **Improved data linkage offers significant opportunities for improved outcome measurement and benefit estimation.** For example, initiatives such as the Multi-Agency Data Integration Project (MADIP) and the National Disability Data Asset (NDDA) can provide easier collection of data, easier comparisons to the broader population and direct estimation of related benefits, such as welfare and income changes.
5. **There is significant opportunity in building and using evidence around how NDIS spending relates to outcomes.** It is feasible to build evidence for how different types of supports (particularly within capacity building and capital categories) enable outcomes and achievement of participant goals. This would assist with value for money assessment, particularly for capacity building and capital investment spending. This requires significant investment around data, research and evaluation.
6. **Participant goals are a central part of Scheme design.** Goals are a natural way to understand need and construct an appropriate package of supports. We believe this means a greater emphasis on setting goals, rather than less. We believe this is important for capacity building and capital supports, but less important for 'core' disability supports.
7. **An expanded framework requires a commitment to use it to drive activity and improvement.** Evidence on outcomes and impact needs to feed back into policy, in turn affecting the design of packages and the guidance given to participants and planners. If there is no commitment, change is unlikely to occur.
8. **Outcomes measurement and goal setting must be underpinned by good data to understand participant needs.** Improvements and greater consistency in objective measurement of participant function and need will enhance the ability to deliver on other parts of the measurement framework and research on improvement to participant outcomes more generally.

Our views on an improved measurement framework do **not** represent recommendations for a final state. Rather, we expect this to input into the NDIS Review, which will in turn drive further development and reform. A final framework would include broader consultation, particularly with people with disability.

Reliances and limitations

We acknowledge a range of reliances and limitations in our work:

- For estimating **gross NDIS costs**, we have relied on costs projections from the NDIA that underlie the 2023-24 Federal Budget announcement. The Budget included a range of measures leading to significant reductions in futures costs compared to the November 2022 interim projections. We have not reviewed the detail or likely impact on these budget measures, but the forecasts are adopted for consistency.

- For estimating the size of **legacy schemes** in the absence of the NDIS, there may be some additional disability-related spending not included in our estimates due to a lack of information or data on these programs.
- For **substitution effects**, the largest limitation is that we have not attempted to estimate substitution from non-government spending on supports that then switched to the NDIS, and the switch from informal to paid care. We are not aware of data or research that enable us to determine the extent of this substitution.
- For **benefit estimation**, there are several limitations:
  - Estimates are made using the data available. Improved data, such as greater availability and use of linked data will increase the ability to measure benefits.
  - Our analyses have implicit assumptions around how we estimate outcomes under legacy schemes. Many benefits are estimated relative to participant's status at their baseline review, at Scheme entry. This may not be a true reflection of their wellbeing prior to entry into the Scheme.
  - Many benefits are longer-term, flowing from upfront spending and early intervention. We have not included estimates for longer-term benefits without clear evidence, and so do not currently capture the 'investment' dynamic that is part of the Scheme design.
  - Figure 1 shows a notional component of 'unmeasured benefits'. Some areas without benefits estimated (as opposed to areas measured but benefits are not found) are:
    - Improvement in physical quality of life (to the extent not captured in self-rated health)
    - Reduction in potentially avoidable hospitalisations and deaths (separate to overall mortality and hospital use).
    - Reductions in extended hospital stays.
    - Improvements in relationships that go beyond life satisfaction measures. For example, reduced rate of separation for parents of children with disability typically confers benefits.
    - Improvement in justice sector and child protection outcomes.
    - Reductions in maltreatment in disability care scenarios.
    - Benefits from improved access to school.
    - Benefits from improved post-school education.
    - Community benefits from more inclusive societies.

    Some of these are likely to be small relative to existing items estimated, but all are important in understanding Scheme impacts. See Section 5.3.2 for further discussion.
  - Our estimates control for level of function, which is crucially important in measure outcomes (for example, employment varies significantly with level of function). However, we observe significant drift and volatility in recorded level of function scores over time. More robust and objective data would improve benefit estimation.
- For **comparison of net costs and benefits**, care is needed in interpreting the result:
  - Any point-in-time estimate such as ours will change over time. Scheme costs will grow, but we have not attempted to estimate how measured benefits will evolve in response.
  - Substitution effects carry significant uncertainty, and in some places estimates may be underestimated.
  - The Scheme contains large variability in participant goals, needs and supports; this variation means care is needed in applying results to smaller subgroups.

  - Our estimate of benefits relies heavily on improvements in subjective wellbeing. Some readers might prefer to put more or less weight on this factor.
  - While direct comparison of whether benefits are larger than costs is common, there is no fundamental reason why this is the appropriate threshold for the NDIS. There are several equity considerations that could warrant different approaches to assessing costs and benefits – this is beyond the scope of our work.

Potential future work on costs and benefits

We have highlighted several areas where we have not attempted to measure benefits, as well as limitations to those that we have. Future work also relates to improvements in the outcomes and measurement framework, discussed above.

That said, we highlight a few areas of potential future work that we believe would be most valuable:

- Achieving a stronger understanding governmental spending on disability supports in mainstream contexts (for example, health and education spending) and how these have changed over time
- Further exploration of household (and charitable organisation) substitution effects, and related improvements to financial wellbeing
- Exploration of market spillover effects outside of the NDIS due to NDIS-driven demand increases, in areas such as attendant care costs (for example, in aged care and injury schemes) or allied health costs
- Improving the consistency of functional capacity data, and the quality of participant goal information so that outcomes can better be measured over time
- Analysis (likely using linked data) to better understand impacts and benefits across domains, such as justice, education and health
- Continued work in understanding the value of specific disability supports, particularly capacity building and capital investments, over time.

1 Introduction

1.1 Background

The National Disability Insurance Scheme (NDIS) aims to improve the wellbeing of Australians by investing in people with disability and supporting them to achieve their goals and better participate in the community and economy. Since its trial in 2013 and full rollout in 2016 the Scheme has grown substantially; at 31 March 2023 there were just over 592,000 people in the Scheme. The 2023-24 Federal Budget projects 2022-23 Scheme costs be $35.1 billion, with average annual cost growth of 13% over the following three years.

The NDIS Review has been commissioned to review the operation of the NDIS and the market for disability services and workers. The Terms of Reference[3] are relatively broad; one item focuses on the effectiveness and sustainability of the Scheme. Taylor Fry ('We') has been engaged by the NDIS Review Secretariat ('Secretariat') to:

- Estimate the net costs of the NDIS, which requires recognising the cost of legacy scheme costs (disability services prior to the introduction of the NDIS) as well as cost substitution effects with other government services.
- Estimate the net benefits of the NDIS, to the extent possible with current data. This includes a broader social and economic benefits and consideration of benefits over the life course.
- Assist with the development of a framework for performance measurement, examining outcomes, benefits and investments. The revised framework will improve the ongoing monitoring and evaluation of the Scheme's effectiveness.

Further background and discussion of each of these components is included in their respective sections.

1.2 Structure of this report

The report is structured to cover off the main themes in separate chapters:

2. NDIS population and segmentation
3. Estimation of legacy scheme costs
4. NDIS costs
5. Benefits estimation
6. Comparison of costs and benefits
7. A framework for improved measurement, examining the relationship between outcomes, benefits and investment.

We note that chapters 3, 4, 5 and 7 are largely independent of each other and readers with particular interests may wish to start at the relevant chapter. Chapter 6 brings together the findings of chapters 3, 4 and 5.

Appendices include additional information, largely technical. Full model coefficient tables are also provided as spreadsheet appendices.

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[3] https://www.ndisreview.gov.au/about/terms-of-reference

1.3 Data used for this project

The analysis underpinning this report draws on a range of different data sources. This includes several publicly available data sources as well as data sets provided to us by the NDIA. Public data sources used include regular reporting and surveys from:

- The Productivity Commission (including their regular Reports on Government Services)
- The Australian Bureau of Statistics (ABS), most notably The Survey of Disability, Ageing and Carers (SDAC)
- The Australian Institute of Health and Welfare (AIHW)
- The NDIA, particularly their financial sustainability reporting and their outcomes reports.

In addition, much of the analysis relies on data about NDIS participants and their plans provided to us by the NDIA. This includes:

- Unit record data relating to:
  - Participant plans – including plan start date, plan length and plan budgets.
  - Payments data covering all payments per person/plan/quarter, at the level of support category
  - In-kind payment data.
  - Longitudinal data on participant demographic characteristics (age, gender, primary disability, etc), with annual snapshots.
  - Access requests data covering all NDIS access requests as well as the resulting access decision.
  - A snapshot of carer demographic characteristics (age, gender, etc).
  - Longitudinal outcome surveys with the associated questions and responses. This includes a short-form survey completed by all participants and their families (with regular reviews) as well as a more detailed survey completed by a subset of participants.
  - Detailed longitudinal data on participants in Specialist Disability Accommodation (SDA) and Support Independent Living (SIL).
  - Detailed longitudinal data on young people (aged less than 65) in residential aged care.
- Other internal reporting analysis related to:
  - The November 2022 interim projections
  - Lifetime cost estimates
  - Monitoring reports on chronic health conditions and health-related supports.

1.4 Stakeholder engagement

We have had discussions with a range of organisations and experts in undertaking our work. These are listed in Appendix A. We are very grateful for the views and advice offered and these have been considered in our work. However, all views expressed in this report are those of Taylor Fry and CIE only.

1.5 Acknowledgements

In addition to those we had discussions with, we would like to acknowledge assistance from:

- The NDIA, particularly the Analytics, Data and Actuarial team, for provision data, assistance with understanding data, responding to other ad hoc requests for information and for offering feedback on report drafts

- Richard Madden, who provided additional peer review on the report
- The NDIS Secretariat, for their review and feedback on the report.

1.6 Status of this report

This report is the finalised and supersedes previous drafts.

2 NDIS population and segmentation

2.1 Background

At 31 March 2023 there were about 592,000 active NDIS participants. There are large variations across this population with respect to demographics, level of function and support needs. Some segmentation can enable more nuanced commentary and results.

The NDIA AFSR is driven by segments defined by primary disability type and bands based on the assessed functional capacity. This has some practical advantages:

- Disability type is relatively objective and well recorded on the existing data systems
- There is some value in distinguishing between disabilities with different severities – those with less functional capacity will generally have greater needs, higher packages and different response patterns on outcome surveys.

There are also some drawbacks to this approach to reporting:

- A focus on disability type and level of function is more associated with a medical approach to disability supports, rather than social or rights-based models of care. A medical model focuses on incapacities, losses, deficits and differences relative to people without disability, an approach that has been subject to critique (for example Llewellyn et al., 2016, Bunbury, 2019 or Quinn, 2022).
- The approach is not intrinsically tied to need; differences in conditions, informal supports and goals may mean people with similar disabilities have very different support plans.

While we are very aware of the drawbacks of a disability-severity segmentation, we have used this for our reporting work in this report. It was most practical, given the data available, and enables better comparison to existing NDIS reporting.

2.2 Stability of disability severity and functional capacity

In the data supplied, level of function (LoF) is scored on a 15-point scale (15 = lowest LoF / highest assessed severity) and is updated periodically (typically on plan review). These are sometimes termed ‘severity’ scores and we use severity and level of function interchangeably in our report. Changing scores are important when it represents a genuine change in underlying functional capacity, as it will indicate changing needs over time.

Our 2021 report (Miller and Frank, 2021) noted that there were relatively high rates of transition between LoF bands, which were typically accompanied by significant increases in plan amounts (see section 3.3 of that report). We viewed the movements as greater than you would expect for genuine deterioration of function for many disability types. This means that changes are either due to improved functional assessment (early assessments are too low) or behavioural (easier to justify package increases).

Figure 2.1 shows the average change in LoF scores from baseline assessment time. Figure 2.2 shows the same information for selected disability types. We observe:

- An overall drift upwards. The overall score is about one point higher by the fifth year.
- A high level of variability. The 10th and 90th percentiles of movements are shown on the chart. We see that 10% of participants increase severity by at least 5 points by year 5 and 10% of participants move down by at least two points.
- Consistent patterns of high change across most disability types. The level of change for a degenerative condition, such as multiple sclerosis, is similar to other disabilities regarded as non-degenerative such as autism and cerebral palsy. The main exceptions to the overall pattern are developmental delay (although most people transition out of this disability group with age), hearing impairment and other sensory – these appear relatively stable with duration.

- Some reversion is visible; participants who start with high severity scores are more likely to see a decrease with duration.

Figure 2.1 – Average change in LoF score by duration in the Scheme (increase in score corresponds to lower level of function on a 15-point scale)

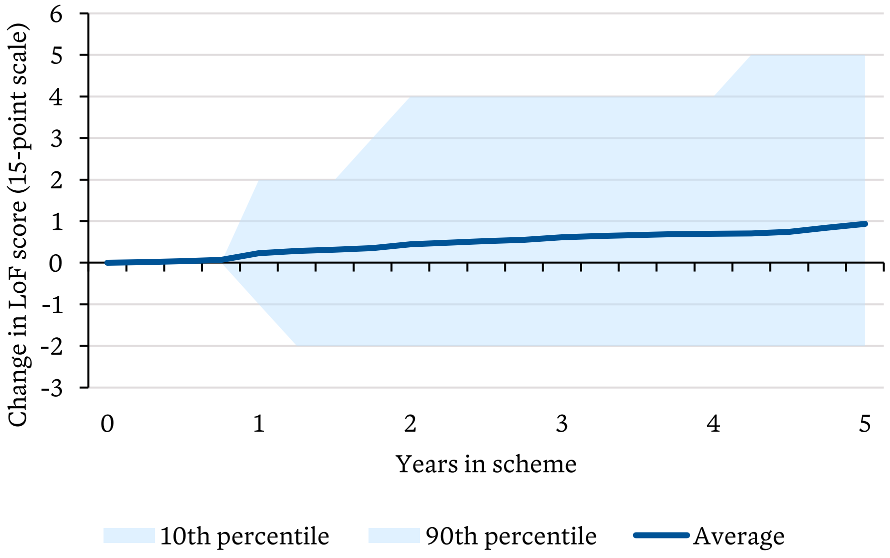
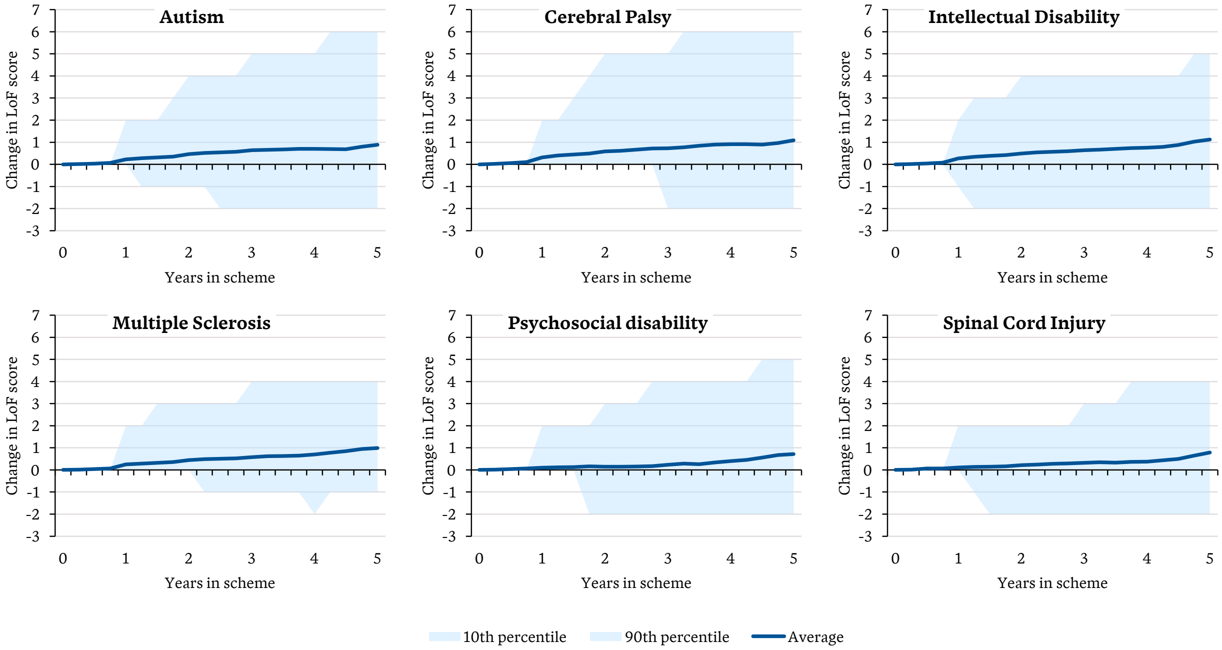


Figure 2.2 – Average change in LoF score by duration in the Scheme, for selected primary disability types



Variability in LoF scores, particularly if it is not tied to an underlying change in condition, is problematic. This is primarily because measurement of an outcome (such as self-rated health or employment rates) requires a strong understanding of level of function. If level of function is falling for a group, then an outcome remaining stable may actually be a strongly positive result. Volatility and bias in level of function undermines the ability to measure outcome improvement. Specifically, recognising too much fall in level of function may lead to overestimates of Scheme benefits.

More robust, objective data would also benefit other areas of Scheme management such as understanding long-term investment benefits, comparing packages of supports across cohorts and time, and tracking shifts in Scheme enrolment.

We have had to take an approach to level of function in our report, since we are tracking outcomes. We have:

- Used LoF (severity) bands rather than the underlying detailed scores. This removes some volatility. Our model approaches also incorporate person-level effects that control for changing composition over time.
- Adopted a point-in-time estimate of LoF for most analyses, rather than evolving LoF . For most outcome testing we have used disability and LoF at two years duration[4]. This means adopting a fixed value close to the average seen for a person over their time in the Scheme, and subsequent changes from that point tend to be smaller.

Fixing level of function in our models carries some drawbacks, since genuine deterioration in condition is not considered as part of our assessment (and so in some cases underestimate benefits). We have explored this in some of our modelling work by testing the impact of swapping fixed LoF for current and generally found similar results.

2.3 Segment characteristics

The adopted LoF bands and disability groups are shown in the table below. Relative to the NDIA AFSR, we have grouped some of the smaller bands to arrive at 41 bands rather than 56. Groupings are made based on exposure (very small segments more likely to be grouped) and average payment levels (small exposure segments are less likely to be grouped if they show markedly different payment levels).

Table 2.1 – Conversion of LoF scores into disability-function bands

	A	**B**	**C**	**D**	**E**
Acquired Brain Injury	1-8	9-11	12-13	14-15	
Autism	1-5	6-9	10-11	12-15	
Cerebral Palsy	1-6	7-15			
Delay	1-7	8-15			
Hearing	1-5	6-15			
Intellectual	1-5	6-8	9-11	12-15	
Multiple sclerosis	1-8	9-11	12-15		
Other Neurological	1-8	9-11	12-15		
Other Physical	1-8	9-11	12-15		
Other	1-15				
Psychosocial disability	1-7	8-9	10-15		
Spinal Cord Injury	1-7	8-9	10-11	12-13	14-15
Stroke	1-9	10-12	13-15		
Visual / other sensory	1-4	5-15			

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[4] We define duration from the date a NDIS participant's first plan started. Additionally, for people with less than two years since their first plan started, we adopted their latest primary disability and level of function score.

Table 2.2 – The number of participants in the Scheme during the March 2023 quarter

	A	B	C	D	E	Total
Acquired Brain Injury	4,025	4,742	7,905	786		17,458
Autism	40,299	116,520	10,264	32,022		199,105
Cerebral Palsy	7,035	10,203				17,238
Delay	83,401	1,914				85,315
Hearing	20,470	5,992				26,462
Intellectual	20,831	32,379	22,663	22,805		98,678
Multiple sclerosis	3,255	4,014	2,786			10,055
Other Neurological	6,386	5,162	10,765			22,313
Other Physical	8,969	5,150	6,586			20,705
Other	6,903					6,903
Psychosocial disability	12,019	12,501	35,916			60,436
Spinal Cord Injury	896	1,172	1,619	1,353	651	5,691
Stroke	1,989	5,917	791			8,697
Visual / other sensory	7,500	5,682				13,182
Total						**592,238**

A summary of segment characteristics is given in Table 2.3. Some broad descriptive comments are:

- Within each disability group, increasing plans and payments with declining LoF (as proxied by the adopted bands) are clear. Some of this will relate to higher incidence of Supported Independent Living (SIL) and Specialist Disability Accommodation (SDA), which have higher plans.
- A reasonably large fraction of current participants transitioned from legacy schemes; about two in five. Rates are higher for lower LoF bands (for example 64% of people in Multiple Sclerosis band C compared to 30% in band A). Rates are much higher for some disability types (cerebral palsy, intellectual disability). Autism and delay rates are low, both reflecting the age demographics (younger people had less time to be in legacy schemes) and scale of legacy supports for those disability types. Rates for psychosocial disability are relatively flat across LoF bands (implying that some low-function participants were not heavily supported under legacy schemes, on the data available). Stroke and other physical disabilities also see relatively low rates of legacy scheme support.
- About 6% of participants are flagged as having SIL supports. Nearly half of SIL places are for people with intellectual disability (including Down Syndrome), with the lowest LoF band having a rate of 39%. Psychosocial disability and autism have the next higher absolute number of people in SIL, but with much lower rates (as a fraction of total participants in those disability categories).
- Delay, by definition, is virtually all children. Among other categories, 75% of those in autism categories are children (higher for groups with higher LoF). The highest LoF band of intellectual disability is 61% children, compared to just 9% in the highest band.
- About 5% of Scheme participants are over 65, with higher rates for (typically) non-congenital categories such as stroke, spinal, other physical and acquired brain injury.

Table 2.3 – Characteristics of segments in the March 2023 quarter

Disability group	LoF band (A = highest LoF)	Number of people	Legacy %	SIL %	Child (<18) %	Over 65 %	Avg payments $p/y	Avg plan $p/y
Acquired Brain Injury	A	4,025	45%	5%	14%	8%	50,400	66,600
	B	4,742	44%	10%	5%	10%	94,200	119,800
	C	7,905	54%	23%	2%	14%	188,300	221,000
	D	786	37%	42%	3%	8%	327,300	366,100
Autism	A	40,299	34%	0%	83%	0%	14,000	22,400
	B	116,520	25%	1%	76%	0%	18,500	28,300
	C	10,264	62%	7%	37%	0%	63,000	81,000
	D	32,022	49%	8%	68%	0%	86,300	101,900
Cerebral Palsy	A	7,035	56%	2%	62%	1%	32,000	43,500
	B	10,203	86%	25%	24%	4%	211,900	238,200
Delay	A	83,401	5%	0%	100%	0%	11,100	19,900
	B	1,914	22%	0%	98%	0%	35,400	47,500
Hearing	A	20,470	17%	0%	48%	5%	5,600	11,900
	B	5,992	37%	1%	24%	9%	20,800	31,500
Intellectual	A	20,831	41%	3%	61%	1%	29,700	41,600
	B	32,379	63%	10%	22%	2%	60,700	76,800
	C	22,663	74%	19%	19%	4%	114,700	136,300
	D	22,805	85%	39%	9%	7%	203,100	227,400
Multiple sclerosis	A	3,255	30%	0%	0%	9%	27,800	41,500
	B	4,014	36%	2%	0%	18%	71,000	97,200
	C	2,786	64%	14%	0%	24%	202,200	232,200
Other Neurological	A	6,386	33%	2%	32%	13%	41,500	57,400
	B	5,162	35%	6%	12%	20%	89,900	116,500
	C	10,765	44%	16%	3%	25%	184,700	222,500
Other Physical	A	8,969	31%	0%	22%	16%	26,600	39,600
	B	5,150	33%	2%	7%	19%	63,900	84,000
	C	6,586	38%	6%	2%	19%	118,400	143,600
Other	A	6,903	12%	6%	20%	11%	82,000	99,100
Psychosocial disability	A	12,019	41%	3%	3%	5%	38,100	52,100
	B	12,501	42%	4%	0%	6%	52,300	67,500
	C	35,916	43%	9%	0%	8%	90,100	111,400
Spinal Cord Injury	A	896	35%	2%	5%	14%	57,000	77,400
	B	1,172	42%	3%	2%	15%	87,100	110,900
	C	1,619	46%	5%	1%	16%	134,800	164,100
	D	1,353	48%	10%	1%	16%	196,200	224,900
	E	651	62%	13%	2%	12%	351,200	365,200
Stroke	A	1,989	22%	2%	4%	19%	41,400	57,200
	B	5,917	28%	11%	1%	25%	127,700	159,700
	C	791	32%	27%	0%	29%	292,700	324,100
Visual / other sensory	A	7,500	46%	1%	44%	8%	20,400	28,900
	B	5,682	53%	3%	14%	13%	52,700	63,300
Total		**592,238**	**37%**	**6%**	**49%**	**5%**	**57,900**	**72,700**

3 Estimation of legacy scheme costs

3.1 Introduction

In this section, we explore the costs of the legacy schemes – those that existed prior to the NDIS to support people with disabilities. A good understanding of these provides:

- A basis for better estimation of the net increase in supports for people with disability due to the NDIS, both in terms of the number of people supported and the depth of support.
- An indication of how supports changed on transition to the NDIS and any relevant insights from the transition.
- An understanding of which segments of the NDIS population were more or less likely to be receiving supports under legacy schemes. By extension, this enables examination of where benefits are likely to be seen, as well as gaps in support under previous programs.

By estimating the hypothetical cost of these legacy schemes for the period since the introduction of the NDIS in 2013 we are able to construct a 'counterfactual' of what supports would currently look like in the absence of the NDIS.

Legacy scheme estimates are a construct for understanding net NDIS costs – they are not designed to be a plausible alternative policy option. Part of the rationale of the NDIS was the identified failings of disability supports available at that time.

3.2 Methodology

3.2.1 Broad approach

We have taken the following approach to develop a counterfactual projection of legacy scheme costs:

1. Determine total annual legacy scheme expenditure from 2008-09 to 2012-13 to establish the baseline legacy scheme costs before the introduction of the NDIS trials (from 1 July 2013).

   We have also examined non-NDIS spending from 2013-14 to 2016-17 to understand how legacy scheme expenditure changed over the course of transition to the full NDIS (beginning in July 2016). The non-NDIS expenditure continues to increase from 2013-14 to 2015-16 and has been considered in our selection of assumptions and as a sense check on our projection over that period.

2. Use the legacy scheme expenditure determined in step 1 (and observed historical trends) to project annual legacy scheme expenditure from 2013-14 to 2022-23. We also make any required adjustments to the estimates for projected years to reflect likely changes in legacy costs which would have occurred in the absence of the NDIS. For example, increases in disability sector minimum wages which occurred in the period 2012-13 to 2020-21.
3. Break down the total expenditure into smaller cohorts (such as by age group, primary disability, LoF band) using NDIS individual person level data. This is required to enable a comparison of benefits by cohort.

3.2.2 Identifying legacy schemes

Services covered under our analysis

We have performed a literature review to understand the breadth of expenditure on people with disability prior to the introduction of the NDIS. We identified the Productivity Commission's 2011 report *Disability*

Care and Support (PC 2011) as a key source, which provided initial estimates for the gross and net costs of the NDIS. This report[5] identified the following programs as offsets to the NDIS:

- Expenditure under the National Disability Agreement (NDA)
- Home and Community Care (HACC), later rebranded as Basic Community Care (BCC)
- Community aged care
- Aids and appliances
- Taxi subsidy schemes
- Early intervention programs for children with disability such as Helping Children with Autism and Better Start for Children with Disability
- Psychiatric disability community supports, including Personal Helpers and Mentors program and Day to Day Living program
- Australian Disability Enterprises (ADE) which became funded by the NDIS since its 1 July 2020.

We have relied upon this list of legacy programs and have collated information about these programs for our projection.

Data limitations

For the NDA, we have been able to source data on the expenditure and participants from the RoGS and AIHW statistics. This enabled us to form a view how the level changes from 2008-09 to 2015-16, so we can model a counterfactual for legacy schemes in 2022-23.

For non-NDA programs, we found limited publicly available information on the expenditure and number of participants of these legacy programs. To assist us, the NDIS Review Secretariat shared some research prepared by its team and information from state and territory governments. We have combined these various sources to form the latest view, typically in the period 2008-09 to 2015-16, on each of the above legacy programs. However, in some cases this was not possible, so we have relied upon the PC 2011 report for an estimate of the cost.

Ultimately, we regard Productivity Commission estimates as the most authoritative estimate of disability supports, and a reasonable starting point for our work. A broader data collection process from the Commonwealth, States and Territories may have improved the estimation of legacy costs, particularly in areas where supports are integrated into mainstream services. Time did not permit for this, although our understanding is that in many cases good data does not exist and the process of reconciling information to historical Productivity Commission estimates would be complex. A detailed analysis of one or two jurisdictions might give indicative results for how supports have evolved over time.

Potential omissions from legacy scheme calculations

We understand there may be other legacy programs from our discussions with representatives from the NDIS Review and state and territory governments. For example, early childhood supports such as Victoria's family centred practice and similar services in NSW. To date, we have not identified publicly available information on these programs, so we have not included them in our analysis.

Relatedly, some mainstream programs may have seen embedded disability supports reduced as part of the transition, with formal NDIS services replacing them. These are difficult to identify and quantify, although some of it is reflected in our estimation of substitution effects (section 4.2.7). We generally expect these program costs to be small relative to those already recognised in our calculations.

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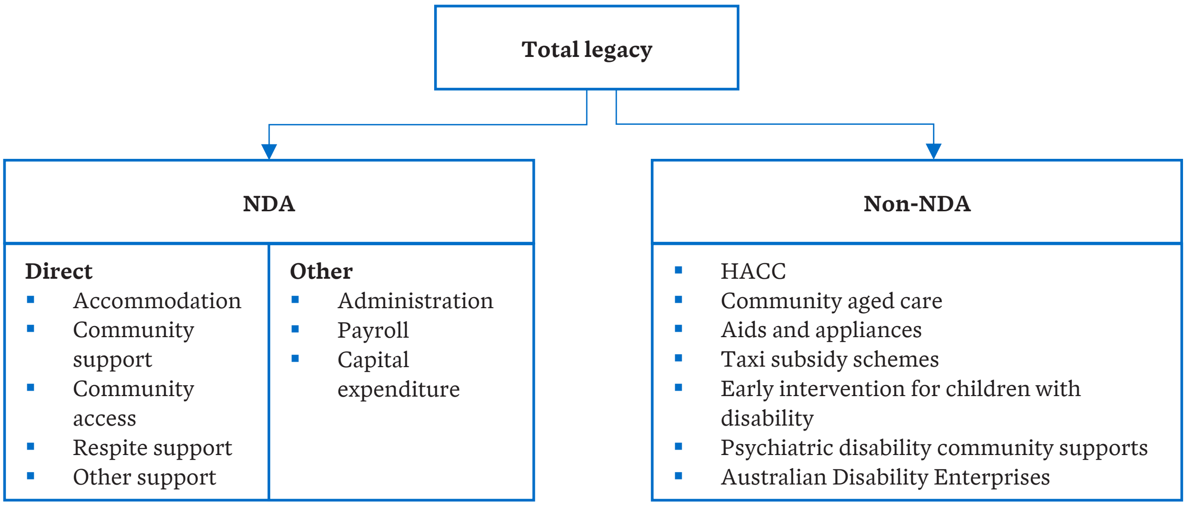
[5] Table 16.19

3.3 Historical legacy costs

This section covers the first step in our approach outlined in section 3.2.1 to collate historical legacy scheme expenditure for the 2012-13 financial year. We outline the methodology, sources of data and the results.

Figure 3.1 illustrates the breadth of coverage of legacy scheme programs. We separately consider expenditure under the NDA to all other programs (referred to as non-NDA).

Figure 3.1 – Coverage of legacy scheme programs



3.3.1 NDA expenditure

Costs associated with the NDA include direct costs and other costs as follows:

- **Direct NDA expenditure**: accommodation support services, community support services, community access services, respite care services and other support services
- **Other NDA expenditure**: capital grants, administration expenditure and imputed payroll tax.

Table 3.1 summarises the approach used to estimate baseline NDA legacy scheme costs for each expenditure category for financial years 2008-09 to 2012-13. We provide further explanation below the table.

Table 3.1 – NDA expenditure approach

Expenditure category		Approach
Direct NDA	Accommodation support	Included as per PC 2011 with adjustment
	Community support	Included as per PC 2011 with adjustment
	Community access	Included as per PC 2011 with adjustment
	Respite services	Included as per PC 2011 with adjustment
	Advocacy and information	Excluded[6], previously included in PC 2011
	Other support services	Included, consistent with PC 2011

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[6] Not covered by NDIS

Expenditure category		Approach
	Employment services	Excluded[7], consistent with PC 2011
Other NDA	Administration	Included, consistent with PC 2011
	Imputed payroll adjustment	Included, consistent with PC 2011
	Capital expenditure	Included, consistent with PC 2011

Nominal values versus 2016-17 values

Our primary source of data for NDA expenditure is from RoGS 2018. However, these data are indexed to 2016-17 dollars using the General Government Final Consumption Expenditure (GGFCE) chain price deflator. We have removed the indexation applied in RoGS to obtain nominal values, which tends to be the most common presentation of NDIS cost estimates.

Additional adjustments

To ensure comparability of legacy costs with NDIS costs, we have removed costs outside of the scope of the NDIS. Likewise, we have adjusted legacy participant numbers (“users of disability services” in RoGS terminology) to be consistent with NDIS data.

- We have adjusted the baseline legacy scheme expenditure to ensure it covers the same proportion of participants aged over 65 years as the NDIS. The NDA expenditure includes costs for **all** participants aged over 65 years, whereas the NDIS only covers a portion of the equivalent costs. This is because, to be eligible for the NDIS, participants must apply before they turn 65. However, once they have joined the Scheme, they can remain in the Scheme past age 65. Our adjustment is performed in two steps:
  - First, we remove NDA expenditure associated with all participants over age 65. For direct expenditure on accommodation support, community support, community access and respite services, we prorate direct expenditure based on the number of users aged under 65. This is done separately for each combination of state and service type[8]. We have not made an adjustment for other expense categories due to data limitations on the number of participants.
  - Second, we scale up the NDA expenditure for participants under 65 years to incorporate the same proportion of participants over 65 years as per the NDIS. We only do this for 2018-19 onwards where the proportion of participants aged over 65 years begins to become material.
- We have removed direct expenditure for employment services, consistent with the approach in PC 2011, since this is not in the scope of the NDIS.
- We have removed costs for advocacy and information, which are not in the scope of the NDIS.

Summary of historical costs

Figure 3.2 shows the NDA expenditure by service type for participants under age 65. Total expenditure grows from $4.3 billion in 2008-09 to $7.0 billion in 2015-16. This represents an average growth rate of 7%.

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[7] Not covered by NDIS

[8] RoGS 2018, Tables 15A.10, 15A.46, 15A.47, 15A.48, 15A.49

Figure 3.2 – NDA expenditure by service type (participants under age 65)

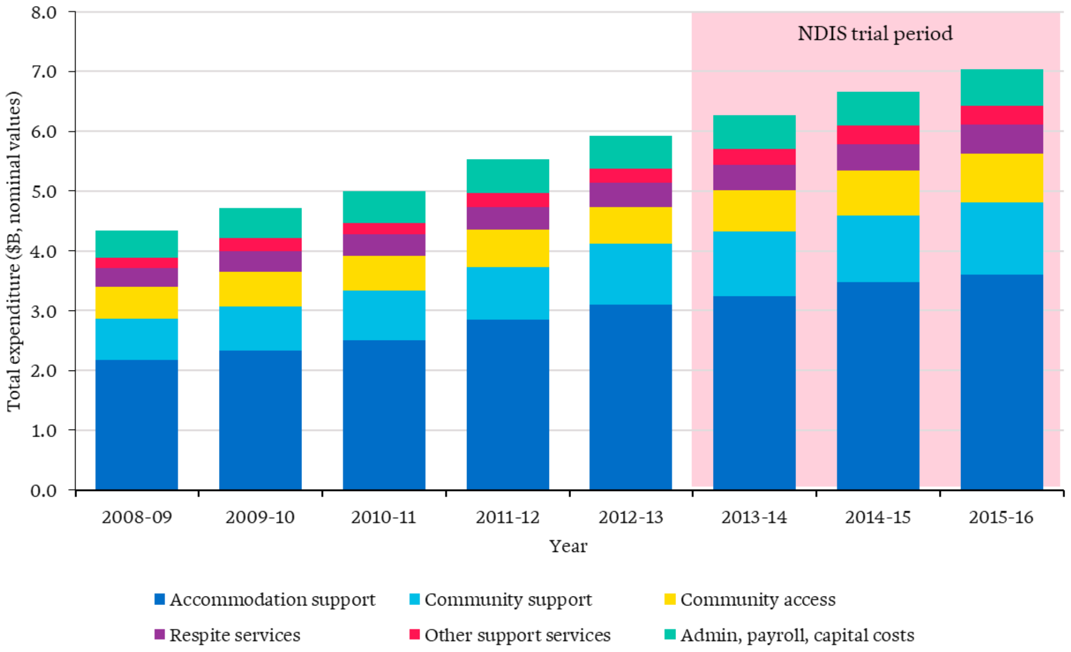

Table 3.2 provides further information in relation to the 2015-16 NDA expenditure for participants under age 65 shown in the right column of Figure 3.2. It shows the amount of expenditure, the number of participants under 65, and average cost per participant by service type.

Table 3.2 – Statistics by service type for NDA expenditure in 2015-16 (participants under age 65)

Service type	**Expenditure ($B)**	**Number of participants**[9] [10]	**Average cost per participant ($)**
Accommodation support	3.6	32,750	110,079
Community support	0.8	46,099	18,008
Community access	1.2	131,850	9,088
Respite services	0.5	34,948	13,490
Other support services[11]	0.3	n/a	n/a
Other NDA costs[12]	0.6	201,057	2,980
Total	**7.0**	**201,057**	**34,965**

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[9] For direct expenditure categories, source is RoGS 2018, Tables 15A.10, 15A.46, 15A.47, 15A.48, 15A.49. For total, source is AIHW 2017, Tables 2.3 and 3.2

[10] Number of users in RoGS is not additive because participants may use more than one service. The total reflects the unique number of people based on a statistical linkage exercise performed by AIHW. Total number of participants has also been adjusted to exclude those who only used open employment services, which has been removed from the expenditure.

[11] There is no participant data for other support services.

[12] We have spread other NDA costs across the total number of participants.

Accommodation support represents the largest category of expenditure and also has the highest cost per participant. The next largest category is community access which has the largest number of participants but the lowest cost per participant. In 2015-16, the total NDA expenditure of $7.0 billion covers approximately 200,000 participants under age 65 with an average cost per participant of approximately $35,000.

3.3.2 Non-NDA expenditure

In addition to services covered by the NDA, some other legacy disability support programs were replaced by the NDIS – we collectively refer to these as non-NDA programs.

Table 3.3 summarises the approach taken in calculating non-NDA legacy scheme costs for each expenditure category. We provide further explanation below the table.

Table 3.3 – Non-NDA expenditure approach

Expenditure category		Approach
Non-NDA	Home and Community Care (HACC, later Basic Community Care)	Prorate expenditure to participants under age 65 using 30 per cent assumption from PC 2011, adjusted for inflation
	Community aged care	Use figure from PC 2011, adjusted for inflation
	Aids and appliances	Use figure from PC 2011, adjusted for inflation
	Taxi subsidy schemes	Use figure from PC 2011, adjusted for inflation
	Early intervention for children with disability	Use figure from DSS Portfolio Budget Statements, adjusted for inflation
	Psychiatric disability community supports	Use figure from PC 2011, adjusted for inflation

For HACC the approach varied for different groups of financial years:

- For 2008-09 to 2010-11, total HACC expenditure in nominal values by year and funding source was drawn from RoGS[13]. To determine the expenditure related to participants under age 65 we relied on the PC 2011 assumption that 30% of total HACC expenditure related to this cohort[14]. This is consistent with the RoGS data on aged care residents.
- For 2011-12 to 2015-16 total HACC expenditure was only available for Victoria and Western Australia[15]. For these two states the same method was applied as for the earlier financial years. For other states HACC was only reported for the aged care cohort. To estimate expenditure for participants under age 65 for these states we applied a growth rate of 8% p.a. to the estimated figures for 2010-11. We derived the growth rate assumption of 8% p.a. from analysis of the growth in total HACC expenditure over the three years from 2008-09 to 2010-11.

For residential aged care, we used the implied average expenditure from PC 2011 for users aged under 65[16], since only data on the number of users was available from RoGS. The assumed average expenditure was then adjusted for inflation.

For the early intervention programs for children with disability such as Helping Children with Autism and Better Start, we have utilised the figures from the Portfolio Budget Statements for the Department of

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[13] RoGS 2010 Table 13A.43, RoGS 2011-2012 Table 13A.5

[14] PC 2011, p 778

[15] RoGS 2013-2014 Table 13A.5, RoGS 2015-2017 Table 13A.4

[16] RoGS 2018, Table 15A.54

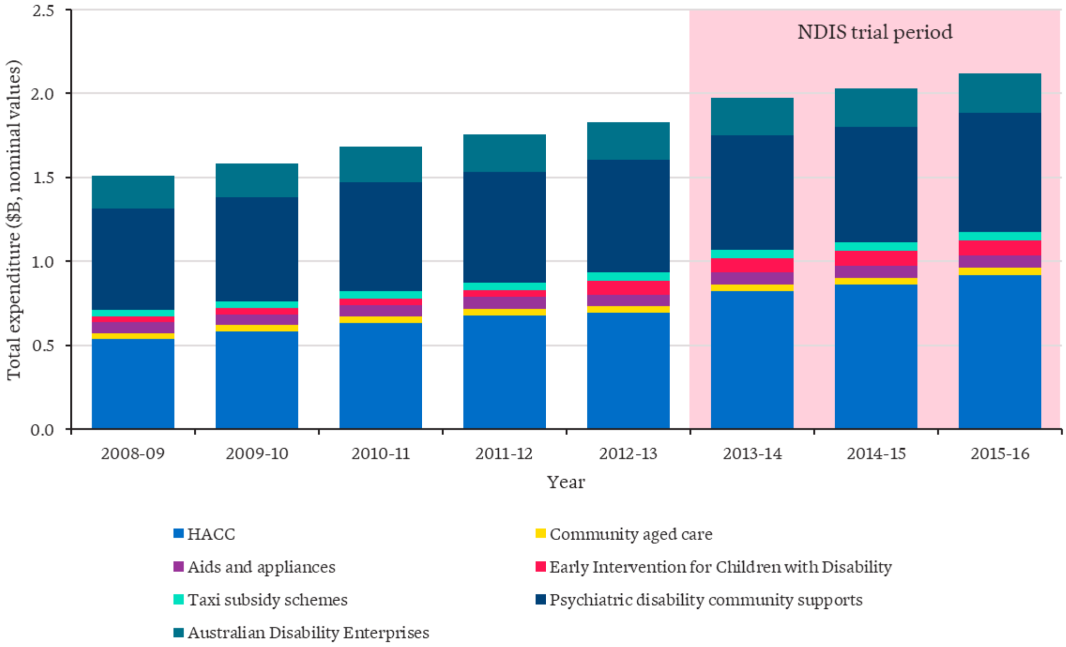
Social Services in 2011-12 and 2013-14. We are aware that parts of this program still exist as items on the Medicare Benefits Schedule. However, the costs for the relevant items in recent years are not material so we have not adjusted for this explicitly in our data.

For other programs, we reference the original direct offset estimate from PC 2011, applying to users aged under 65, and adjust for inflation for these programs. We have considered the information provided by the Secretariat. This was a useful reference point for some categories, but there were limitations to it. For example, the research only covered Commonwealth programs so suggested lower estimates compared to PC 2011. The state and territory spending covered spending on people with disability outside of the NDIS in 2021-22 and 2022-23 so was less relevant in understanding historical legacy costs.

Summary of historical costs

Figure 3.3 shows the estimated non-NDA expenditure grows from $1.5 billion in 2008-09 to $2.1 billion in 2015-16. The average growth rate over this period is 5%. The HACC program represents the largest component.

Figure 3.3 – Non-NDA expenditure by service type



3.4 Projection of legacy costs

3.4.1 Growth assumptions

NDIS trials commenced in July 2013 and the full roll out commenced in July 2016, with continued growth in participants for several years afterwards. The following section expands on step 2 in section 3.2.1 to project legacy scheme costs from the 2012-13 financial year, which was the final period unaffected by the NDIS.

We select constant annual growth rates to project costs forward from 2012-13 based on trends in prior periods. These are combined growth rates that allow for participant growth and cost escalation effects. We separately project NDA costs from non-NDA costs to allow for the different rates of growth. As per results in sections 3.3.1 and 3.3.2, we have selected baseline annual growth rates of 7% for NDA and 5% for non-NDA. NDA costs represent approximately 75% of the total legacy scheme costs, so the overall baseline annual growth rate is 6.5%.

In addition to the historical trend growth rate, we have also included an explicit allowance for the Equal Remuneration Order on Social, Community, Home Care and Disability Services (SCHADS) Award made by the Fair Work Commission. This change increased minimum wages for some employees in the social, community, home care and disability services industry from 1 December 2012 to 1 December 2020.

Table 3.4 shows the growth rate assumptions adopted across different time periods.

Table 3.4 – Expenditure growth rate assumptions by period

Period	NDA	Non-NDA
2013-14 to 2020-21	8.3%	5.0%
2021-22 and later	7.0%	5.0%

Note: Additional 1.3% p.a. growth from 2013-14 to 2020-21 due to Equal Remuneration Order on Social, Community, Home Care and Disability Services (SCHADS) Award. Estimate based on NDIS AFSR 2015-16, Table C.1.

Our analysis of the baseline 7% NDA growth rate shows that 3% is due to participant growth with the remaining 4% due to cost escalation (mainly wage and price inflation). Including the adjustment for the SCHADS Award increases the wage and price inflation component to 5.3%. This is consistent with historical inflation analysis in the 2021-22 AFSR, where the average wage and price inflation observed within the NDIS over 2019-20 to 2021-22 is 5.4%, providing a check on reasonableness.

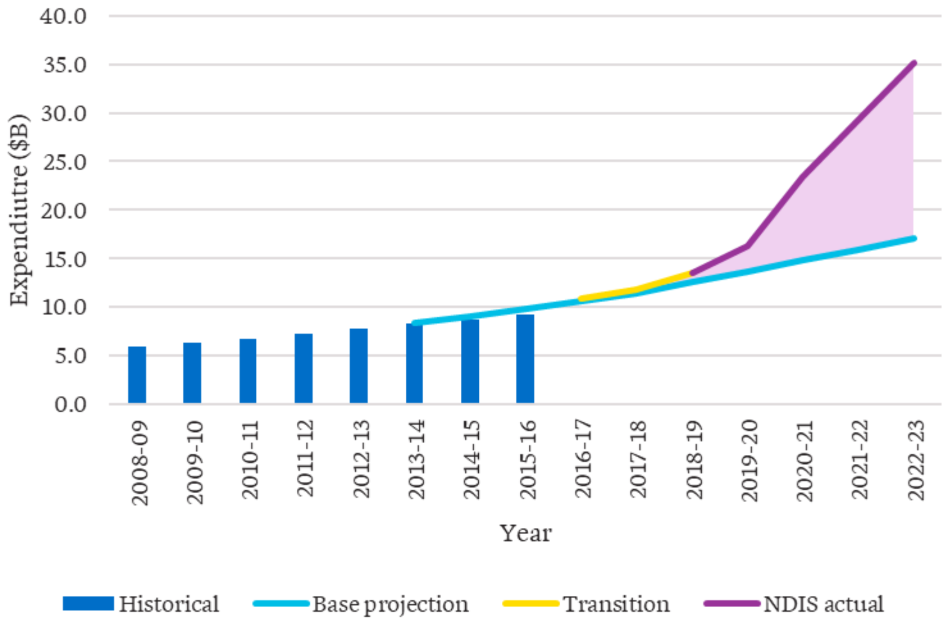
3.4.2 Aggregate results

Figure 3.4 illustrates:

- Historical legacy scheme costs (blue columns),
- Projected legacy scheme costs (blue line),
- Estimated costs during the transition to the full NDIS (yellow line), that is a combination of NDA, non-NDA and NDIS expenditure, and
- Actual NDIS costs (purple line for full Scheme)
- Net costs of the NDIS (purple shaded area).

We cross reference the adopted projection against the NDIS trial years between 2013-14 to 2015-16, which inform a lower bound to legacy scheme costs.

Figure 3.4 – Projection of legacy costs



By 2022-23, the legacy scheme costs are projected to be $17.1 billion (mostly NDA at $13.9 billion). Actual NDIS costs are $35.1 billion[17], so the net costs of the NDIS (before consideration of substitution effects) are $18.0 billion. Table 3.5 provides statistics to compares the NDIS to the projected counterfactual of the legacy costs in 2022-23.

Table 3.5 – NDIS versus projected legacy scheme counterfactual in 2022-23

	NDIS (A)	**Projected legacy counterfactual (B)**	**Ratio (B÷A)**
Total cost ($B)	35.1	17.1	49%
Number of participants, Mar-23	592,238[18]	272,104	46%
Average annual cost per participant ($)	59,300	62,800	106%
Average annual cost per participant ($) – legacy subgroup	100,800	62,800	62%

In 2022-23, we estimate the legacy scheme expenditure to be 49% of the annualised NDIS expenditure in March 2023. This is mainly because the legacy schemes are estimated to only support 46% of NDIS participants at March 2023. On face value, the annual cost of supports per participant in legacy schemes is higher than the NDIS but if we examine the cohort of legacy participants, the annual cost of supports per participants is lower at 62% of the NDIS level of support. In other words, the NDIS is covering more participants than before, but the new participants tend to have lower needs and require less supports. On average, the NDIS is providing more supports for participants in legacy scheme.

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[17] Accrual basis

[18] Number of participants, March 2023

3.5 Segment results and transition to NDIS

3.5.1 Summary by state and territory

Legacy scheme costs

In this section, we focus on the NDA expenditure by state and territory using data from RoGS. We were unable to perform a similar split for non-NDA programs due to data limitations.

Figure 3.5 shows estimated historical NDA expenditure, consistent with results in Figure 3.2, by state and territory. In absolute terms, the $2.7 billion increase over 2008-09 to 2015-16 is driven by increases the largest states – NSW, Victoria and Queensland. However, there were *proportionately* larger increases in Queensland, WA and SA with expenditure almost doubling over this period. The annual (nominal) growth over the period ranges from 5% (Victoria) to 12% (WA and NT). While there are some differences in scale and timing, all jurisdictions show a substantial increase in spend over time.

Figure 3.5 – Historical NDA expenditure by state and territory

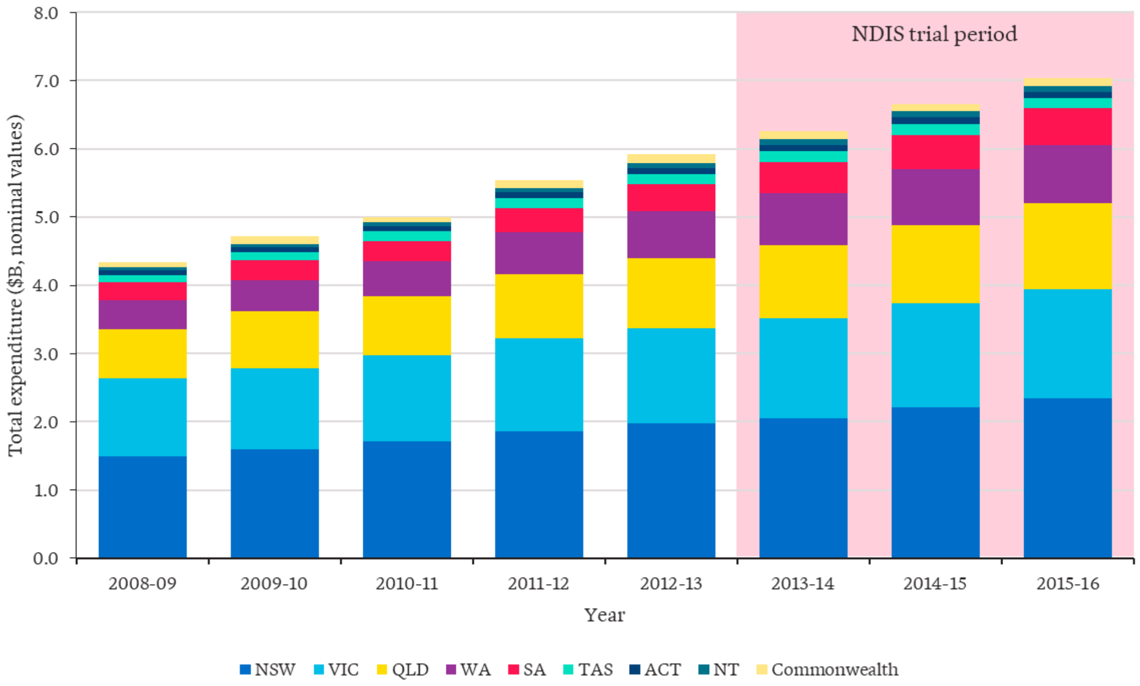

Figure 3.6 – Average cost per user in 2015-16

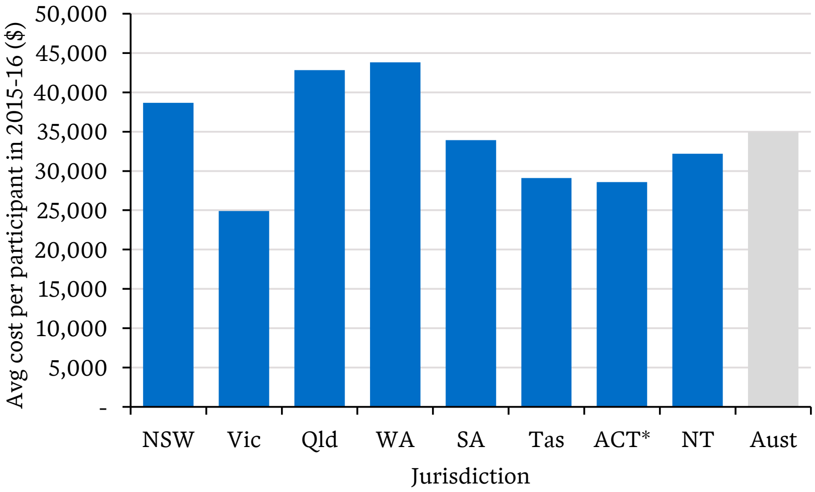

Figure 3.6 shows the average cost per user across jurisdictions for 2015-16 (approximated for ACT due to missing data); although NDIS trials would have had an impact, figures from earlier years appear similar. The figure shows that NSW, Queensland and WA had higher average costs per user compared to other jurisdictions. Care is needed when interpreting these figures as it could reflect the differences in participant needs as well as efficiency in delivery. We observe, to explain some of the differences:

- Victorian services appeared to cover a broader range of people, with greater emphasis on community supports. For example, in 2016-17 Victorian accommodation services covered 5% of the potential population[19] compared to 6% across Australia; however community supports reached 33% of the potential population (versus 24% for Australia).
- New South Wales had the highest cost per person in accommodation supports (20% higher than the national average), increasing its average.
- While SA and Tasmania had relatively high rates of accommodation supports, the average cost per supported person across the various categories was significantly lower.
- While Queensland and the Northern Territory had average costs per user above or in line with the Australian average, their coverage was significantly lower; in both cases 18% of the potential population received services, compared to the national average of 24%.

This information explains some of the differences, but ultimately there is no way of distinguishing between cost-effectiveness and underservicing.

Transition to the NDIS

Figure 3.7 shows the number of participants entering the NDIS over the trial period (2013-14 to 2015-16) and the roll out (2016-17 to 2018-19)[20]. By 30 June 2019, most jurisdictions were in operating the NDIS across all regions. The exception was WA with a delayed enrolment in the national NDIS.

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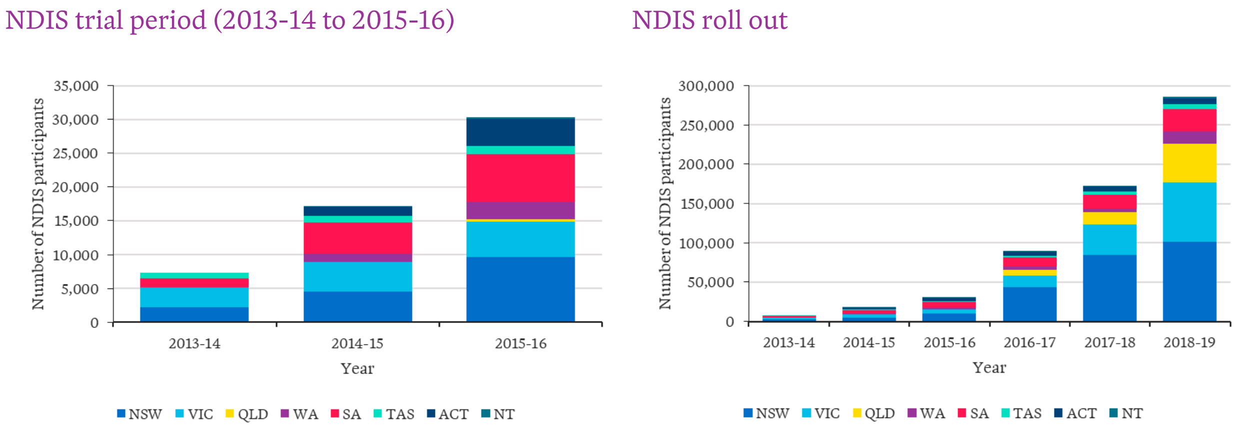
[19] A term used in RoGS for “the number of people aged 0–64 years who could most appropriately be supported by specialist disability services, require ongoing and/or long-term episodic support, have a permanent or chronic impairment and substantially reduced capacity in one or more core activities”. Based on SDAC estimates.

[20] RoGS 2021, Table 15A.1

Figure 3.7 – Number of participants in the NDIS



NDIS trial period (2013-14 to 2015-16)

NDIS roll out

The charts show:

- Over the NDIS trial period, numbers grew quickly in NSW, SA and ACT. Progress was slower in Victoria, Queensland and WA.
- From 1 July 2016, all jurisdictions except WA were rolling out the full Scheme to its regions. Numbers of participants grew rapidly, increasing more than nine times from 2015-16 to 2018-19. ACT was the first jurisdiction to complete the roll out. By 1 July 2018, NSW and SA saw scheme rollout across all its regions. Other jurisdictions reached full coverage by 1 July 2019, except WA.

While rollout windows are well understood, this timing allows us to better gauge coverage of legacy scheme by cohort at the point of (near) completion of the rollout.

3.5.2 Segmentation by participant demographics

We have utilised the NDIS individual level data to gain insights into the coverage and average support offered by the NDIS compared to the legacy schemes for participant segments. This is possible because the NDIS data records detailed participant level information on primary disability and level of function over time as well as whether the participant was from a legacy scheme.

Table 3.6 is an extension of Table 3.5 for our segmentation by disability group and level of function bands at two years in Scheme (discussed in section 2.3). It compares key statistics for the NDIS and legacy schemes by segment, including number of participants, average annualised cost for all participants as well as the legacy scheme subgroup and total cost.

The key observations are:

- Within each disability group, the difference in the coverage, average support and total cost between legacy schemes and the NDIS generally reduces as level of disability (proxied by LoF band) increases.
- Legacy schemes cover 46% of NDIS **participants**, but the ratio varies by disability group.
  - The ratio is higher than average for acquired brain injury, lower LoF bands of autism, cerebral palsy, lower LoF bands of intellectual disability, lower LoF bands of multiple sclerosis, lower LoF bands of spinal cord injury and visual / other sensory disability.
  - The ratio is lower than average for delay, hearing, stroke and other disabilities.
- For legacy participants, the average **level** of support for legacy schemes is 62% of the corresponding level under the NDIS. In other words, legacy participants are receiving more support under the NDIS on average.
  - The ratio is lower than average (that is, the increase in the level of support is higher than average) for lower LoF bands of acquired brain injury, autism, intellectual disability, multiple sclerosis,

lower LoF bands of other neurological disability, psychosocial disability and visual / other sensory disability.

- The ratio of the total cost under legacy schemes compared to the NDIS is 49%, in other words twice as much is spent on specialist disability services. The increase in dollars is $17.2 billion.
  - The greatest increases are for intellectual disability, autism and psychosocial disability. These three groups make up $9.5 billion of the increase. Both numbers and payment levels contribute heavily to this result.
  - There is a high proportionate increase in delay and other with costs increasing more than tenfold.

Table 3.6 – Segmentation of NDIS and legacy scheme counterfactual by disability group, level of function

Disability group at 2 years	LoF band at 2 years (A = highest LoF)	Number supported, Mar-23 (A)	Avg cost of supports, Mar-23 qtr annual. - legacy (B)	Avg cost of supports, Mar-23 qtr annual. - All	Total cost, Mar-23 qtr annual., $m (C)	Number supported under legacy (D)	Avg cost under legacy (E)	Total cost under legacy, $m (F)	Ratio, numbers (D÷A)	Ratio, avg cost (E÷B)	Ratio, total cost (F÷C)
Acquired Brain Injury	A	4,025	63,900	51,600	208	2,271	35,400	80	56%	55%	39%
	B	4,742	120,300	96,400	457	2,646	71,300	189	56%	59%	41%
	C	7,905	229,100	192,900	1,525	5,395	159,200	859	68%	69%	56%
	D	786	387,200	335,200	263	358	276,800	99	46%	71%	38%
Autism	A	40,299	17,300	14,300	577	17,390	10,700	187	43%	62%	32%
	B	116,520	27,900	19,000	2,209	36,939	18,000	665	32%	65%	30%
	C	10,264	81,200	64,500	662	8,332	46,500	387	81%	57%	58%
	D	32,022	143,700	88,400	2,832	20,446	85,200	1,742	64%	59%	61%
Cerebral Palsy	A	7,035	39,200	32,800	231	5,075	22,100	112	72%	56%	49%
	B	10,203	235,600	217,000	2,214	10,184	157,800	1,607	100%	67%	73%
Delay	A	83,401	13,800	11,400	950	5,347	12,400	66	6%	90%	7%
	B	1,914	50,700	36,300	69	562	30,400	17	29%	60%	25%
Hearing	A	20,470	9,700	5,700	118	4,320	7,700	33	21%	79%	28%
	B	5,992	28,300	21,300	128	2,665	16,700	44	44%	59%	35%
Intellectual	A	20,831	43,300	30,400	633	10,718	23,600	253	51%	55%	40%
	B	32,379	76,200	62,200	2,014	26,623	43,600	1,160	82%	57%	58%
	C	22,663	137,500	117,500	2,663	22,017	82,600	1,820	97%	60%	68%
	D	22,805	225,200	208,000	4,744	22,755	143,500	3,264	100%	64%	69%
Multiple sclerosis	A	3,255	30,200	28,500	93	1,273	17,100	22	39%	57%	23%
	B	4,014	93,000	72,700	292	1,875	49,400	93	47%	53%	32%
	C	2,786	250,100	207,100	577	2,335	158,400	370	84%	63%	64%
Other Neurological	A	6,386	51,300	42,500	271	2,677	25,900	69	42%	50%	26%
	B	5,162	115,400	92,100	475	2,273	64,200	146	44%	56%	31%
	C	10,765	216,300	189,200	2,036	5,718	168,200	962	53%	78%	47%
Other Physical	A	8,969	32,700	27,300	245	3,565	21,500	77	40%	66%	31%
	B	5,150	81,100	65,400	337	2,099	54,500	114	41%	67%	34%
	C	6,586	150,000	121,300	799	2,950	110,500	326	45%	74%	41%
Other	A	6,903	109,200	84,000	580	581	84,700	49	8%	78%	8%

Psychosocial disability	A	12,019	41,000	39,100	470	5,460	20,300	111	45%	50%	24%
	B	12,501	59,400	53,600	670	5,871	31,200	183	47%	53%	27%
	C	35,916	103,800	92,200	3,313	16,978	60,900	1,035	47%	59%	31%
Spinal Cord Injury	A	896	60,500	58,400	52	397	53,500	21	44%	88%	41%
	B	1,172	95,300	89,200	105	635	67,900	43	54%	71%	41%
	C	1,619	161,700	138,000	223	970	109,600	106	60%	68%	48%
	D	1,353	243,100	200,900	272	820	180,300	148	61%	74%	54%
	E	651	357,700	359,700	234	535	292,200	156	82%	82%	67%
Stroke	A	1,989	46,400	42,400	84	535	27,900	15	27%	60%	18%
	B	5,917	150,200	130,800	774	1,960	102,400	201	33%	68%	26%
	C	791	271,500	299,800	237	287	219,700	63	36%	81%	27%
Visual / other sensory	A	7,500	24,600	20,800	156	4,447	14,000	62	59%	57%	40%
	B	5,682	60,900	54,000	307	3,815	35,000	134	67%	57%	44%
Total		**592,238**	**100,800**	**59,300**	**35,100**	**272,104**	**62,800**	**17,090**	**46%**	**62%**	**49%**

Table 3.7 shows the comparison by current age band. The key observations are:

- The coverage ratio of the legacy schemes to the NDIS increases with age, that is older NDIS participants are more likely to be covered under legacy schemes.
  - The exception is participants aged over 65 years which reflects the change in eligibility rules. Only people with disability aged under 65 years can enter the NDIS if they meet other eligibility criteria but they can remain the Scheme after turning 65 years.
  - For people aged under 65 years, legacy schemes only cover around 40% of current NDIS child participants compared to almost 60% for NDIS adult participants.
- For adults, the average level of support for legacy schemes is 60%-65% of the corresponding level for the NDIS. There is more variability for children. The average level of support doubles for children aged 0-6 but is largely unchanged for children aged 7-18.

Table 3.7 – Segmentation of NDIS and legacy scheme counterfactual by age band

Current age band	Number supported, Mar-23 (A)	Avg cost of supports, Mar-23 qtr annual. - legacy (B)	Avg cost of supports, Mar-23 qtr annual. - All	Total cost, Mar-23 qtr annual., $m (C)	Number supported under legacy (D)	Avg cost under legacy (E)	Total cost under legacy, $m (F)	Ratio, numbers (D÷A)	Ratio, avg cost (E÷B)	Ratio, total cost (F÷C)
0-6	93,819	33,900	14,800	1,387	37,868	15,400	582	40%	45%	42%
7-14	156,086	25,800	17,000	2,652	56,265	24,500	1,376	36%	95%	52%
15-18	50,743	62,800	32,800	1,663	19,338	60,500	1,170	38%	96%	70%
19-24	48,756	119,900	74,500	3,633	23,917	75,800	1,813	49%	63%	50%
25-34	51,611	141,500	97,600	5,039	29,169	88,500	2,581	57%	63%	51%
35-44	45,994	154,000	104,300	4,799	28,255	88,900	2,511	61%	58%	52%
45-54	54,063	158,800	108,900	5,886	35,537	91,700	3,258	66%	58%	55%
55-64	64,147	156,600	112,000	7,182	38,468	90,900	3,498	60%	58%	49%
65+	27,020	139,600	105,800	2,860	3,288	91,400	301	12%	65%	11%
Total	**592,238**	**100,800**	**59,300**	**35,100**	**272,104**	**62,800**	**17,090**	**46%**	**62%**	**49%**

We note that significant differences are visible by state across disability groups too. For example, Victoria had high coverage of people with psychosocial disability under legacy schemes, but relatively lower-than average rates for spinal disabilities and South Australia had quite high coverage of people with an acquired brain injury. State level results are effectively averaged out and all our subsequent reporting in later sections is at a national level.

4 NDIS costs

4.1 Introduction

While actual NDIS costs to 2022-23 are shown in the previous section, some further commentary is warranted on:

- Future NDIS costs
- Substitution effects, where NDIS costs can be directly tied to reduced government spending elsewhere
- Unanticipated costs, as a contributor to NDIS cost growth
- Other aspects of NDIS costs, including the lifetime projection of spending and variability in payments across the NDIS population.

The estimation of substitution enables a more accurate view of net costs, relevant to this report. Other aspects reflect areas identified as of interest to the Review.

4.2 NDIS cost projections

4.2.1 Introduction

While much of work focuses on current costs and benefits, we provide some examination of future cost trajectories and how they intersect with our findings. The most natural cost projections to adopt are those used for the 2023-24 Federal Budget in May 2023. These were the NDIA's November 2022 interim projections, with modifications.

The NDIA has provided some detail behind these figures including:

- The November 2022 interim projection spreadsheets
- A high-level reconciliation of the November 2022 interim projections to the 2023-24 Federal Budget announcement.

Taylor Fry is familiar with the NDIA's methodology underlying the AFSR projections, having previously performed an independent review of the June 2021 AFSR projections. We have confidence that the June 2022 AFSR reflect data and trends appropriately too – we understand that these estimates were peer reviewed by the Australian Government Actuary, plus two independent estimates sourced which largely corroborate the AFSR cost projections.

The November 2022 interim projections show higher estimates of participant numbers and Scheme costs, reflecting the emerging experience. To move from November 2022 interim to 2023-24 Federal Budget figures projections, the NDIA made allowances for recent budget measures and the 8% sustainability target, reducing the Scheme costs over 2023-24 to 2026-27. This essentially brings future years cost estimates closer to the June 2022 AFSR projection. Budgeted Scheme expenses in 2026-27 are 11% lower than the November 2022 interim projections.

We regard:

- The November 2022 interim projections as reasonable, given they reflect some additional emerging experience since June 2022 and follows the recent trend of increases to expected Scheme costs.
- The reductions related to 2023-24 budget measures as largely untested. We have not been provided with detail around how the reductions are estimated, but are included for consistency with other work.

This report does not attempt to assess the appropriateness of the 2023-24 Budget Estimates. Regardless, the projections (including 2023-24 Budget changes) are suitable for our purposes with costs over the short to medium term of most interest to our work.

There is significant uncertainty with the cost projections and the NDIA acknowledges this in the annual AFSR[21]. The uncertainty is also reflected in the substantial changes in forecasts seen over time. The NDIA explores the uncertainty through scenario analysis on key assumptions such as number of participants with SIL, exit rate of the Scheme, number of new entrants to the Scheme, average payments for new entrants and additional inflation. They also update a stochastic model to gain insight into the distribution of outcomes. The 90% confidence interval for the projected costs in 2022-23 from the June 2022 AFSR[22] is from $2.1 billion below the baseline projection to $3.5 billion above the baseline projection.

4.2.2 Consideration of the deadweight loss of taxation

In cost-benefit work it is common for the 'cost' component to allow for the deadweight loss of taxation (or marginal excess burden) associated with government spending, with numbers between 25% to 30% common.

The marginal excess burden of tax varies greatly across taxes. For example, Tran and Wende (2017) estimate that the MEB is $0.83 for a company income tax, $0.34 for a person income tax and $0.24 for a consumption tax. We believe a reasonable assumption of the marginal excess burden of tax is 30 per cent, which is a rule of thumb based on the approximate average rate across the tax base. This is intended to be approximate, particularly given that the tax that would be changed to fund a given program typically is not specified. It is broadly consistent with similar research work, such as Vincent et al. (2022).

For our main results, we have not included deadweight loss in our main estimate – so 'costs' are the actual NDIS spending on disability supports. This simplifies the presentation, effectively providing a participant-centred view of costs and benefits.

There are arguments for alternative approaches to the treatment of deadweight loss:

- **Addition** of deadweight loss to cost estimates. This would see the net costs of the NDIS would grow by 30% to reflect the burden of additional taxation. Generally, deadweight losses are justified by recognising the utility or welfare benefits of the spending (e.g. redistribution effects increases overall utility). Were we to including deadweight loss, it would also be appropriate to include more consideration of utility effects (see Section 5.3.8).
- Consideration of **only** deadweight loss component of costs. The Productivity Commission in their 2011 work focused on marginal excess burden amounts as a threshold for net benefits. Under this approach only 30% of actual incremental spending would be recognised as cost, on the basis that there is an automatic private value for participants equal to the amount spent. Relatedly, this could be justified by treating the plan as a transfer from taxpayers to participants and only examining the economic cost of the transfers.

  We do **not** think this approach is appropriate for our work. Ultimately, the NDIS is not a cash transfer – it involves use of real economic resources to produce disability support services and so carries a real economic cost. Further, we can directly estimate the benefits (market and non-market), rather than setting them by assumption. Excluding the bulk of actual spending creates an unrealistically low picture of resources being spent on disability supports.

We discuss deadweight loss implications further for our main results in Section 6.1.2.

The Productivity Commission, in their analysis of NDIS costs, noted that if NDIS funding replaced inefficient state and territory taxes with more efficient taxation then this would also generate economic benefits. There is no evidence for this mechanism to date – state and territory contributions to the scheme still reflect these traditional funding sources, and Commonwealth funding is additional to this, so would carry additional deadweight loss.

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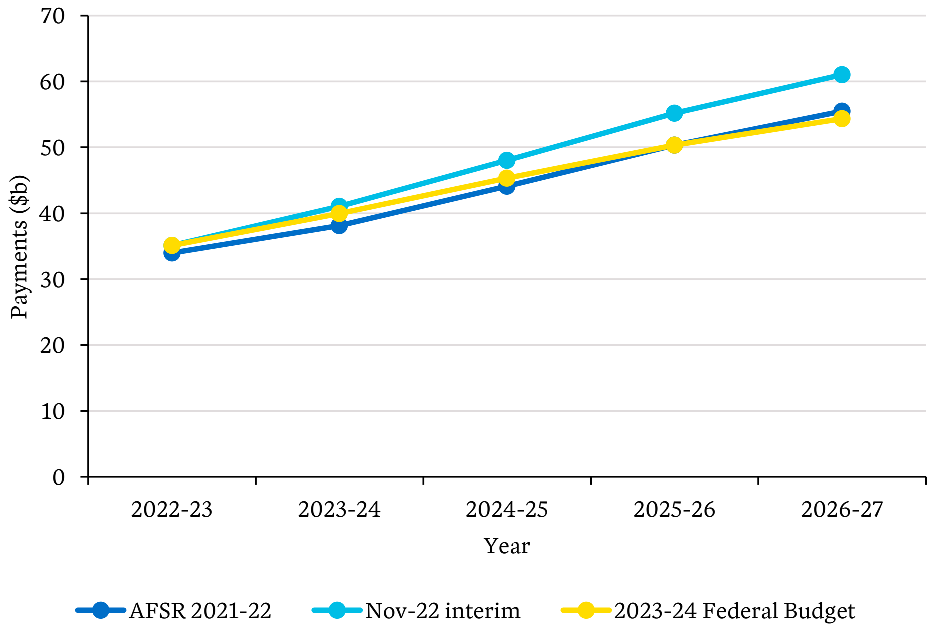
[21] See section 6 of AFSR 2021-22

[22] Table 6.14 and paragraph below that table

4.2.3 Gross cost projections

Figure 4.1 shows the NDIS cost projections for the 2021-22 AFSR, the November 2022 interim projections and the 2023-24 Federal Budget announcement.

Figure 4.1 – Recent NDIS cost projections



The November 2022 interim projections for 2022-23 shows that Scheme costs are higher than the June 2022 AFSR by 3% in 2022-23 to 10% in 2026-27. The increase mainly relates to higher participant numbers (8% of the 10% relates to participant growth and 2% average payment amounts). The 2023-24 Federal Budget announcement incorporates measures anticipated to save $15.3 billion over 2023-24 to 2026-27 and a sustainability target from 1 July 2026 saving a further $0.6 billion in 2026-27. These measures bring the Scheme costs over 2023-24 to 2026-27 closer to the June 2022 AFSR.

4.2.4 Gross cost projections by disability group and level of function band

Table 4.1 shows the projected gross costs over 2022-23 to 2026-27 by disability group and level of function and, consistent with our segmentation.

The key observations are:

- The overall rate of growth is around 12% p.a. across the four years to 2026-27, even after 2023-24 Budget reductions.
- Autism and intellectual disability band A show high rates of growth at around 20% p.a. across the four years to 2026-27. This strong growth is due to the explicit modelling of transitions from delay into these two categories. This explains the strong reduction in projected costs for delay band B over time.
- The rates of growth for other segments, notably intellectual disability bands B-D and psychosocial disability, are generally lower at around 10% p.a. over the four years to 2026-27.

Table 4.1 – Gross cost projection ($m) by disability group and level of function

Disability group	**LoF band (A = highest LoF)**	**2022-23**	**2023-24**	**2024-25**	**2025-26**	**2026-27**
Acquired Brain Injury	A	149	178	209	239	265
	B	425	504	581	653	711
	C	1,466	1,676	1,859	2,009	2,105
	D	404	406	450	487	513
Autism	A	499	686	874	1,084	1,290
	B	2,468	3,227	4,025	4,894	5,747
	C	556	681	798	914	1,012
	D	3,328	4,067	4,858	5,683	6,457
Cerebral Palsy	A	213	252	287	322	352
	B	2,294	2,473	2,654	2,807	2,890
Delay	A	840	1,088	1,304	1,438	1,483
	B	47	45	33	26	22
Hearing	A	116	134	150	165	177
	B	117	132	147	160	172
Intellectual	A	592	724	876	1,038	1,193
	B	1,832	2,148	2,441	2,724	2,955
	C	2,632	3,031	3,382	3,705	3,944
	D	4,903	5,342	5,748	6,058	6,202
Multiple sclerosis	A	75	91	106	122	136
	B	243	269	297	324	346
	C	616	648	690	725	744
Other Neurological	A	185	222	261	299	330
	B	358	425	484	538	580
	C	2,211	2,187	2,287	2,352	2,360
Other Physical	A	183	196	212	228	239
	B	265	289	314	338	356
	C	793	817	855	888	901
Other	A	614	700	856	1,000	1,122
Psychosocial disability	A	397	448	524	594	652
	B	575	652	749	839	912
	C	3,334	3,679	4,141	4,552	4,856
Spinal Cord Injury	A	53	55	62	69	75
	B	101	106	117	128	136
	C	212	224	247	271	289
	D	250	268	297	327	349
	E	255	262	282	299	311
Stroke	A	72	86	99	111	122
	B	757	848	977	1,095	1,188
	C	261	266	290	310	321
Visual / other sensory	A	118	130	140	150	158
	B	288	321	353	383	405
Total		**35,100**	**39,976**	**45,315**	**50,348**	**54,376**

4.2.5 Gross cost projections by age band

Table 4.2 shows the projected gross costs over 2022-23 to 2026-27 by age band. The key observations are:

- The cost for participants aged over 65 years is growing the fastest at a rate of 20% p.a. across the four years to 2026-27.
- The cost for children is growing faster than average, particularly for age groups 7-14 and 15-19.
- The cost for adults aged 35-64 is growing slower than average at 7% p.a. across the four years.

Table 4.2 – Gross cost projections ($m) by age band

Age band	2022-23	2023-24	2024-25	2025-26	2026-27
0 to 6	1,502	1,845	2,088	2,231	2,265
7 to 14	3,230	3,813	4,304	4,817	5,230
15 to 18	1,791	2,163	2,540	2,937	3,311
19 to 24	3,539	4,082	4,706	5,383	6,030
25 to 34	4,898	5,651	6,480	7,284	7,972
35 to 44	4,633	5,192	5,828	6,399	6,823
45 to 54	5,695	6,181	6,739	7,193	7,480
55 to 64	6,993	7,551	8,264	8,856	9,225
65+	2,820	3,500	4,367	5,249	6,041
Total	**35,100**	**39,976**	**45,315**	**50,348**	**54,376**

4.2.6 Gross cost projections by SIL status

Table 4.3 shows the projected gross costs by SIL status over 2022-23 to 2026-27. Payments for participants in SIL are growing faster (average rate of 17%) than for participants without SIL (average rate of 13%). This is due to the relatively higher projected growth in the average payment levels of people receiving SIL, rather than faster growth in numbers of people.

Table 4.3 – Gross cost projections ($m) by SIL status, plus projected numbers and average costs

SIL status	2022-23	2023-24	2024-25	2025-26	2026-27
Total costs ($m)					
With SIL	11,817	13,836	16,058	17,814	19,042
Without SIL	23,283	26,140	29,257	32,533	35,334
Total	**35,100**	**39,976**	**45,315**	**50,348**	**54,376**
Number of participants at year end					
With SIL	32,709	36,709	39,609	41,366	43,183
Without SIL	578,777	643,245	701,143	756,453	808,385
Total	**611,486**	**679,954**	**740,752**	**797,819**	**851,568**
Average cost per person ($)					
With SIL	361,276	376,917	405,424	430,653	440,952
Without SIL	40,228	40,638	41,727	43,008	43,709
Total	**57,401**	**58,793**	**61,175**	**63,106**	**63,854**

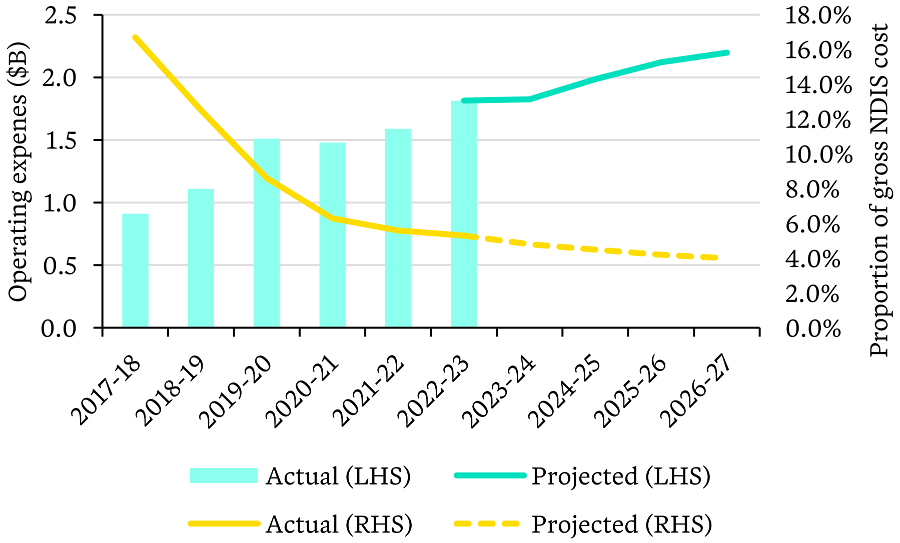
4.2.7 Operating expenses

Gross operating costs

The NDIA incurs operating expenses to administer the Scheme such as staff payroll, early childhood partners, local area coordinator partners and government shared services. We report these separately to gross participant costs for consistency with other disclosures, but operating expenses contribute to the costs of running the Scheme, as they are necessary for providing disability supports to participants.

Figure 4.2 shows actual and projected NDIS operating expenses from 2017-18 to 2026-27. Operating expenses have doubled to $1.8 billion in 2022-23 over the five years since 2017-18. The AFSR 2021-22 projects these expenses to follow a steady upward trajectory to $2.2 billion in 2026-27. Average operating expenses per participant have fallen from earlier years and is equal to 5.3% in 2022-23, with further decreases projected in later years.

Figure 4.2 – Actual and projected NDIS operating expenses and proportion of gross costs



Note: 2022-23 expenses annualised based on expenses for the 9 months to 31 March 2023. From NDIS Quarterly report to disability ministers March 2023 Figure 108 and AFSR 2021-22 Table 5.30.

Net operating costs

Gross operating costs ignore the fact that administration costs of legacy schemes have reduced. We have estimated what these would have been to arrive at net operating costs of the NDIS – the increase compared to our counterfactual.

We estimate legacy operating expenses for 2022-23 at $0.8 billion, which represents an average annual growth rate of 5.6% from $0.5 billion in 2012-13. The projection allows for increasing efficiency in operating expenses as a proportion of scheme expenditure in line with historical improvements. We deduct the state and territory administration expenditure of $0.2 billion to arrive at a net operating cost estimate of $1.2 billion for 2022-23. The calculation is summarised in Table 4.4.

Table 4.4 – Calculation of net operating costs

Item	**Amount ($m)**
NDIS	1,813
Less: Legacy scheme costs	817
Plus: Current state and territory expenditure	(226)
Net cost	**1,222**

4.3 Substitution effects in NDIS costs

4.3.1 Introduction

If the NDIS spending has resulted in less or replaced previous government spending for people with disability, then this is a substitution, reducing the net costs of the Scheme.

We identified the potential areas of substitution through a review of literature and discussions with the NDIA, the NDIS Review Panel and its Secretariat and other relevant stakeholders. The main areas relate to mainstream services supporting people with disability (e.g., Commonwealth spending on aged care or healthcare costs, State and Territory government spending in the education system).

To estimate the substitution and determine the net costs of the NDIS, we construct a counterfactual for how the spending would look like in a world without the NDIS. Importantly, the focus is **not simply what the NDIS currently pays**, because it is likely to have changed both the demand for services and the unit cost of delivery compared to alternative arrangements. For example, if the NDIS provides SIL supports for a person rather than funded aged care places, the substitution is what the aged care place would cost, rather than the amounts currently paid in SIL. In many cases the costs of NDIS supports are greater than the substituted counterfactual service.

Constructing the counterfactual for this substitution estimate is not simple since there is no direct data source in most cases. We have combined information from the NDIA on current spending and research or statistics on government spending prior to the NDIS to form a view on the substitution estimate. The exact approach varies depending on the substitution effect and is explained in the following subsections. For this reason, the estimates are highly uncertain.

4.3.2 Substitution effects excluded from the analysis

The largest omission from our substitution work is the absence of estimates for the substitution of spending that was previously from outside government (for example, the private purchase of a wheelchair now covered by a scheme). This includes:

- **Household spending on disability supports.** For people not previously supported under legacy schemes, or receiving limited support, there may well have been substantial amounts of household spending on supports. Our results on reduced financial distress (Section 5.5.5) are consistent with this substitution.
- **Charitable spending and not-for-profit organisations.** Significant volumes of supports were provided through not-for-profit organisations. The operations of these organisations have changed as NDIS supports have grown.

We are not aware of data or research that would enable us to determine the extent of this substitution. For this reason, we have not attempted to estimate the substitution from non-government spending. Amounts are likely to be substantial, but ultimately partial (we would not expect all additional NDIS spending to be offset):

- The observed strong growth in the disability support sector suggests that a large fraction of spending is ‘new’ rather than displaced
- For participants with larger packages, it is unlikely that household budget could accommodate all of the budgeted spending.

Additionally, we recognise that there will also have been a substitution from (unpaid) informal care to paid care. We have not found satisfactory data to estimate the effect – future SDAC releases may be the best way to examine hours of informal care.

4.3.3 Summary of substitution effects studied

Table 4.5 summarises our estimates of substitution effects we have identified from a review of literature and discussions with the NDIA, the NDIS Review Panel and other stakeholders. Each item is discussed in turn for the reminder of Section 4.2.7.

Table 4.5 – Summary of substitution effects that impact the net cost of the NDIS

Substitution effect	Estimate for cost over year to March 2023 ($m)	Potential upper bound ($m)
Residential aged care – younger people	408	598
Residential aged care – older people	66	289
Home care packages	336	672
Palliative care	2	12
Housing and homelessness	92	233
Healthcare costs	292	586
Early childhood and positive behaviour supports	n/a	n/a
Justice	n/a	n/a
School transport	162	243
Personal care in schools	174	232
Participants with chronic health conditions	677	1,004
Attendant care, allied health and other therapy	n/a	n/a
Total	**2,209**	**3,870**

Note the last item is a potential negative substitution effect – where the NDIS has increased costs elsewhere in the care sector. In the following subsections, we describe each substitution effect, our approach to estimation and the results.

Table 4.5 shows our estimate of substitution from government spending on people with disability is $2.2 billion. We have determined a potential upper bound for the substitution impact using different assumptions to illustrate the uncertainty. This shows, under more generous assumptions, substitution of government spending could be $3.9 billion.

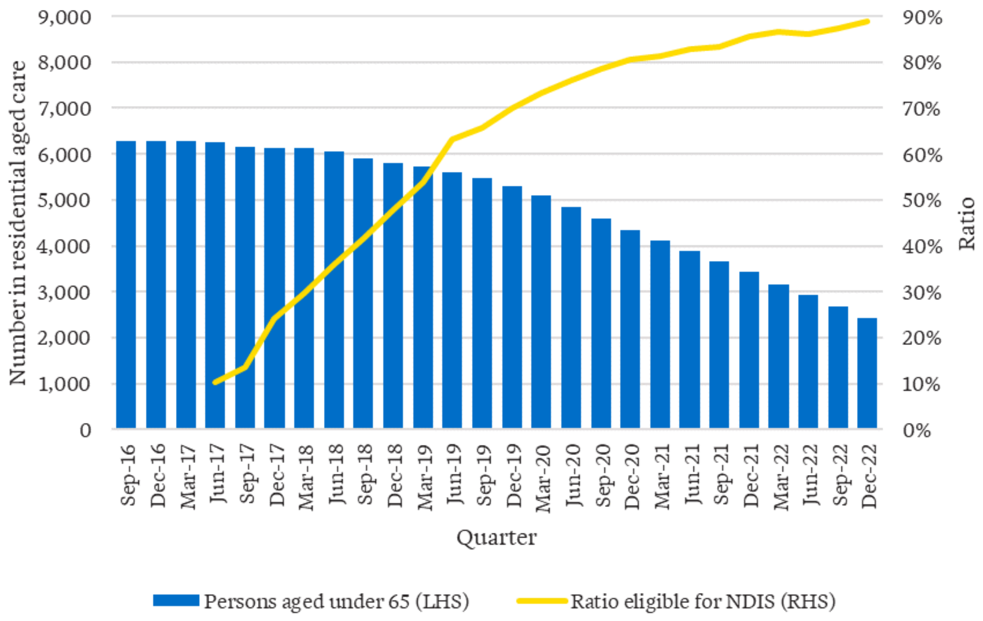
4.3.4 Younger people in residential aged care facilities

Background

Young people with disability sometimes enter residential aged care when there is a lack of options available to provide the required support and housing. Figure 4.3 below shows the number of people aged under 65 years in residential aged care since 30 June 2017 and the proportion participating in the NDIS.

The number of people under 65 years in residential aged care was steady at around 6,250 people prior to the main roll-out of the NDIS. The proportion of residents participating in the Scheme increased over time, as efforts increased to help residents understand the NDIS and go through the application process.

Figure 4.3 – Number of people aged under 65 years in residential aged care and proportion in NDIS



Source: NDIS quarterly reports at March 2023 (Figure 7), June 2021 (Figure 25) and June 2020 (Figure 10), AIHW (2023c) Table 3

For a participant aged under 65 years in aged care, the NDIS reimburses the Commonwealth Department of Health and Aged Care for the funding to provide aged care support. This is based on standard agreed rates (AN-ACC rates going forward) and is accomplished via a cross-billing arrangement between the two parties. This is a direct substitution with the NDIS paying for the service instead of the Commonwealth Department of Health and Aged Care who would have paid prior to the NDIS. We can identify from the NDIS data the number of NDIS participants aged under 65 years in residential aged care and the direct costs of the cross-billing arrangement.

The number of younger people in aged care has reduced over time and this reduction has accelerated in recent years, through a combination of fewer entries, more exits, plus some aging out (people turning 65). This reflects Australian Government policy initiatives to reduce the number of young people in aged care supports, with a target to numbers to zero by 2025 (DSS, 2020). The NDIS has been a key component of the policy strategy with eligible residents transitioning out, typically to group home supports or SDA.

Approach and results

Figure 4.3 shows there were 6,250 people aged under 65 years in residential aged care prior to the NDIS. We assume that, in the absence of the NDIS, this number would have held steady over time. We further assume 87% of this group would have been NDIS participants, based on the ratio seen over the most recent year.

This implies in the past year the NDIS has assisted around 5,440 participants aged under 65 years who would have been in aged care under legacy programs. These participants are either currently in residential aged care with funding provided by the NDIS, or are not in aged care (transitioned out, or did not need to enter), due to housing support funding (SIL or SDA) as part of their NDIS plan. As of March 2023, there are 1,930 participants in aged care, so an estimated 3,510 participants who would have been in aged care but are not due to the NDIS.

Based on the cross-billing payments in the year to September 2022 for NDIS participants aged under 65 years in residential aged care, we estimate the average cost of support per person is $75,000. Based on these assumptions, we estimate the substitution amount to be $408 million.

We have reviewed the reasonableness of the $75,000 assumption by examining the cost of aged care support from the RoGS 2023[23], which was $61,000 during 2021-22. Given that young people in aged care likely have high needs we believe the higher assumption of $75,000 seems reasonable.

The estimate of average support costs is uncertain. For example the cost of delivering accommodation support services to people with disability under the National Disability Agreement is $110,000 from RoGS 2018[24]. If we use this average cost, the substitution impact is $598 million.

4.3.5 Older NDIS participants not transitioning to residential aged care

Background

Australians aged over 65 years with disability may enter the aged care system. However, if they become eligible for the NDIS prior to turning 65 years old, they can remain in the NDIS post age 65 and if eligible can utilise SIL or SDA funding. This support may mean that people can avoid or delay entering a residential aged care facility. This creates a substitution impact, because without the NDIS, these participants would be in residential aged care and funded by the Commonwealth Department of Health and Aged Care.

Approach and results

At 31 March 2023, we identified 3,500 participants aged over 65 years with a SIL or SDA arrangement.

We assume 25% of these participants would enter the aged care system without the NDIS. This is somewhat ad hoc, but matches the AIHW (AIHW, 2022b[25], using SDAC data) which found 75% of people with severe or profound disability lived in a private dwelling. Using the SDAC 2018 results directly for the 65-69 age group tells as similar story of relatively low aged care use, showing:

- 97,000 people with severe or profound core activity limitation in the 65-69 age band (most relevant for us- not many participants over 70- yet)[26]
- 8,600 living in cared accommodation (disability or aged) in 65-69 age band[27].

This gives less than 10% of people with severe or profound limitations in that age group being in aged care. An additional consideration supporting a low transition into aged care is that some people in group homes would have remained in these arrangements, even under legacy scheme arrangements – AIHW data from 2015-16 had about 2,300 people aged 65+ in domestic-scale supported living facility or supported accommodation facility, distinct from residential aged care.

We have assumed the cost of delivering aged care services to a client with disability is $75,000 based on the annual cost for younger people with disability in residential aged care. This gives a substitution impact of $66 million.

We note:

- The proportion of NDIS participants who would be in aged care is uncertain and relies on the equating NDIS eligibility with ‘severe or profound disability’ in the SDAC, and its applicability in the counterfactual.

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[23] Table 14A.3 for cost, Table 14A.2 for numbers

[24] See Table 3.2 of our report

[25] Table HOUSING.1

[26] Table 2.1 of ‘Disability tables’

[27] Table 25_1 of ‘older peoples tables’

- The assumed cost per user is also uncertain. Some other proxies in a legacy scheme are:
  - The cost of providing aged care support for residents aged over 65 years is $61,000 from RoGS 2023. However, we consider that people with disability have higher needs than average so would cost more to support.
  - The cost of support per participant in NSW group homes was $183,000 (COAG, 2018, Table 2).
  - The cost of NDA accommodation support services per user in RoGS 2018 was $110,000[28]. However, RoGS indicates this includes the cost of lighter touch clients who receive in-home supports (such as attendant or personal care) to enable them to stay at home.

We note the cost per participant in a residential aged care facility is much lower than the cost per participant with SIL. On average, the average annual payments per participant with SIL is $341,000[29] and their annual budget is $360,000[30].

To illustrate the uncertainty in our estimate, we provide a scenario based on 75% of NDIS participants aged over 65 years in SIL or SDA requiring aged care and an average cost of $110,000. This gives a potential upper bound of $289 million.

4.3.6 Home care packages for people over 65

Background

The Australian Government funds a range of aged care services to support older Australians to live independently and safely in their own home for as long as possible. These include the Commonwealth Home Support Programme and the Home Care Package (HCP) Program. Our discussion will focus on the HCP as it is designed for older people with more intensive or complex care needs.

The HCP program provides support to older people with complex care needs to live independently in their own homes. The main categories of care and services from a HCP include aging related services to keep older Australians well and independent, safe in their homes and connected to their communities. There are four levels of HCPs to help meet the different levels of ageing related functional decline from level one for basic care needs to level four for high-level care needs.

Many older participants who are not already in SIL or SDA would be eligible for the HCP in the absence of the NDIS. The government funds part of a person's HCP budget though subsidies and supplements.

Approach and results

We estimate the number of participants eligible for HCP as those who are aged 65 and over but not in SIL or SDA. Participants eligible for the NDIS would largely meet the eligibility criteria for HCP because eligibility is driven by functional need – people who require coordinated care and support to remain living in their own home.

If we assumed that all people would qualify and receive a home care package corresponding to the highest package threshold below their payments in the year to March 2023, (e.g. a participant with payments of $50,000 would be assigned to the HCP intermediate care need level), then we would see a total cost of $672m and an average home care package size of about $50,000. However, this would be an overestimate of true substitution costs:

- The uncapped nature of the NDIS might lead to higher packages of support compared to an equivalent HCP.

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[28] See Table 3.2 of our report

[29] AFSR 2021-22, Figure 4.11

[30] AFSR 2021-22, Figure 4.19

- NDIS packages are somewhat broader than home care packages in their potential inclusions
- HCPs are subject to waitlists through the National Priority System and there are government caps on number of packages. Wait times between 3 and 12 months are common, with longer waits for higher levels of approved care needs. Even if packages were granted to our NDIS cohort first, it could cause longer waits for other applicants, reducing the value of substitution.
- People may not immediately apply for HCPs when they turn 65 (e.g. if their informal care arrangements were felt as adequate).

We have not attempted a detailed estimation of these effects – rather assumed a 50% discount on our upper bound to account for them by assumption. The resulting estimate of $336m represents about 8% of current Home Care Package spending.

Table 4.6 – Estimate of HCP substitution effect

HCP level	Threshold ($)	Estimate ($m)	Potential upper bound ($m)
1 – Basic care needs	10,300	8	16
2 – Low care needs	18,100	37	74
3 – Intermediate care needs	39,400	50	100
4 – High care	59,750	241	482
Total		**336**	**672**

4.3.7 Palliative care

Background

The NDIA raised this as a potential area to examine in our discussions on substitutions and benefits of the Scheme. They also shared a submission to the NDIS Review Panel on the intersection of the NDIS and other government systems, including palliative care. There is anecdotal evidence of palliative care patients aged under 65 years (for example, with cancer) accessing the Scheme under Early Intervention, possibly due to more generous supports available under the NDIS.

Approach and results

There is currently no field on the NDIS data that specifies whether the participant is at the palliative stage and eligible for palliative care. We have tried to identify a potential pool of participants who could be palliative care patients. We used several proxies:

- Elevated mortality in the first year of participation – Our analysis of mortality rates (see section 5.4.1) showed that after controlling for participant characteristics, mortality rates were higher in the first year of participation than other durations. We have calculated the excess annual deaths in the first year of participation and used this as a proxy for the number of participants eligible for a palliative care setting. This approach implied 140 participants over the year to March 2023.
- Active participants with cancer – The September 2022 Chronic Health Conditions Monitoring report[31] shows that at 30 September 2022, around 110 active participants had cancer as their primary disability. This would understate the number, but it is reasonably close to the result from the first proxy.

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[31] Table 7

- Annual deaths in SIL and SDA – This is a very high upper bound, but is a useful comparison given the uncertainty in our estimation. We identified around 800 deaths from SIL and SDA over the year to March 2023.

We have chosen the first proxy (140) as the number of participants eligible for palliative care over the year to March 2023. We have assumed a cost of $15,000 for palliative care based on statistics published by IHACPA[32]adjusted for inflation. This implies a substitution impact of $2 million.

For reference, the upper bound of 800 implies an impact of $12 million – even this higher number is a relatively small contributor to total offset costs based on current numbers.

Trends and potential implications

Feedback from the NDIA suggests that palliative care cost substitution is likely to be a growing issue over time, particularly for Scheme access requests for people with metastatic cancer. We recognise that the Scheme costs can be far larger than the palliative care offset assumptions; people admitted to the scheme and accessing SIL may have packages in the hundreds of thousands of dollars per year, for the period of time that people remain alive. This risk suggests that the boundary between the Scheme and disability care requires ongoing attention.

4.3.8 Housing and homelessness

Background

Although housing is not a core NDIS responsibility, the NDIS provides support to enable participants to live at home independently. This could be either through:

- Supported Independent Living (SIL) providing support for the participant to become more independent within their home
- Housing support such as home modifications or in the case of very high needs, Specialist Disability Accommodation (SDA).

Approach and results

We model in the absence of the NDIS, how many more people with disability would access social housing or access specialist homelessness support services and the corresponding cost.

We identified 23,000 active participants in SDA and 31,000 active participants in SIL at 31 March 2023. Furthermore, there is a large intersection with 19,000 active participants receiving both SIL and SDA. To model the number of participants that would have accessed housing services in the absence of the NDIS, we assume:

- 10% of the SDA cohort would access social housing. This is consistent with the proportion of DSP recipients accessing social housing in June 2022 based on AIHW[33] statistics.
- 3.5% of the SIL cohort would access specialist homelessness services. This is consistent with the proportion of DSP recipients accessing specialist homelessness services during 2021-22 based on AIHW statistics (AIHW, 2022b).

To model the cost, we assume:

- $38,300 for the cost of social housing per household from RoGS 2023[34]

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[32] IHACPA (2021) Table 11

[33] AIHW 2023a Table HOUSEHOLDS.4

[34] Tables 18A.3-4, 18A.48-51

- $5,000 for the cost of specialist homelessness services per client based on RoGS 2023[35].

Based on these assumptions, we estimate the spending in the social housing and homelessness system to be $92 million in the absence of the NDIS.

There is considerable uncertainty around our estimates from the proportion of NDIS participants who access housing services in the absence of the Scheme. We have utilised the proportion of Disability Support Pension recipients as a proxy in the absence of other data.

If we assume 25% of the SDA cohort would access social housing and 10% of the SIL cohort would access specialist homelessness services, then the substitution impact would be $233 million.

4.3.9 Healthcare costs

Background

The intersection of the NDIS and the healthcare system has been a major area of discussion between policy makers in recent years. Much of the discussion centres on who should be responsible for providing support given the complex relationship between a person's disability and their health. In June 2019, the Minister for the NDIS, through the Disability Reform Council (DRC), announced the NDIS would fund disability related health supports. These health supports enable the participant to manage a health condition directly related to their disability. For example, nursing support, training for carers on providing healthcare, and consumables such as continence products. Some of these costs were already being met by the NDIS before this formalisation, although itemisation of these costs is relatively poor prior to 2019.

As expected, disability-related health support payments have increased significantly since the decision, through both increased spending and better recording. The NDIA monitors and reports on the level of payments in an internal report every six months.

In the absence of the NDIS, some of this spending would be funded by the government as part of public health expenditure, private health insurance or self-funded by the participant. Spending under the NDIS may be larger than the non-NDIS costs given the uncapped nature of the Scheme and coverage for all reasonable and necessary supports.

Approach and results

A full treatment of healthcare costs would involve:

- Identification of all healthcare supports
- Assessment of what fraction would be met by non-NDIS sources (particularly the health system) under legacy schemes
- Assessment of what volume and price of spending would occur under legacy schemes (since these may be higher under the NDIS).

A full analysis of these effects quickly runs into data limitations, so our estimate is largely assumption based. Table 4.7 shows the breakdown of $837m of disability-related health supports identified by the NDIS. For these we have assumed:

- The bulk of the 'health' categories would not have been covered under legacy schemes – supports such as nursing and dieticians would likely be covered under health system costs.
- The bulk of 'consumables' and 'assistive technology' would have been covered under legacy programs.
- A global 80% ratio for the costs (including volume changes) under legacy compared to the NDIS. This sits between full recognition and the 62% figure for total supports seen in our analysis in Table 3.6.

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[35] RoGS 2023, Table 19A.18

These assumptions given an estimated substitution of $292m, about 35% of total costs.

Table 4.7 – Disability-related health supports for the year to March 2023

Item	Cost, 12 months to March 2023, $m (A)	% not covered by disability schemes prior to 2019 (B)	Assumed % cost if met outside the NDIS (C)	Assumed substitution $m (A×B×C)
Health costs				
Nurse	138.5	80%	80%	88.6
Dietician	30.6	80%	80%	19.6
Exercise	128.8	80%	80%	82.4
Training Carers	7.4	80%	80%	4.7
Podiatry	10.7	80%	80%	6.8
Self-managed CB Health Wellbeing	13.9	80%	80%	8.9
Consumables				
Continence	98.5	20%	80%	15.8
Feeding supports	10.6	20%	80%	1.7
Other Health consumables	64.4	20%	80%	10.3
Personal care	140.1	20%	80%	22.4
Self-Managed - consumables	143.4	20%	80%	22.9
Assistive technology				
Respiratory	8.8	20%	80%	1.4
Pressure Care	22.3	20%	80%	3.6
Epilepsy	0.2	20%	80%	0.0
Thermoregulation	0.1	20%	80%	0.0
COVID-19 related supports				
All COVID supports	19.1	20%	80%	3.1
Total	**837.4**			**292.3**

Source: NDIA monitoring report, Taylor Fry assumptions

To illustrate the uncertainty, we provide a potential upper bound based on 75% as the proportion that is a substitution. This gives a potential upper bound of $628 million.

We highlight the limitations of the $837 million estimate noted by the NDIA in their report, which suggest the figure could be understated. Some item codes on the payment data are generic making it difficult to identify disability-related health spending and in-kind supports are not included in the estimate. Similarly, some types of therapies (e.g. psychological services) could attract government funding support outside the Scheme. Furthermore, there is no detail on the proportion of hours that disability support workers spend on health-related activities (e.g., insulin injections, wound care) for the participant, so this has not been included as a health support.

4.3.10 Early childhood and positive behaviour supports

There has been a significant shift in funding, coverage and service delivery models for disability support services for children since the introduction of the NDIS. These services include the following:

- Early childhood interventions for children aged designed to help children to better integrate into schools and the wider community. These target maternal and paediatric health (0 to 2 years) and Early Childhood Education and Care (ECEC, 2 to 6 years).
- Positive behaviour support (PBS) is an approach to encourage children to behave in new ways. The goal of this approach is to address significantly harmful or persistent behaviours of concern to improve quality of life of children and people they interact with.

Prior to the NDIS, states and territories provided differing levels of early childhood intervention services. The availability of these support programs varied considerably between jurisdictions. For example, NSW funded early education programs that were tightly integrated with social services and mainstream ECEC. Other jurisdictions provided less early childhood support for children under age 7.

Historically states and territories also funded PBS for children. Given that PBS is intended to address severely difficult or challenging behaviours, these services were delivered primarily in specialty school settings, separate to mainstream classroom environments.

Early childhood and positive behaviour supports are now provided through a market of service providers funded through the NDIS. Service delivery models have transitioned towards a system more heavily providing individualised supports, particularly in the early childhood space:

- Early childhood interventions have moved towards a treatment model of intervention with increased use of therapy, potentially with a reduction in the level of integration with mainstream ECEC.
- Behavioural interventions are also being provided by third-party operators, being a combination of onsite and offset services supporting specialist education settings. Analysis undertaken by the Review Secretariat on behavioural interventions have identified estimates of positive behaviour supports in the range of $170 and $290 million annually for people aged 0-18.

A natural question is how much of the spending on early childhood and positive behaviour supports represents substitution. We have chosen to not have an explicit figure – our understanding is incomplete, but the main considerations are:

- It is reasonable to conclude that that structure of the Scheme has led to a significant expansion in both the coverage of people and volume supports provided (see Section 3.5). This means that even if we recognised a component, it should only be a fraction of total current supports. For example, we have been advised that typically child inclusivity packages under legacy programs were on the order of $8,000 per year, significantly less than average package sizes.
- Some childhood supports are already counted in our estimate of legacy scheme costs, and so not appropriate for recognition as additional substitution. The AIHW (2012) report[36] suggests states and territories historically funded a portion of these supports under the community support under the National Disability Agreement. 26,060 participants received early childhood intervention and 8,100 participants received behaviour/specialist intervention.
- Funding streams are also uncertain. It is unclear the extent to which different supports were historically funded by the government through disability or education spending, and private and non-for-profit spending.

On balance, we have viewed most spending as either additional or replacing legacy funding, noting there is a lot of specific detail and corresponding uncertainty.

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[36] Disability support services 2010-11

4.3.11 Justice

In our discussions with the NDIA, it was stated that the use of SIL and SDA has led to “overstaffing” of care compared to more traditional settings such as aged care or group homes. For participants with behavioural problems, this overstaffing could be a substitution to the forensic mental health stream of the justice system paid by State and Territory governments. For example, there are special units within the justice system for offenders with mental health problems. These units have designated nursing and security staff, providing an efficient way of delivering care to people with behavioural problems.

There is no clear way of identifying this issue in the data. We tried to determine a proxy for overstaffing by examining participants with very high attendant care payments and to determine a proxy for participants with behavioural problems by examining those with psychosocial disability. However, this approach does not differentiate between a participant requiring three staff members in an eight-hour shift or a participant requiring 24-hour care. We have not attempted to estimate a substitution impact for this area due to the data limitations.

From our analysis of attendant care payments, we identified a small number of active participants in March 2023 with psychosocial disability that had very high attendant care payments. This suggests that the substitution impact would be small even if we used this as a basis for estimation.

4.3.12 School transport

Background

The NDIS is funding school transport (for example, buses or taxis) needed to get child participants to and from school. In the absence of the NDIS, State and Territory governments would bear this cost as part of the education system, so this is a substitution impact.

Approach and results

The AFSR 2020-21[37] estimated the cost of this support in the Scheme was about 5.7% of projected payments for participants aged 0-18 years in 2022-23. We have applied this rate to the estimated payments for participants aged 0-18 years in 2022-23. This gives an estimate of $325 million spent on school transport in 2022-23 within the NDIS.

However, it is likely this estimate is higher than the actual cost of delivery in the absence of the NDIS. The Scheme has improved access to this service compared to the legacy schemes and furthermore, delivery as a collective support in the education system was more cost efficient. For this reason, we assume 50% of this cost would represent a substitution amount for this support, giving an estimate of $162 million. There is no data for this assumption, so we have selected it based on judgement.

To illustrate the uncertainty, we calculate a potential upper bound of $243 million based on an assumption of 75%.

4.3.13 Personal care in schools

Background

Prior to the NDIS, State and Territory governments provided extra staff to assist children with disability in schools. The extra staff would assist the child with their learning in the classroom but also with care duties such as going to the toilet or assistance at mealtimes.

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[37] Table 49

The NDIS has in-kind agreements with State and Territory governments to continue providing personal care services for child participants at schools. Whilst this is not deducted specifically from participant plans, the NDIS covers the cost so this represents a substitution.

Approach and results

The AFSR 2020-21[38] estimated the cost of this support within the Scheme was about 4.1% of projected payments for participants aged 0-18 years in 2022-23. We have applied this rate to the estimated payments for participants aged 0-18 years in 2022-23. This gives an estimate of $232 million spent on personal care within schools in 2022-23 within the NDIS.

It is likely that the delivery model for this support is largely unchanged and based on previous models. However, it may be the case that more staff are required to provide the support as the NDIS may have improved access to the service. For this reason, we assume 75% of the current spending is a substitution impact, giving an estimate of $174 million.

To illustrate the uncertainty, we provide a potential upper bound of $232 million based on 100% of the current spending.

4.3.14 Participants with chronic health conditions

Background

The NDIS was intended to cover only people with permanent and significant functional impairment requiring specialist support needs. However, disputes at the Administrative Appeals Tribunal have broadened access to people with mild and moderate disability, including chronic health conditions which are often ageing related. Examples include dementia, physical conditions such as arthritis, pain/fatigue, diabetes, obesity and mental health condition such as PTSD, depression and anxiety.

Prior to the NDIS, Australians with chronic health conditions received support from mainstream services, including healthcare and aged care. We discuss some examples below.

- A person with diabetes could see a regular doctor for monitoring and receive pathology tests, covered by Medicare. Depending on the person's circumstances, medication for managing the condition could be subsidised by the Pharmaceutical Benefits Scheme and treatment such as dialysis could be covered by public hospital expenditure.
- A person with depression could receive psychology services funded by Medicare. Depending on the person's circumstances, medication for managing the condition could be subsidised by the Pharmaceutical Benefits Scheme.
- A person with dementia could move into a residential aged care facility to receive support.

Healthcare supports are often capped and may involve co-payments from the individual. Similarly aged care supports may involve co-payments from the individual and are means-tested. On the other hand, the NDIS is an uncapped fully funded Scheme and some spending (e.g., self-management, community participation, transport) would not be covered for this cohort without the NDIS. This suggests current NDIS spending could be more than government spending for this cohort without the NDIS.

On the other hand, the at-home care provided by disability support workers would likely be delivered in a hospital setting when the participant's condition has deteriorated in a world without the NDIS. Delivery of care in a hospital setting is more expensive than at-home care.

In our view, some of this spending is a substitution for government spending in a world without the NDIS. We discuss our approach for estimation below.

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[38] Table 49

Approach and results

The NDIA produce regular internal reporting on the cost of participants with chronic health conditions. We have reviewed the September 2022 report and used this as a basis for our estimate. We were able to validate the figures in the report.

For participants with dementia, we consider that in a world without the NDIS, these participants would instead have interacted with residential aged care. We identify 4,200 participants with dementia as at 31 March 2023 and assume a cost of $75,000 for the delivery of aged care consistent with our analysis in section 4.3.4. This gives an estimate of $315 million.

For the other participants, we use the NDIA's report on chronic health conditions. The September 2022 report shows spending of $2.5 billion in the year to September 2022 on participants with chronic health conditions. However, limitations with the coding of the primary disability group fields means many participants are coded into an "Other" bucket and their exact condition is not known. Of 41,600 participants identified, 16,300 (39%) were in the "Other Physical" group and 8,900 (21%) were in the "Other Psychological" group. The cost for these participants was $1.3 billion. We are unsure to what extent this group could be considered as having chronic health conditions (as opposed to other types of disability), so we have excluded this group from our estimate of the substitution impact. In other words, we assume this group continues to require specialist disability support services in a world without the NDIS – already allowed for in our projection of legacy schemes.

From the NDIS data, we estimate spending on participants with chronic health conditions in the year to March 2023 as the combination of:

- $248 million for participants with known physical conditions
- $495 million for participants with known mental health conditions.

We remove disability-related health spending from these figures, estimated to be 4% and 2% of spending respectively for physical and mental health conditions. Finally, we assume 50% of this spending would have been spent on government services in a world without the NDIS so is a substitution. The choice of 50% is subjective but on balance reflects a middle ground between two extremes. Using these assumptions, we obtain an estimate of $362 million.

Overall, our estimate for the substitution is $677 million.

The uncertainty in our estimate arises from:

- The assumed cost of aged care support per person for participants with dementia. We refer the reader to section 4.3.5 where we discuss other relevant benchmarks for this assumption.
- The proportion of NDIS spending on participants with known chronic health conditions that would be government spending in a world without the NDIS. This is highly uncertain and there is no data.

If we assume an average aged care cost per participant of $110,000 for dementia and 75% of current spending for participants with known chronic health conditions, we obtain an estimate of $1 billion. This could be a potential upper bound.

The NDIA monitoring report focuses on people with a chronic health condition as their primary disability – there might be some additional substitutions tied to people accessing services due to secondary chronic health conditions. Some of this will be included in health costs (Section 4.3.9), but we have not attempted to estimate further.

4.3.15 Costs of attendant care, allied health and other therapy

Background

There has been considerable attention on the pricing arrangements of the NDIS and the impact it has had in the market on the pricing of services. Potential services impacted (based on stakeholder discussions and anecdotal evidence of price increases) include:

- Attendant care for other care schemes such as workers compensation and lifetime care schemes
- Carer costs for aged care providers
- Allied health services costs.

If allowed for, this would be a type of 'reverse substitution', where the impact on government and private service costs elsewhere has risen.

It is beyond the scope of this report to explore the pricing impact across the whole market. However, we provide an estimate for the first item (attendant care for other care schemes). This is an additional cost to schemes of $48 million per year, assuming a 7% increase in attendant care costs, all else equal. Broader impacts on aged care and allied health are likely to be larger. Further research on market impacts of the NDIS would be valuable to understand these spillover effects.

Attendant care costs in other schemes

Australia's network of lifetime care and workers' compensation schemes provide no-fault treatment and care for people seriously injured in road and workplace accidents respectively. Anecdotal evidence suggests increased costs of care. For example:

- In one scheme, most providers were charging the NDIS price limit with some charging above or below it.
- Another scheme recently completed a tender process for attendant care providers and most of the providers submitted rates aligned to the NDIS price guides. Discussions with tenders revealed that providers considered the NDIS and the scheme as interchangeable consumers, so they decided to charge the same price.

The NDIS is now a large source of demand for attendant care services and many providers are using the NDIS price limits as guides for how much they charge. The schemes effectively compete with the NDIS for providers to service their participants. We believe it is reasonable to conclude this competition has pushed up the prices for these schemes.

To estimate the impact of the NDIS on attendant care payments, we estimate the pricing impact on the attendant care rate and apply it to the estimated payments.

We estimate the pricing impact of the NDIS on attendant care rates in these schemes to be approximately 7%. This is based on consideration of the following:

- We understand lifetime care schemes have historically adopted an inflation assumption higher than economic inflation to capture unit cost growth not explained by economic inflation. In the past three years, this has been attributed to the impact of the NDIS pricing guidance. The inflation assumption was higher than economic inflation by around 2%-3% which implies a cumulative impact of 6%-9%.
- We compared the current attendant care rate in Victoria's Transport Accident Commission to the 2012-13 rate (that is, prior to the start of the NDIS trial) adjusted for growth in the National Minimum Wage and the Fair Work decision on wages in the community and disability sector. The gap was 7%.

For both cases, the 7% is based on the experience of larger schemes and is more an upper bound as there could be other sources of cost pressure impacting the experience. However, we believe the impact could be higher for smaller schemes who have less bargaining power than the larger schemes. On balance, we adopt 7% for our estimate.

We estimate that schemes in Australia paid approximately $680 million in attendant care payments in 2022-23. This is based on:

- Estimated $300 million in attendant care payments for the NSW Lifetime Care and Support Scheme and Victoria's Transport Accident Commission.
- Assuming this represents 55% of payments across Australia based on motor vehicle registrations (ABS, 2021).

- An additional 25% loading for workers compensation based on NSW experience. This also aligns with AIHW research (AIHW, 2021) showing workplace accidents lead to fewer serious injuries than road accidents.

Using these assumptions, we estimate the impact to be $48 million in cost growth, so this is a reverse substitution effect.

4.3.16 Projection into the future

To calculate the net costs of the NDIS in the future, we need to project the substitution from government spending. To do this, we have made assumptions on the growth of each substitution impact. Table 4.8 summarises our assumptions.

Table 4.8 – Growth assumptions for substitution effects from government spending

Substitution effect	Assumption for growth and rationale
Residential aged care – younger people	Grows with inflation only, as our estimate is based on a steady number of participants in residential aged care.
Residential aged care – older people	Grows with inflation and increase in number of participants aged over 65 years. Rate is faster than the projected growth in gross NDIS costs, because the number of participants aged over 65 years is growing faster than overall numbers in the Scheme.
Home care packages	Grows with inflation and increase in number of participants aged over 65 years. Rate is faster than the projected growth in gross NDIS costs, because the number of participants aged over 65 years is growing faster than overall numbers in the Scheme.
Palliative care	Grows with inflation and participant numbers in the Scheme, so rate aligns with growth in gross NDIS costs.
Housing and homelessness	Grows with inflation and participant numbers in SIL. Rate is slower than projected growth in gross NDIS costs, because the number of SIL participants is growing slower than overall numbers in the Scheme.
Healthcare costs	Grows at a rate 50% higher than projected growth in overall Scheme costs, consistent with experience in internal monitoring report.
Early childhood and positive behaviour supports	n/a
Justice	n/a
School transport	Align to growth in Scheme costs for participants aged 0-18 years
Personal care in schools	Align to growth in Scheme costs for participants aged 0-18 years
Participants with chronic health conditions	Growth rate at 50% higher than projected growth in overall Scheme costs, consistent with experience in internal monitoring report
Attendant care, allied health and other therapy	n/a

Most of the substitution impacts are driven by groups that grow faster than the overall gross costs of the NDIS. For this reason, the substitution impact is projected to growth at a rate faster than the overall gross costs of the NDIS. We project the substitution impact to grow from $2.2 billion in 2022-23 to $3.9 billion in 2026-27. This projection is highly uncertain due to growth assumptions derived from the Scheme cost projections. The comments on uncertainty underlying the Scheme cost projections (see section 4.2.1) are relevant here too.

4.4 Unanticipated costs

Over time, there have been unanticipated costs that have emerged in the NDIS. Some of these are already included in our substitution effects (such as school transport, some disability-related health costs, personal care in schools), but some are more properly viewed as unanticipated costs, without direct substitution. We are aware of two such examples from our research and discussions with the NDIA.

Table 4.9 – Unanticipated costs

Unanticipated cost	Estimated amount in 2022-23 ($m)
Children with development delay	980
National Injury Insurance Scheme	770
Total	**1,750**

These do not feature in our estimation of 'net' NDIS costs, but are included for completeness. We explore them in the following subsections.

4.4.1 Children with developmental delay

Background

The initial design of the NDIS excluded "developmental learning disorders" and "other developmental disorders". However, children with developmental delay can access the current NDIS under Early Intervention. This is the fastest growing cohort in the NDIS and is a key driver of cost pressures in the Scheme. This is an unanticipated cost of the NDIS.

Approach and results

Based on the November 2022 interim projections, the cost of child participants aged 0-6 with developmental delay is $828 million in 2022-23. Furthermore, the cost of all participants who have developmental delay (that is, including participants who entered aged 0-6 but are now 7+) is $980 million in 2022-23.

This estimate is uncertain. We refer the reader to our comments on uncertainty in the Scheme cost projections (see section 4.2.1). We also note that if people with developmental delay were excluded from the Scheme, the savings might be less than the $828 million – more children might be diagnosed earlier with autism or intellectual disability and enter the Scheme under these disability groups instead.

4.4.2 National Injury Insurance Scheme

Background

When the Productivity Commission proposed the NDIS, it also recommended the establishment of the National Injury Insurance Scheme (NIIS). The scheme was intended to cover people with serious injuries from accidents regardless of the cause (for example, road accident, workplace injury, medical misadventure, or general injury).

To date, the NIIS only exists across Australia covering road accidents and workers compensation. Most people who incur a serious injury from other causes do not have a lifetime compensation scheme to provide no-fault cover for their treatment and care costs. The consequence of the NIIS not being fully in place is that these people with disability enter the NDIS if aged under 65 years. This was not anticipated by the initial estimates.

Approach and results

The NDIA shared a paper prepared for the Department of Social Services on this issue with preliminary estimates. We have reviewed the paper and have used this as a basis to estimate the substitution impact.

We estimate the annual plans of NDIS participants who should be in the NIIS total $1.02 billion[39] in 2022-23. However, not all this funding is spent. The projected utilisation for 2022-23 is 77% (AFSR 2021-22, p. 66), which implies an unanticipated cost of $770 million.

We highlight the limitations of this analysis noted by the NDIA in their paper. There are no fields collected in the NDIS data that enable the reliable identification of participants whose disability was a result of a serious injury. Some participants whose disability relates to an accident may provide an injury date, but this is missing for most participants. For this reason, the NDIA had to approximate the number of participants who would have been in the NIIS. The approach relied on a combination of two criteria:

- Primary disability group deemed consistent with an accident or injury such as spinal cord injury, acquired or traumatic brain injury, amputations
- Current annual plan for the participant above a threshold[40] were considered.

The coding of primary disability group does not always provide sufficient granularity for specific conditions to be identified. The NDIA included some of these participants in the estimate if their current annual plan met the threshold criterion. The NDIA performed reasonableness checks against data from lifetime care schemes to confirm the injury mix in their identified pool was consistent. Due to the data limitations, the estimate is highly uncertain.

4.5 Lifetime cost estimates

Introduction

We have also been requested to examine future ‘lifetime costs’ of NDIS participants. This is an estimate of the future costs of current NDIS participants over their lifetime. The NDIA has shared with us the most recent lifetime cost estimates (from their June 2022 AFSR).

To determine gross lifetime costs, the NDIA’s approach to extend the cost projection for current participants (as done for the AFSR) into the future until all current participants have exited. Future payments are discounted to reflect the time value of money and express the result as a present value.

One important feature of the approach is to assume the same average payments, rates of exit and rates of mortality continue over the lifetime of participants. In other words, no allowance is made for experience to improve or deteriorate over the lifetime, for example due to capacity building or supports to the early intervention cohort. The approach is pragmatic, given limited longitudinal experience in the Scheme to inform these long-term assumptions.

As a rough guide to cohort-level future costs, the lifetime costs are useful. There is obviously growing uncertainty as timeframes lengthen, so any limitations to the existing AFSR forecasts are magnified on a lifetime bases.

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[39] For lifetime participants, approximately $700 million as per Table 3. For interim participants, Table 5 suggests 1,600 participants each year at annual plan of $200K (mid-point of $100K-$300K rage for identifying participants in this group), which gives $320 million.

[40] For lifetime participants, current plan is more than $300K. For interim participants, current plan is more than $100K but up to $300K.

We have also produced a crude estimate net lifetime cost, using the ratios found in our work on substitutions and legacy. We do not vary the ratio of net to gross over the life course, so results should not be taken too literally. But the results do highlight segments with large long-term increases in Scheme costs.

Summary of NDIS lifetime cost estimates

Table 4.10 shows the gross and net lifetime cost estimates for NDIS participants at 30 June 2022 as per our segmentation by disability group and level of function band.

The key points are:

- The NDIA estimates the gross lifetime cost of NDIS participants at 30 June 2022 is $1.4 trillion. Across the 534,655 participants, the average gross lifetime cost is $2.63 million.
- The net lifetime cost is $624 billion with a net average lifetime cost of $1.17 million. The net to gross ratio is 44% overall. The ratios are high for delay, psychosocial disability and stroke indicating low coverage from legacy schemes.
- There is significant variation in the average lifetime cost by disability group. Acquired brain injury, autism, intellectual disability and spinal cord injury have the higher gross estimates.
- Within a disability group, the average lifetime cost increases as level of function reduces (as indicated by a higher LoF band). This pattern is consistent with the average payments seen in Table 2.3.

Table 4.10 – Lifetime cost estimates at 30 June 2022 by disability group and level of function

Disability group	LoF band (A = highest LoF)	Participants at 30 June 2022	Gross lifetime costs, $m	Net lifetime costs, $m	Average gross lifetime costs, $m	Average net lifetime costs, $m	Net to gross ratio
Acquired Brain Injury	A	3,456	3,839	2,357	1.11	0.68	61%
	B	4,412	9,011	5,244	2.04	1.19	58%
	C	7,858	22,108	8,713	2.81	1.11	39%
	D	949	5,775	3,622	6.09	3.82	63%
Autism	A	32,038	34,885	24,194	1.09	0.76	69%
	B	107,639	235,269	169,657	2.19	1.58	72%
	C	9,366	47,058	17,290	5.02	1.85	37%
	D	33,451	378,462	124,704	11.31	3.73	33%
Cerebral Palsy	A	6,587	13,533	6,640	2.05	1.01	49%
	B	10,619	76,251	14,585	7.18	1.37	19%
Delay	A	57,527	1,613	1,486	0.03	0.03	92%
	B	1,191	93	73	0.08	0.06	79%
Hearing	A	19,022	2,799	2,077	0.15	0.11	74%
	B	5,593	3,664	2,430	0.66	0.43	66%
Intellectual	A	18,949	36,820	22,000	1.94	1.16	60%
	B	30,785	92,652	35,055	3.01	1.14	38%
	C	22,858	114,797	28,056	5.02	1.23	24%
	D	23,877	129,495	30,857	5.42	1.29	24%
Multiple sclerosis	A	2,783	1,575	1,266	0.57	0.45	80%
	B	3,754	4,501	3,154	1.20	0.84	70%
	C	2,991	10,248	3,041	3.43	1.02	30%
Other Neurological	A	5,211	4,160	3,236	0.80	0.62	78%
	B	4,641	6,679	4,765	1.44	1.03	71%
	C	11,242	19,756	10,025	1.76	0.89	51%
Other Physical	A	7,922	3,653	2,581	0.46	0.33	71%
	B	4,826	4,342	2,921	0.90	0.61	67%
	C	6,620	7,767	4,562	1.17	0.69	59%
Other	A	6,356	7,596	6,862	1.20	1.08	90%
Psychosocial disability	A	10,008	7,904	6,339	0.79	0.63	80%
	B	11,403	12,858	9,723	1.13	0.85	76%
	C	35,148	64,422	45,551	1.83	1.30	71%
Spinal Cord Injury	A	823	1,249	737	1.52	0.90	59%
	B	1,184	2,167	1,261	1.83	1.07	58%
	C	1,546	4,822	2,426	3.12	1.57	50%
	D	1,285	5,042	2,108	3.92	1.64	42%
	E	725	5,244	1,383	7.23	1.91	26%
Stroke	A	1,732	1,002	877	0.58	0.51	88%
	B	5,510	10,162	7,856	1.84	1.43	77%
	C	872	2,358	1,805	2.70	2.07	77%
Visual / other sensory	A	6,514	2,721	1,632	0.42	0.25	60%
	B	5,382	6,525	3,609	1.21	0.67	55%
Total		**534,655**	**1,404,877**	**626,762**	**2.63**	**1.17**	**45%**

Table 4.11 shows the lifetime cost estimates at 30 June 2022 by age band. The key observations are:

- The net to gross ratio is highest for participants aged over 65 years, because of the eligibility requirement of the NDIS. Participants must enter before turning 65 years old, however can remain in the Scheme after turning 65 years old.
- The net to gross ratio is around 40% for adults and lower for children at 25%.

Table 4.11 – Lifetime cost estimates at 30 June 2022 by age band

Age band	Participants at 30 June 2022	Gross lifetime costs, $m	Net lifetime costs, $m	Average gross lifetime costs, $m	Average net lifetime costs, $m	Net to gross ratio
0 to 6	82,863	167,438	89,426	2.02	1.08	53%
7 to 14	139,087	394,667	166,713	2.84	1.20	42%
15 to 18	43,943	154,817	33,144	3.52	0.75	21%
19 to 24	44,006	175,246	89,565	3.98	2.04	51%
25 to 34	47,166	176,189	87,458	3.74	1.85	50%
35 to 44	43,206	122,179	54,610	2.83	1.26	45%
45 to 54	51,377	105,873	43,708	2.06	0.85	41%
55 to 64	61,011	86,483	42,193	1.42	0.69	49%
65+	21,996	21,985	19,945	1.00	0.91	91%
Total	**534,655**	**1,404,877**	**626,762**	**2.63**	**1.17**	**45%**

Reasonableness and use of lifetime cost estimates

The insurance principles of the Scheme included the chance to manage lifetime costs (see Productivity Commission, Chapter 12.6 for instance). Supports for people that build capability and improve independence might reduce future needs.

The lifetime cost estimates (and indeed, the shorter-term cost projection used in the AFSR) do not have this insurance dynamic built in. Rather, they apply average cost assumptions visible in data to provide plausible cohort estimates. Current funding levels do not ‘follow’ participants[41]. The approach is not wrong, but does not (by design) reflect the investment principle. That said, we also acknowledge that there is limited established evidence of this dynamic, with plan costs for most cohorts rising over time.

We believe there remain opportunities to develop more granular long-term cost estimates for participants, similar to the management of insurance schemes such as lifetime care. This should enable better testing of altered trajectories and incorporation of investment dynamics.

4.6 Variability in NDIS costs across participants

NDIS supports need to meet a set of reasonable and necessary criteria to be approved in a participant’s plan. The NDIS currently takes a subjective approach to determine a participant’s reasonable and necessary level of support, based on the interpretation of how the provider or support coordinator describes a participant’s circumstances. This can lead to participants in similar situations receiving different support packages. In this section we explore the extent to which variation in plan packages

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[41] See Appendix B.2 of Miller and Frank (2021) for further discussion of this.

occurs for participants with similar disabilities and level of function, with particular attention to the inclusion of SDA or SIL support packages.

Participants in SDA or SIL

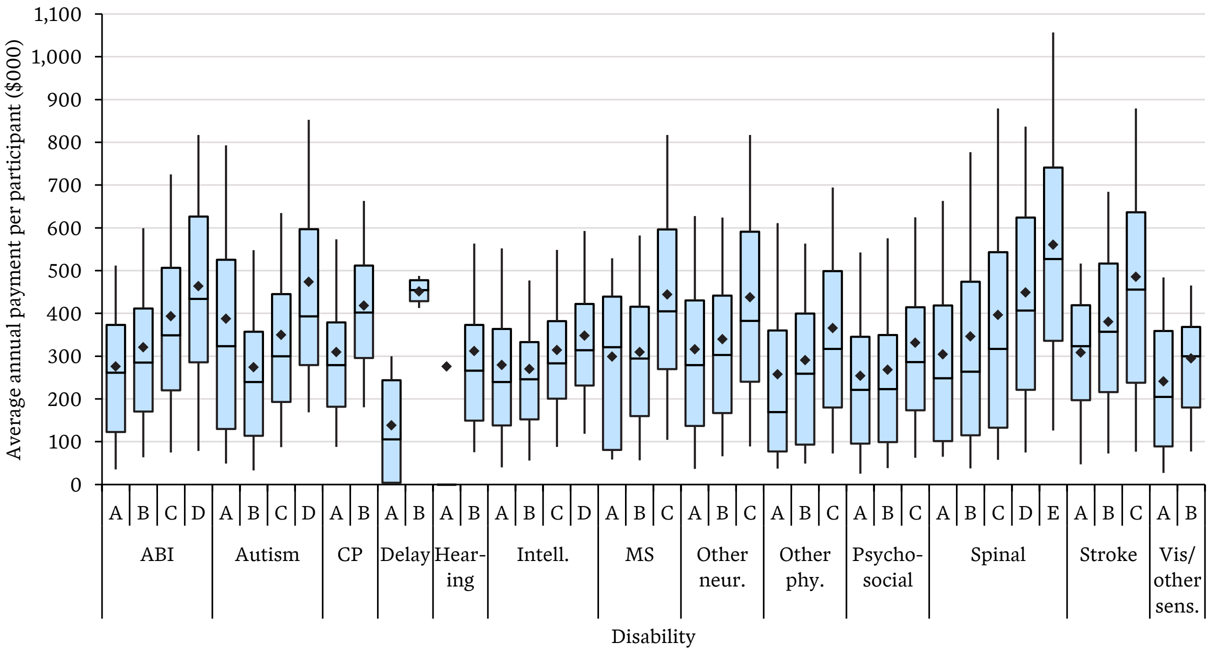
SIL and SDA provide funding for NDIS participants with some of the highest disability support needs. While SIL is different from SDA, participants often receive both types of support and in this instance, we consider these supports together. Over March 2023 quarter, 39,000 participants received either SIL or SDA support. This 7% of the population corresponds to 40% of total NDIS funding ($14.0 billion annualised). The average annualised payment over this period was $357,000.

Figure 4.4 and Figure 4.5 set out box-whisker representations of the distribution of annualised payments made to NDIS participants in the March 2023 quarter by disability function-group for participants with and without SDA and SIL support packages, respectively. The horizontal black lines surrounding and dividing the box indicate the 25th, 50th (median) and 75th percentile, with the vertical 'whisker' lines terminating at the 10th and 90th percentiles. The average payment level for each disability group is indicated by the diamond.

Within each primary disability group, average and median payments generally increase with declining LoF across all disability classifications. This is the case with the key exception of participants with autism, where average payments in band A are $100,000 higher than band B and $40,000 higher than band C.

We also observe a large degree of variation across people with the same disability and level of function group. Payments to a participant at the 75th percentile are between 1.7 and 4.7 times higher than those 25th percentiles at a segment level, and 2.1 times higher overall, which translates to a difference of $250,000 in dollar terms.

Figure 4.4 – Distribution of annual payments to participants in SDA/SIL by disability function group, annualised March 2023 quarter payments



Notes: Diamonds represent mean payments, centre-lines in boxes the median, box extremes the 25th and 75th percentiles, and whisker lines the 10th and 90th percentile. Participants with zero payments in the quarter are excluded.

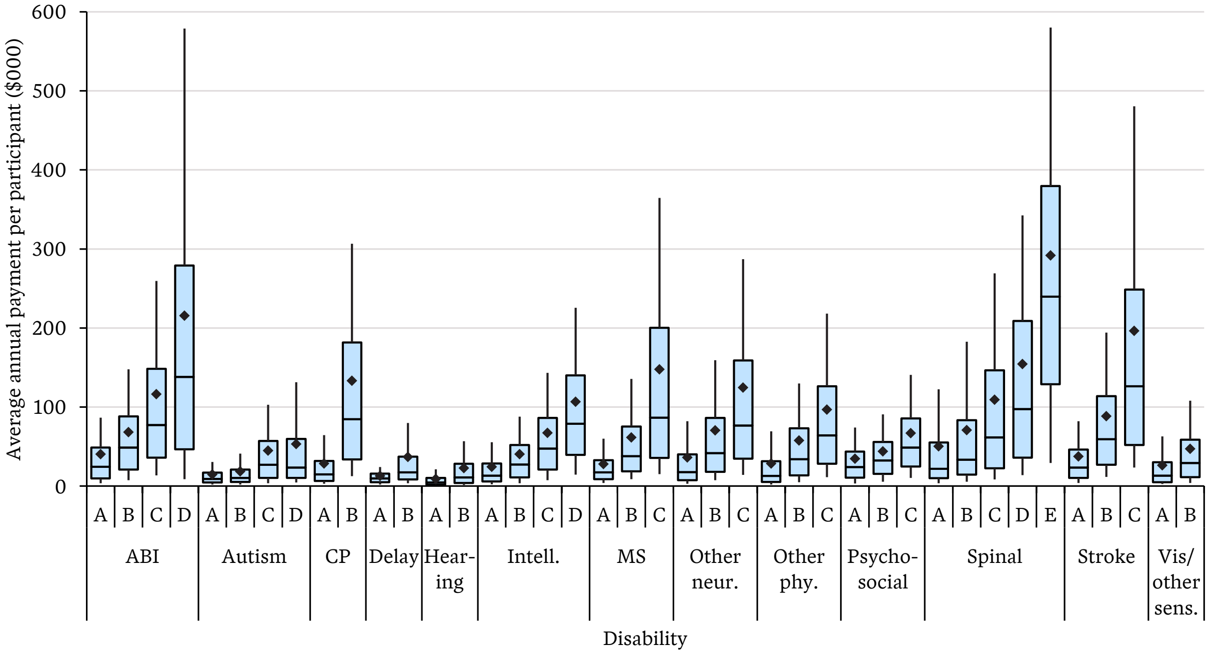
Participants not in SDA or SIL

Over the March 2023 quarter, 500,000 participants without SDA or SIL support received an average annualised payment of $41,000. The distribution of payments is highly skewed towards larger packages, meaning a relatively small number of people are receiving the majority of funding. For example, participants receiving the top 10% of packages represent 50% of total payments for this group.

Within each primary disability group, average and median payments generally increase as level of function falls, across all disability classifications.

We also observe a large degree of variation across people with similar levels of disability as we have defined them in section 2.3. The largest variations within disability-function groups are observed in the lowest levels of function for disabilities where substantial support is required, for example acquired brain injury, multiple sclerosis, spinal injury and stoke. Payments to a participant at the 75th percentile are between 3 and 10 times higher than those 25th percentiles at a segment level, and 6.3 times higher overall, which translates to an average difference of $37,000 in dollar terms.

Figure 4.5 – Distribution of annual payments to participants not in SDA/SIL by disability function group



Notes: See notes for previous figure. Participants with zero payments in the quarter are excluded.

Implications of variability

The variability of packages, even at a segment level, is very large. This is obviously a challenge when attempting to discuss overall trends and impacts in the Scheme. For instance:

- When we estimate the percentage of funding a segment would receive under legacy programs, there would still be massive variation at a sub-cohort level or even a participant level. We will possibly never know how much of this variation existed in legacy programs, but we conjecture current NDIS design increases variability rather than increases consistency.
- Similarly, the benefits of the Scheme may differ depending on the range and volume of supports provided. We have not attempted to incorporate payment levels in our outcome estimation, since
  - Selection effects might lead to anomalous relationships (those with higher funding might have worse outcomes since higher funding might proxy for otherwise hidden level of function differences)
  - This would begin to duplicate the work of the NDIA's investment effectiveness research project (IEP – see Section 5.2.5).

The variability also points to potential equity concerns, although a full discussion is beyond the scope of this report. For people with similar characteristics, large variation in plans might relate to goals and specific needs but could also be due to differences in decision making and application of the definition of reasonable and necessary – we have no immediate way to distinguish between the two. Stakeholder discussions have flagged concerns that the variability may reflect equity issues, which would require deeper analysis.

5 Benefits estimation

5.1 Introduction

We test and quantify a range of Scheme benefits in this section. This focuses on outcomes for participants and their carers; for example, we do not recognise increased spending on the care economy as an intrinsic benefit of the NDIS.

Care is needed in interpreting benefit estimates. For example:

- Best estimates are made using the data available. As discussed in Section 7, significant improvements are possible that will increase the ability to measure benefits. Some elements are challenging, even with improved data (e.g. estimating diverted homelessness against a backdrop of decreasing housing affordability).
- There are limitations to all our analyses. For example, it is unclear whether wellbeing for a person at baseline review is a true reflection of their state **prior** to entry into the Scheme.
- Many benefits are expected later, flowing from upfront spending and early intervention (see Section 5.3.4).

Our general approach is to attribute benefits to proven improvements in outcomes. This means that no allowance has been made for improvements that are believed to exist, but are not reflected in our outcome modelling. For example, people generally agree that the NDIS is helping their school-aged children; but we have not been able to measure this reflected in our selected outcomes (developmental concerns and year 12 outcomes). This approach means **our figures are more likely than not to underestimate broader benefits**. We expect future work could build on ours, adding additional data and modelling to fill remaining gaps.

Ultimately, economic benefits are a reflection on the improvements in the underlying outcomes. Our discussion of outcomes across Sections 5.4 to 5.8 give a deeper discussion of what improvements we can see in the Scheme using available data.

The report's main body highlights aspects that we believe are most relevant; further detail, such as regression coefficient tables, are given in the appendices.

5.2 Overall findings

5.2.1 Summary of economic benefits

Table 5.1 shows our aggregated economic benefits, split by market vs non-market as well as benefits that accrue to the households of NDIS participants and government.

Table 5.1 – Summary of economic estimates of benefits for the year to 31 March 2023, for modelled outcomes

Benefit	**Market benefits, Households ($m)**	**Market benefits, Government ($m)**	***Total market benefits ($m)***	**Non-market benefits, households ($m)**	**Total ($m)**
Health & Wellbeing					
Mortality improvements				0	0
Improved health				0	0
Reduced hospital use		625	*625*		625
Participant life satisfaction				4,255	4,255
Carer life satisfaction				2,259	2,259
Employment and financial security					
Higher participant employment	29	22	*51*		51
Higher participant life satisfaction from employment				22	22
Higher carer employment	250	90	*341*		341
Increased hours or wages – participant	0	0	*0*		0
Increased hours or wages - carers	0	0	*0*		0
Inclusive homes & Communities					
Higher satisfaction with housing	13	2	*15*		15
Access to transport	*n/a*	*n/a*	*n/a*		
Community participation	*n/a*	*n/a*	*n/a*		
Safety, rights and justice					
Improved safety-participants	0		*0*		0
Improved safety – carers	0		*0*		0
Education and learning					
Improved school readiness	0	0	*0*		0
Improved Year 12 attainment	0	0	*0*		0
Total	**292**	**739**	***1,032***	**6,536**	**7,568**

We observe:

- Total benefits are $7.6 billion, which represents a sizeable portion of NDIS costs. The comparison is discussed further in Section 6.
- About 85% of benefits are non-market, namely improved life satisfaction (or subjective wellbeing) for Scheme participants and their family and carers. This is not altogether surprising – improved wellbeing is arguably the key reason for providing supports and the largest impact identified by the Productivity Commission. However, the figure relies on an assumed dollar quantification for life satisfaction scores (see Section 5.3.4).
- Of the $1.0 billion in identified market benefits, three quarters accrues to government in the form of lower hospital costs, higher taxes and lower welfare payments. The remaining quarter relates to increased personal income for participants and their carers.

- Zeros in the table indicate where we have searched for benefits but not found them. For instance, we have not found evidence of improved school readiness or Year 12 attainment
- Entered 'n/a' for cases where an effect is found and not recognised due to difficulty in quantification and potential double counting – transport and community participation.

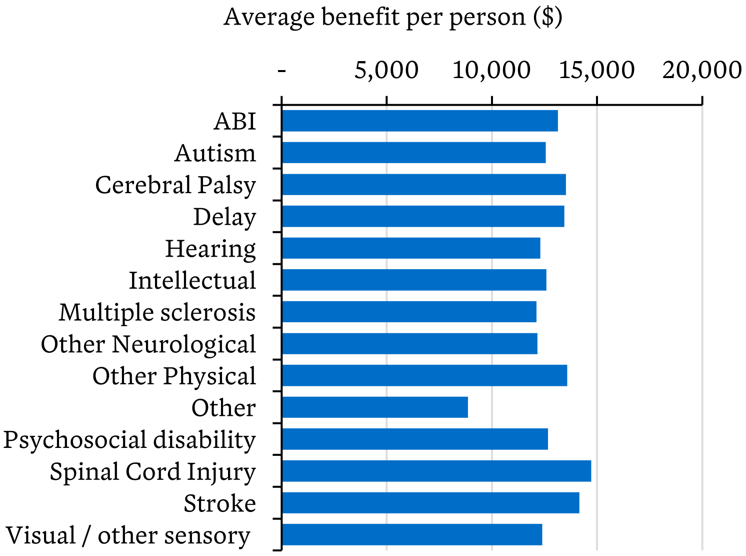
While the table shows all elements considered in our work for benefits, there are also a set of identified 'unmeasured benefits', where we have not modelled improvements. See Section 5.3.1 and Appendix C.

Our benefits are calculated at a segment and age group (or participant) level. This means we can recognise benefits for different cohorts. Disability groups are shown in Table 5.2 and Figure 5.1. Benefits per person are $12,750 and are fairly even by disability type since wellbeing improvements has been estimated as reasonably flat across the population; but some differences emerge due to different rates of hospitalisation reductions and employment increases. The 'Other' group is notable for its significantly lower wellbeing score improvement when modelled.

Table 5.2 – Summary of economic estimates of benefits by disability group ($m)

Disability group	Market, household	Market, government	Non-market	Total
ABI	5	42	182	229
Autism	119	189	2,201	2,510
Cerebral Palsy	7	18	207	233
Delay	45	62	1,039	1,147
Hearing	12	33	280	325
Intellectual	39	112	1,090	1,241
Multiple sclerosis	3	15	104	122
Other Neurological	7	35	229	271
Other Physical	7	51	223	281
Other	2	10	49	61
Psychosocial disability	30	102	641	773
Spinal Cord Injury	5	14	67	85
Stroke	3	32	88	123
Visual / other sensory	9	23	134	166
Total	**292**	**739**	**6,536**	**7,568**

Figure 5.1 – Average benefit by disability group



Our benefits framework has placeholders for a range of other benefits – we believe these are feasible to estimate with more time and data (particularly linked data – see discussion at Section 7.4). These are discussed in Section 5.3.2.

5.2.2 Uncertainty in estimated benefits

All our estimates are subject to some uncertainty. The table below gives an indicative range for non-zero effects found in our modelling. Ranges are judgementally selected so are best thought of as scenarios.

Table 5.3 – Indicative lower and upper estimates for non-zero benefits identified

Item	Estimate ($m)	Indicative low ($m)	Indicative high ($m)	Basis of range
Reduced hospital use	625	384	925	**Low**: 0.05 more hospital visits (based on 90th percentile model estimate) and -20% hospital costs **High**: 0.05 fewer hospital visits (based on 90th percentile model estimate) and +20% hospital costs
Participant life satisfaction	4,255	1,842	6,370	**Low**: 100% weight on Wellbeing index estimate, and -$6000 value per point of life satisfaction. **High**: 100% weight on life satisfaction estimate, and +$6000 value per point of life satisfaction.
Carer life satisfaction	2,259	1,396	3,327	**Low:** -20% carers/family, and -$6000 value per point of life satisfaction. **High**: +20% carers/family affected, and +$6000 value per point of life satisfaction.
Participant employment	51	0	117	**Low**: Assume overall impact is zero, consistent with most disability group **High**: Identified increases apply to all disability groups
Carer employment	341	9	673	**Low**: No weight to HILDA results

Item	Estimate ($m)	Indicative low ($m)	Indicative high ($m)	Basis of range
				High: +4pp rather than +2pp based on HILDA findings, equalling raw impact on employment rates
High satisfaction with housing	15	0	40	**Low**: 0% of satisfaction change linked to accessibility issues **High**: 100% of satisfaction change linked to accessibility issues

We observe that the largest component of benefit, participant and carer life satisfaction, carries a wide range of low and higher benefits. In these cases our uncertainty stems from:

- Difference in estimates under our two methods for participant wellbeing
- The range of plausible assumptions for how to value subjective wellbeing improvements
- Uncertainty around the size of the population of carers and family affected by measured changes in life satisfaction.

We also note that even under optimistic assumptions, market benefits of estimated components remain small relative to overall scheme costs.

5.2.3 Summary of NDIS outcomes modelling

The NDIS maintains a rich set of outcomes through its regular surveys. All participants and their families complete the short-form survey and a subset complete a longer form survey with additional questions.

We have selected a subset of outcomes for modelling, which can be reasonably associated with economic benefits. Our primary test is whether duration in the Scheme is associated with improvement in outcomes. For example, if employment rates are demonstrably higher at year 3 in the Scheme compared to entry (after controlling for factors like age and level of function), then this can be attributed to a Scheme benefit.

The main advantage of the approach is it enables rich NDIS data to be used to isolate duration effects, as well as leveraging the repository of outcomes data. The main disadvantage is the imperfect counterfactual – we cannot see outcomes for people not in the Scheme, and status at Scheme entry is a proxy. Table 5.4 provides a summary of models fit and findings.

Table 5.4 – Summary of modelling results from for NDIS impact on outcomes visible in NDIS outcomes data

Dependent variable	**Have we found a statistically significant (positive) impact of the NDIS?**	
	Person with disability	Carer / family
Mortality	No	
Self-reported health	No	
Hospital visits	Yes	Yes
Wellbeing / life satisfaction	Yes	Yes
Paid employment rates	Some cohort-level gains	Marginal gains
Satisfaction with home	Yes	
Access to transport	Yes	
Safety at home	No	
Choice and control	Yes	
School readiness	No	
School attainment	No	

5.2.4 Summary of HILDA data outcome modelling

As a second data source, we also tested a range of outcomes using the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The last four waves (running up to the end of 2021) include a flag for NDIS participation so that we can see entries and potentially improvements across other collected indicators. The HILDA survey provides evidence of benefits in some areas, but not others. The data source has the advantage of being relatively up to date, longitudinal, and capturing information **prior** to entry into the NDIS. The last four waves (running up to the end of 2021) include a flag for NDIS participation so that we can see entries and potentially improvements across other collected indicators. It also provides a strong household picture, including income distributions and outcomes for carers. The main disadvantage is size (only about 400 people in the survey are in the NDIS in the most recent wave) and detail (relatively little information about the size and nature of NDIS supports). About half of the NDIS participants recorded are under age 18.

The HILDA survey provides evidence of benefits in some areas, but not others. Detailed results are in Appendix E with high-level findings below:

- No significant evidence of improvements for participants across life satisfaction, employment status, income, and school outcomes.
- Statistically significant evidence of improvements for participant financial security – a composite measure asking about eight indicators of financial distress (e.g. unable to pay bills, heat home, rent or mortgage).
- Statistically significant evidence of improvements for carer outcomes across life satisfaction, financial security and employment status. On employment status, we observe an 11-percentage point lift in part-time work by the fourth year in the NDIS. The increase is driven by corresponding decreases in unemployment and not in labour force status. We did not find additional increases in hourly wages or hours worked, but the switch to employment provides a significant income boost for those households.

A summary of tests across a range of outcomes is shown in Table 5.5. Outcomes are tested separately for people with disability, carers and non-carers; the latter is effectively a control of the methodology, where we would expect less of an impact from the NDIS.

Table 5.5 – Summary of results from statistical models for NDIS impact on outcomes visible in HILDA data

Dependent variable	**Have we found a statistically significant (visible)impact of the NDIS?**		
	Person with disability	Carer	Non-carer
Various satisfaction measures	No	Yes	No
Financial distress	Yes	Yes	No
Labour force status	No	Yes	-
Hours worked	No	No	-
Earnings	No	No	-
School outcomes for children	No	-	-
Psychological distress	No	No	No

Specific findings and our weight in setting assumptions is described through the remainder of the section.

5.2.5 Evidence from the NDIS Investment Effectiveness Program (IEP)

Background

We have been provided with some background material as well as some model outputs for the NDIA's early Investment Effectiveness Program (IEP) modelling. The work seeks to estimate the marginal impact of support funding on participant outcomes. In other words, after adjusting for participant characteristics, is there evidence that additional spending increases participant outcomes?

Such evidence is useful for future planned work, where stronger articulation of Scheme benefits can be made, as well as the potential for optimisation – improved efficiency in the generation of outcomes for participants.

At its core, the modelling takes one row per person per year (assuming they answer the surveyed outcome that year) and attaches an outcome response (e.g. *Do you choose what you do each day?*) and a range of characteristics ranging from demographic (e.g. age, gender, region), disability (e.g. disability group, LoF), goals, payments by category in the previous year (fifteen categories), duration in Scheme and so on. A machine learning model is then fit to this dataset, using those characteristics to predict the selected outcome response. The adopted prediction tool is a gradient boosted machine with decision tree learner, which is a fast, flexible and accurate tool that is suitable for general-purpose prediction, particularly in the presence of non-linearities and interaction effects.[42]

We have been provided with:

- A presentation summarising some results for a pilot cohort (people with an intellectual disability or Down Syndrome aged 15-24)
- Outputs for models generated across the whole population, whereas in practice the NDIA would likely build and apply the models on smaller cohorts.

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[42] See for example Chapter 10 of Hastie et al. (2009)

Brief review of the approach and results

One observation is that the method attempts to measure the marginal effect of spending, rather than the overall impact of NDIS support over time. In this sense it makes a natural complement to some of our analysis, which focuses on overall impacts.

Perhaps the most challenging issue related to the approach is the feasibility of drawing causal interpretations from what is ultimately observational data. There are significant challenges in interpretation and applicability. For instance:

- Spending in one category for a person that generates outcomes may not directly apply to other people; that person may have had a specific type of unmet need.
- Spending in some categories are predictive in an unhelpful way; for instance, employment support spending correlating with employment outcomes is often proxying a participant employment goal, so the impact of the supports is likely overstated.
- Spending may see negative correlations with outcomes. Typically this would indicate the spending is correlated with another unseen variable (such as lower functionality not captured in LoF scores).

There will be smaller technical issues to consider too. For example, level of function is included in the model, but if a participant's level of function rating has fallen significantly at the same time as spending has increased (a common pattern), this can create a modelling artefact where the spending appears to be boosting outcomes where in fact outcomes remain flat and the spending effect offsets the changing level of function effect over time.

Table 5.6 shows some results from the population-wide model; for each outcome we have extracted the most important payment variable (according to the model's internal variable ranking function) and summarised the size and direction of impact.

Table 5.6 – Summary of most important payment variables in population-wide investment effectiveness model

ID	Outcome being modelled	Largest payment variable effect (payments related to prior review period)	Rank in model	Direction	Size of change (averaged over population)
1	Do you choose what you do each day?	NDIS social community and civic participation support payments	7	Down	7pp
2	Has the NDIS helped you with daily living activities?	NDIS daily activity support payments	2	Up	10pp
3	Do you have someone outside your home to call when you need help?	NDIS social community and civic participation support payments	14	Down	1pp
4	Are you happy with the home you live in?	NDIS support coordination payments	2	Down	16pp
5	Of those who are happy with their current home: Will you want to live here in 5 years' time?	NDIS daily activity support payments	6	Up	4pp
6	Have you had difficulty in getting health services?	NDIS support coordination payments	11	Down	6pp
7	Do you get opportunities to learn new things?	NDIS transport support payments	5	Up	9pp
8	Are you currently working in a paid job?	NDIS capacity building employment support payments	1	Up	48pp
9	Do you spend your free time doing activities that interest you?	NDIS support coordination payments	6	Down	7pp
10	Have you been actively involved in a community, cultural or religious group in the last 12 months?	NDIS social community and civic participation support payments	3	Up	10pp
11	Do you know people in your community?	NDIS support coordination payments	14	Down	5pp
12	How often do you feel you are able to have a say with the services that provide support for you?	NDIS support coordination payments	12	Down	7pp
		NDIS daily activity support payments (second most important outcome for #12)	15	Up-Down	Non-monotonic 2pp increase up at smaller amounts, then 2pp decrease again over larger amounts

The challenges discussed above are visible in the results. We see:

- A very large increase in employment outcomes (#8 in the table) associated with employment support payments – however this mainly indicates a person is already in a job, so not useful for investment modelling. A similar effect is seen in #10.
- Similarly, the 'has the NDIS helped with daily activities' question (#2) unsurprisingly has positive correlation with daily activity spending; however, it is less clear whether this in turn generates other benefits.
- Decreasing outcomes associated coordination support payments across housing, health, activities, community engagement and choice & control (#4, #6, #9, #11, #12). However, it is very likely that the payments are a proxy for participant needs and level of function.
- The non-monotonic effect for daily support affect participant voice (#12) is interesting, as it potentially illustrates the dual effect of having more voice when controlling services, and then reduced voice due to level of function effects.

Similar features are observed in the targeted cohort results for participants aged 15-24 with intellectual disability or Down syndrome. For example, large negative effects are observed for participant choice with income for both core and capacity building supports, suggesting that it is capturing underlying level of function effects rather than the benefits of increased supports.

Implications

Ultimately, our views on the work are that:

- Such modelling is useful exploratory work, particularly in the context of hypothesis generation. The broader question of figuring out how investments improve the wellbeing and outcomes of participants is crucial to assessing Scheme effectiveness (see our broader discussion in Section 7).
- The results would need to be supported by a strong theory of change to overcome causal concerns.
- Care is needed given the potentially thousands of combinations of outcomes, spending categories and participant cohorts – some degree of prioritisation is likely needed.
- The process of building evidence around effective spending requires hard work. Specific investments may need to be examined at a finer level of detail than payment category and be more closely tied to unmet needs.
- Of the results viewed to date, some moderate conclusions could be justified; for instance, the relationships between spendings and certain outcomes such as 'has the NDIS helped…?' questions and 'Have you had the opportunity to learn new things' are intuitive and potentially useful.

The work remains at a relatively early stage and drawing conclusions from the mixed results a challenge; for this reason, we have not relied on IEP results in our conclusions, but see it, or initiatives like it, as important in improving Scheme accountability and effectiveness.

5.3 Sources, methodology and key concepts

5.3.1 Overall methodology

Our general process is to:

- Define outcomes that can be measured and tied to benefits. For example, increased lifespan for people in the Scheme (compared to what it would be otherwise).
- Assess evidence for improvement in outcomes. For example, mortality trends can be modelled for NDIS participants.
- Convert outcome improvements to economic benefits. For example, there are standard conversions for the statistical value of a life year (here $227,000 per year using PMC, 2023).
- For outcomes not easily measured either make assumptions or omit from the benefits calculation. In either case, there will be recommendations for improved measurement in the future.

Ideally this process should take place under a broader measurement framework. While this section focuses on specific benefits that we can estimate, we return to the topic of frameworks and improved measurement (as per point 4) in Section 7, including recommendations for improvements and directions to improve benefit recognition in the future.

While we defer full consideration of the framework to Section 7, elements relevant to current benefits are reflected here. Table 5.7 shows a summary of benefits to be tested and further detail is provided in Appendix C.1.

Table 5.7 – Summary of benefits examined

Domain	Outcomes	Approach to monetisation
Health and Wellbeing	Increased lifetime (mortality) Improved (self-rated) health Improved subjective wellbeing (participants) Improved subjective wellbeing (carers) Reduction in hospital visits Psychological distress	QALYs for additional life years Mix of QALYs and willingness to pay for subjective wellbeing Hospital system costs
Employment and financial security	Increased employment/income for participants Increased employment/income for carers Reduced financial distress	Typically market estimates of additional productivity, allocated to private (e.g. higher net income) and fiscal improvements (e.g. lower welfare, higher tax) Mix of QALYs and willingness to pay for subjective wellbeing
Inclusive homes and communities	Improved access to suitable housing Access to transport Engagement in community activities	Existing estimates for the value associated with accessible housing and homelessness.
Safety, Rights and Justice	Safety at home Lower rates of maltreatment in disability service delivery Increased choice and control	Estimates for services related to maltreatment Experimental estimate related to choice and control value
Education & learning	Improved school-readiness Improved school attainment Improved attainment of post-school qualifications	Draw on existing human capital estimates to attach value to different life stages

5.3.2 Unmeasured potential Scheme benefits

Some elements are important to Scheme benefits but are not included in our work. These are also listed in Appendix C.1. They include:

- Health-related quality of life – Quality of life may have significantly improved, such as through lower incidence of health conditions. These would be recognised as part-year improvements under the QALY framework. If there are large gains not reflected in subjective wellbeing or self-rated health, these are not included. This covers both physical and mental health.
- Reduction in potentially avoidable hospitalisations and deaths (separate to overall mortality and hospital use).

- Reductions in extended hospital stays. – Recent media attention has been given to reductions in delays for hospital exits for people who are medically ready for discharge[43]. If systematically true, this would be a genuine benefit, freeing up hospital capacity. However, our understanding is that:
  - June 2022 represented a highpoint for pending discharges – the size of the issue under legacy schemes is not clear.
  - Relatedly, the NDIA only has good hospital data since 2022, so longer-term improvements cannot be gauged.

  For these reasons, we do not recognise these in our work. There is testing that can be done on hospital use using linked data, which we have identified as a future opportunity.
- Improvements in relationships that go beyond life satisfaction measures. For example, reduced rate of separation for parents of children with disability typically confers benefits.
- Improvement in justice sector and child protection outcomes. While justice and child protection sectors are not direct areas of interest for the Scheme, improved capacity will plausibly see improvements in these areas, where the cost of poor outcomes can be substantial. Improvements could relate to:
  - Reduced offending, associated with reduce justice and incarceration costs
  - Reduced victimisation
  - Reduction in children with disability being taken into care
  - Reduction in parents with disability having their children taken into care

  Improvements in these areas would best be measured through analysis of suitable linked data.
- Reductions in maltreatment in disability care scenarios.
- Benefits from improved access to school and human capital development (that is not captured in year 12 attainment figures).
- Benefits from improved post-school education.
- Broader community benefits from more inclusive societies. These are sometimes recognised as spill-over effects, or the ‘curb cut’ effect, where adjustments designed for people with disability lead to broader benefits. We have not attempted to measure these directly in our work.

Some of these are likely to be small relative to existing items estimated, but all are important in understanding Scheme impacts.

We also acknowledge the significant amount of outcomes reporting available from the NDIS in their annual dashboards. Many outcomes are important to understanding scheme effectiveness, even if we have not selected them for benefit quantification.

5.3.3 Estimating Scheme-related improvements from outcomes data

In terms of measuring the impact using NDIS outcomes and HILDA data, we illustrate diagrammatically Figure 5.2.

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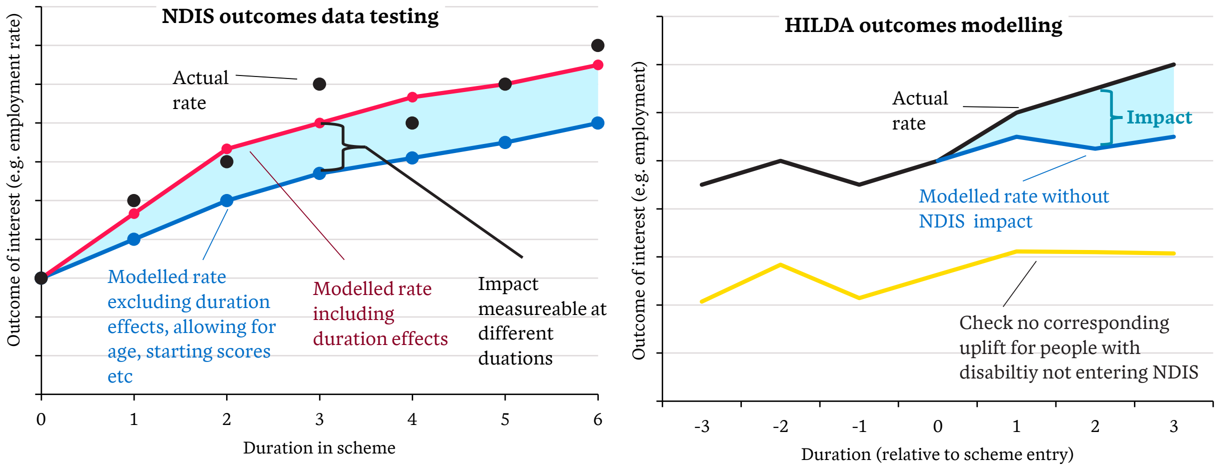
[43] For example the Australian Medical Association issued a report (AMA, 2023) estimating savings of up to $540m related to improved discharges over the course of 2022

Figure 5.2 – Schematic for illustrating benefits when testing NDIS and HILDA outcomes



We adopt slightly different forms for the two main data sources:

- **NDIS outcomes** (e.g. responses to the paid employment question in the annual survey), we build a model controlling for factors such as age, gender, disability type and level of function, as well as individual-level survey responses. We can then compare the actual response by Scheme duration compared to what we would expect if there were no duration-specific effects[44].
- **HILDA outcomes**, we have a longer time series so can model the change in outcome relative to levels prior to entry. Non-participant data is also available, including those with a disability, so we can use this to further check the change is NDIS-specific.

There are other possible confounders to this type of estimation, which we control to the extent possible. Time-related confounders can be allowed for since people have entered the Scheme at different times, and so we look for improvements that are consistent across this range of entry times. Compositional effects are controlled by our models, but potential drift in level of function definitions remain an issue (see Section 2.2). Overall, we regard the data and approach reasonable and appropriate for estimating a variety of benefits.

We note the NDIA have flagged some data quality concerns with collected outcomes. One issue is 'stickiness' in responses – in perhaps 10% of cases responses are copied over from a previous planning meeting. We have not directly adjusted for this but may cause a small understatement of benefits.

5.3.4 Subjective wellbeing

Monetisation of subjective wellbeing typically relies on an overall self-rated life satisfaction score. For example HILDA has a question, *How satisfied are you with your life, all things considered*?, on a 10 point scale.

For NDIS outcomes data, the long-form survey for participants and carers has a life satisfaction question that we have modelled. The NDIS short-form outcomes survey does not have a life satisfaction question, but there are enough other questions to plausibly construct a composite wellbeing index. We have constructed such a measure for modelling – see section 5.4.5 and Appendix B.5.

We recognise improvements in life satisfaction and subjective wellbeing as a non-market benefit (see below).

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[44] Note the 'expected' curve by duration, shown in the left chart may have a trend even if duration is not modelled explicitly due to compositional reasons. If a smaller fraction of recent scheme entrants had employment compared to previously, than this would create a shape. The gap between actual and expected is the key focus, since this reflects impact after allowing for duration.

There is also the opportunity to add the overall life satisfaction score to the NDIS short-form outcomes survey in the future – see section 7 for some comments on future directions the outcomes framework.

5.3.5 The timing of benefits and investment principles

Part of the insurance principles of the NDIS is that better upfront supports for people with disability will generate later benefits, leading to a virtuous investment cycle. This includes both reduced costs (lower disability supports) and improved outcomes.

We have only been able to recognise this investment dynamic to a small degree:

- The evidence to date that increases in spend lead to lower support levels later is limited – for virtually all cohorts the trend over time is to higher costs. See also our discussion of lifetime cost estimate in Section 4.5.
- Genuine long-term improvements (e.g. early intervention leading to improved school attainment and more employment and higher incomes) require more time to be visible. We have recognised some human capital benefits with higher attainment, to the extent visible.

By and large we recognise currently visible benefits. The main exception is educational attainment – we are comfortable in recognising benefits related to future earnings if improved attainment was observed, given the strong evidence base on this subject.

5.3.6 Market and non-market benefits

In this report we recognise both market and non-market benefits.

Market-based costs include those associated with improved workforce and productivity impacts, reduced government spending on health, justice and other services, and other changes to spending by households that can be recognised credibly as benefits.

Non-market-based costs relate to improved length and quality of life outcomes for people with disability and wider society. These are less tangible (e.g. cannot be readily bought and sold for actual dollars) but nevertheless important. Indeed, the Productivity Commission (2011) recognised improved subjective wellbeing as the largest benefit of the NDIS, although did not attempt to estimate this benefit.

Care in interpretation is required when combining market and non-market benefits. Indeed, many people choose to discount non-market benefits in cost-benefit work. We report them separately to make our work as usable as possible.

Our approach to some non-market costs is:

- **Modified QALYS for improved longevity and health –** We use a modified approach to Quality-Adjusted Life Years (QALYs) estimation for some non-market costs, that ensures that the intrinsic value of a year of life for a person with disability is the same as a person without disability – see Appendix B.1.
- **Monetization of subjective wellbeing improvements –** We also recognise improved subjective wellbeing using a conversion of reported wellbeing to a QALY scale – see Appendix B.2.
- **Experimental estimate for Choice and control –** There is some academic literature around people's value placed on choice and control, recognised as a percentage of funds under control. If we had found strong evidence in the Scheme, we would calculate an experimental estimate associated with it, noting potential overlap with other features such as subjective wellbeing – see Appendix B.3.

5.3.7 Consideration of double-counting

There is some scope for double-counting, particularly with the inclusion of non-market benefits such as subjective wellbeing. An improvement in one domain (e.g. increased feelings of safety) will typically see some benefit in the subjective wellbeing domain also.

We have avoided double-counting in our overall benefits estimate by restricting non-market measures to our estimates of overall subjective wellbeing improvements. While we explore improvements on other subjective measures they do not contribute to the main results in Section 5.2.

Housing satisfaction is one area where some benefits have not been included, for fear of overlap with subjective wellbeing scores.

5.3.8 Net versus Gross Scheme benefits

As discussed earlier in the report, our approach to benefits is to estimate incremental improvements attributable to the NDIS compared to legacy schemes. These 'net' costs are by definition lower than the 'gross' costs if we considered a world where there were no disability supports. Gross costs are harder to measure but we offer a few general comments. We would expect:

- Significant mortality benefits under gross measurement – disability supports are responsible for maintaining life for many people with low level of function. This is despite finding no incremental mortality benefits under the NDIS.
- Moderate to large additional gains from subjective wellbeing measures; a large fraction of participants acknowledge that the NDIS is helping in the short-form outcome surveys, and it is reasonable to conclude lower life satisfaction in the absence of disability supports; the extent of the change is unclear – we do not see massively larger gains for non-legacy scheme participants in our net benefit estimates.
- Large impacts for carers and families. Absence of government support would see large increases in unpaid care and private spending on supports at the expense of paid employment for carers and increased financial stress.

While we expect gross benefits to be comfortably larger than double the estimated net benefits, formal estimation is a separate exercise, and likely to depend on weaker evidence, given the lack of a suitable counterfactual in available data.

5.3.9 Alternative methodologies

A variety of alternative methodologies exist for benefit calculation. We have considered these as part of our work. Our thinking in not pursuing some of these methodologies is given below.

Fiscal multiplier impacts

One alternative approach is to recognise 'multiplier effects' for program spending –additional spending will generate revenue for providers which will translate into purchases, wages and profits; in turn, this money will flow to households and be spent, providing an economic boost. A recent report by Per Capital (D'Rosario & Lloyd-Cape, 2021) take this approach to estimate an economic boost of $2.25 per NDIS dollar spent, appealing to fiscal multiplier estimates related to health programs in the academic literature (but not based on the NDIS itself).

We **do not regard this approach as fit for purpose** in estimating NDIS benefits:

- **It ignores opportunity cost effects –** If similar government spending (or indeed, private spending arising from lower taxes) has similar multipliers, there is no advantage in spending through the NDIS. In fact, the argument could be used to increase spend in virtually any context.
- **It ignores the efficiency of spending –** If NDIS spending was doubled through increased prices, but still delivered the same disability supports and outcomes, then most people would regard this as a poor outcome. However, a fiscal multiplier approach would recognise this as increased economic activity.

For these reasons we believe it best to avoid consideration of multipliers and focus on measurable benefits for Scheme participants, their carers, and the community.

Sector growth arguments

Relatedly, some economic arguments point to sectoral growth as a benefit – in this case the jobs and income created directly in the disability services sector. The arguments against such treatment are similar to that for the fiscal multiplier:

- **Opportunity costs** – The government could have spent money elsewhere, creating jobs. Or the absence of that spending would have led to lower taxation (and more consumer spending) or reduced government debt. In any case, there is no intrinsic value to spending through the NDIS.
- **A need to focus on the value of spending** – Government spending is intended to achieve a purpose. For example, construction spending on school buildings is primarily to improve the quality of education, rather than just growing the building sector. A building that is never used has no enduring value, even if it has (temporarily) supported secondary employment. Similarly, NDIS spending is primarily about improving the welfare of people with disability and their carers. By focusing on the value of spending rather than sectoral growth, a sensible assessment of costs and benefits is possible.

Sector jobs are therefore not a primary benefit in our analysis. As the Productivity Commission (2011) recognises, some improvements in the sector could be recognised as benefits – for instance, improved quality or productivity. We do not have data to assess these potential benefits (apart from observing that there is not an obvious reduction in the price of disability support services).

Equity and economic utility arguments

The Productivity Commission (2011) recognised that the NDIS had a high redistributive element; incomes for people with disability who were likely to qualify for the NDIS were significantly lower than the people whose taxes pay for the Scheme. A utility argument uses distributional weights (a dollar gained by a poorer person has greater utility than the loss of a dollar for a richer person) to recognise the benefits of NDIS as a redistributive tool.

The argument has merit, and there are related approaches (for example, a 'basic needs' approach recognises the societal value of different cohorts having their basic needs met – see Harberger, 1984).

That said, we have not currently performed an estimation of utility benefits arising from redistribution, for a few reasons:

- As with the previous subsection, such an estimation would ignore efficiency considerations; without reference to measurable improvements, ever-growing spending could be justified on utility arguments alone.
- There is the possibility of double-counting with other components of our estimate. Improvements in subjective wellbeing should reflect some equity effects.
- Methodologies for estimating benefits are varied, and so comparison of any equity benefits to other costs and benefits is more fraught.
- To the extent that the government is interested in the targeting of spending (e.g. spending more on one type of disability support at the expense of another), utility arguments are less relevant.

Importantly though, equity impacts are important and are visible. Our HILDA modelling shows a marked reduction in the 'gap' of financial distress scores between people with disability and their carers, compared to the broader population. Roughly 4 percent of the group move from having at least one area of financial distress to no areas.

5.4 Health and Wellbeing

5.4.1 Mortality

We have not found evidence of reduced mortality, although it is difficult to properly control for degenerative effects that contribute to time trends. We do observe higher mortality in calendar year 2022, which we have attributed to the impacts of the COVID-19 pandemic.

Introduction

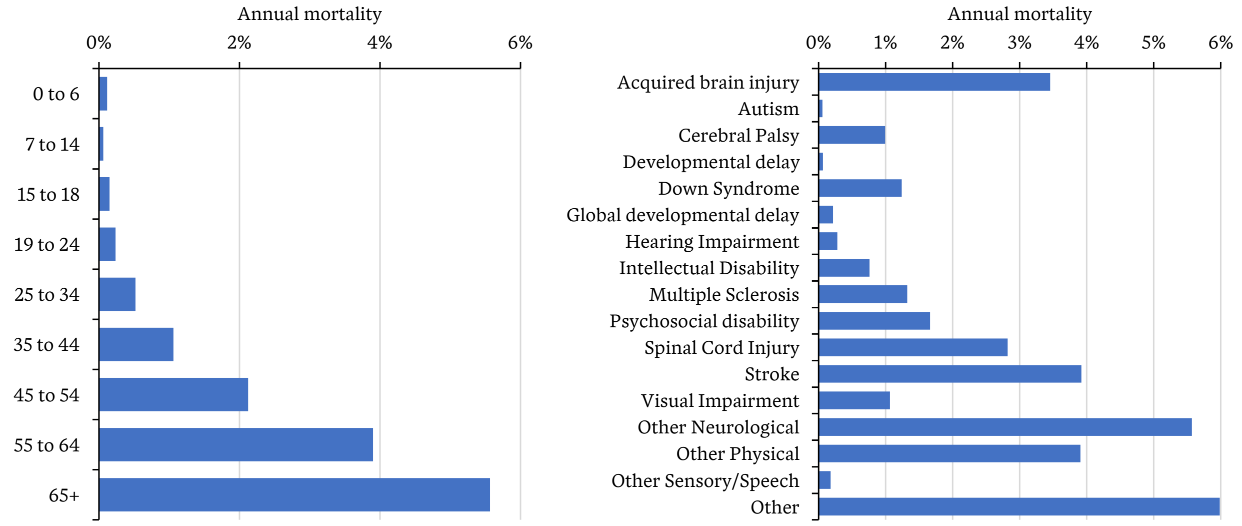
While healthcare is not a core function of the Scheme, supports for people with disability should enable longer and healthier lives, and in many cases are necessary. For people with severe and profound disability, such supports are vital. Evidence of longer lifetimes is therefore a natural question in examining Scheme benefits.

People with disability experience higher mortality – NDIS participants experience roughly six times the rate of death of the broader Australian population, although this varies by age, disability type and level of function. For calendar year 2022 we estimate that among people aged 0 to 65, the NDIS represented 2.3% of the Australian population but 15% of deaths, reflecting this elevated mortality. It also means that improvements in mortality for people in the Scheme can have material impacts on overall mortality in that age range.

Changing composition means that care is required in controlling for age, gender, disability type and functional impairment when examining time trends. The growing size of the Scheme also means that rates are more informative than absolute numbers of deaths.

In calendar year 2022 1.1% of Scheme participants are recorded as dying, or about 5,750 people. Mortality rates increase sharply with age, as shown in Figure 5.3. Disability groups with more young people, such as autism and developmental delay, correspondingly see low mortality rates.

Figure 5.3 – Mortality rates by age and disability type, calendar year 2022



Source: NDIA Mortality report

Observed time effects

We have fit a model that controls for key participant characteristics: age, gender, primary disability group, and LoF band (at year 2 – see section 2.3), with interactions as required. More details are provided in Appendix D. We can then test for time effects, having standardised for participant characteristics.

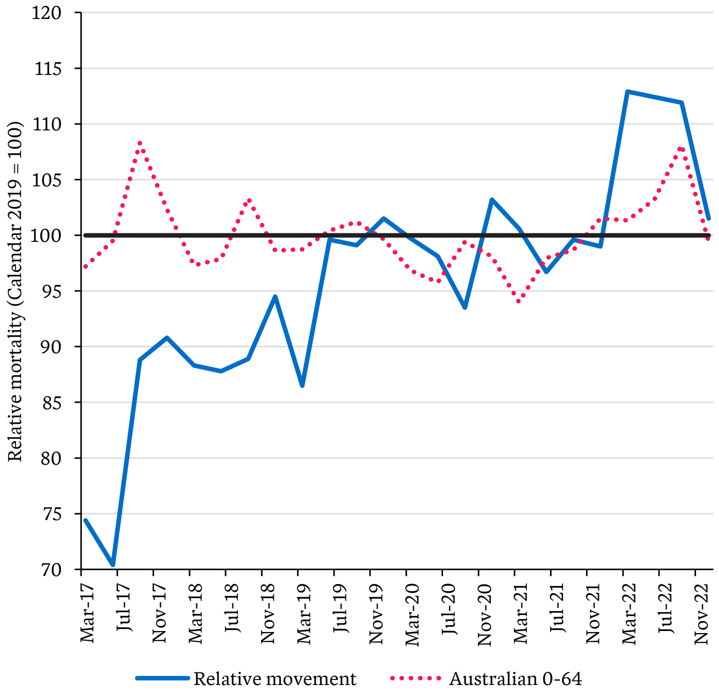
Results are shown in Figure 5.4. We have found mortality rates were:

- Lower in 2017 and 2018 compared to later years.
- Relatively stable over 2019 through to the end of 2021.
- Significantly higher in 2022. The increase is larger than the equivalent effect for the 0-64 age group of the broader Australian population, which has some COVID-19 pandemic impacts (lower mortality in 2020 and elevated mortality in 2022).

We do not know why rates are higher than those seen in early years; potentially a changing definition of level of function contributes to the result, but in the absence of this it suggests mortality increased rather than decreased. The heightened levels in 2022 may reflect people with disability having higher risk of death once contracting COVID and corresponds to about 560 excess deaths.

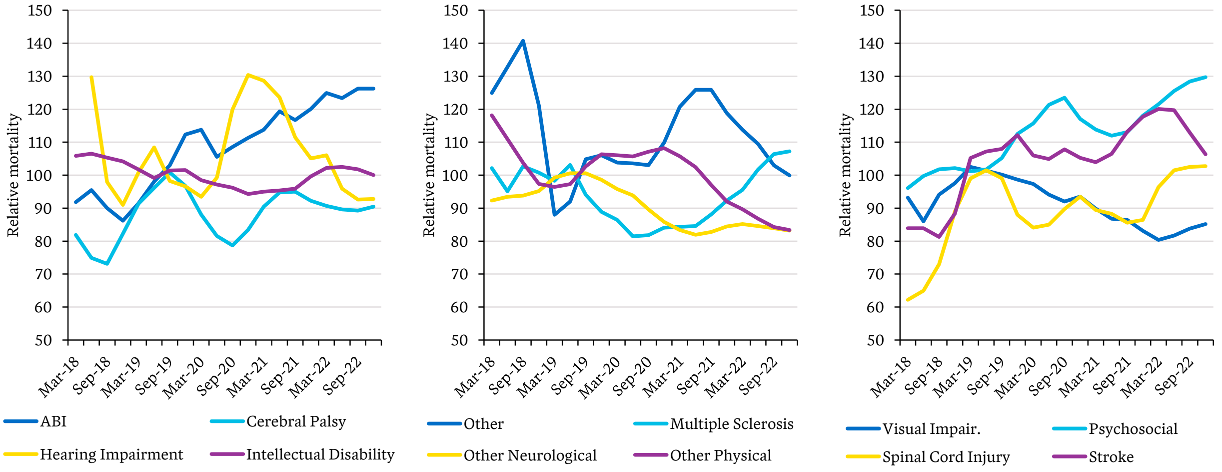
These overall results lead us to conclude there is no evidence of large mortality improvements visible in the Scheme and therefore these are not recognised in our overall assessment.

Figure 5.4 – Relative mortality time trends, NDIS (population to age 75) versus Australian population (to age 64)



A similar approach examining actual and expected mortality can be applied at a disability type level, shown below. It shows variation in experience, although numbers of deaths tend to be small which adds to volatility. Mortality trends for those with psychosocial disability are a major contributor to the overall trend.

Figure 5.5 – Relative mortality time trends, by primary disability type and smoothed over time

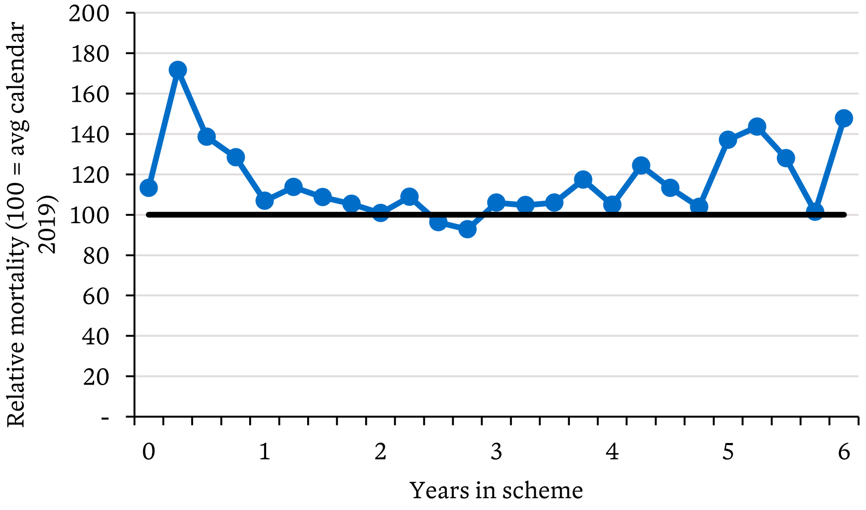


Note: Autism and delay not shown, given their very low mortality rates. 100 = calendar 2019 mortality for each series.

Other mortality dynamics

One other relevant dimension is how relative mortality varies with duration, the period of time spent in the Scheme. A strong duration trend may suggest effectiveness over time in driving mortality improvements. Again, there is little evidence visible of improvements with duration – see Figure 5.6. Slightly elevated mortality is visible in the first year in Scheme; we attribute this the entrants with rapidly deteriorating conditions (and have recognised this as an alternative to palliative care in our substitution work in section 4.3.6).

Figure 5.6 – Relative mortality by duration in Scheme for calendar years 2021 and 2022. Baseline mortality set to Scheme average in 2019.



Discussion and limitations

The absence of time and duration improvements means that we do not recognise mortality improvements as Scheme benefits. There are several potential issues with the presented analysis, not least a lack of objective functional capacity (see Section 2.2) – this may be a factor in the higher observed mortality after 2018. The pandemic impacts visible in 2022 mean that any recent benefits would be largely invisible.

5.4.2 Improved physical health

In addition to improved mortality, good disability supports should improve the quality of life through improved physical health. Such improvements can be naturally incorporated into a QALY framework.

We do not have the data to estimate this effectively in this project, but note that some benefits could be recognised through improved self-rated health and subjective wellbeing (which we do estimate). In practice, benefit estimation in this category could be targeted.

5.4.3 Self-rated health

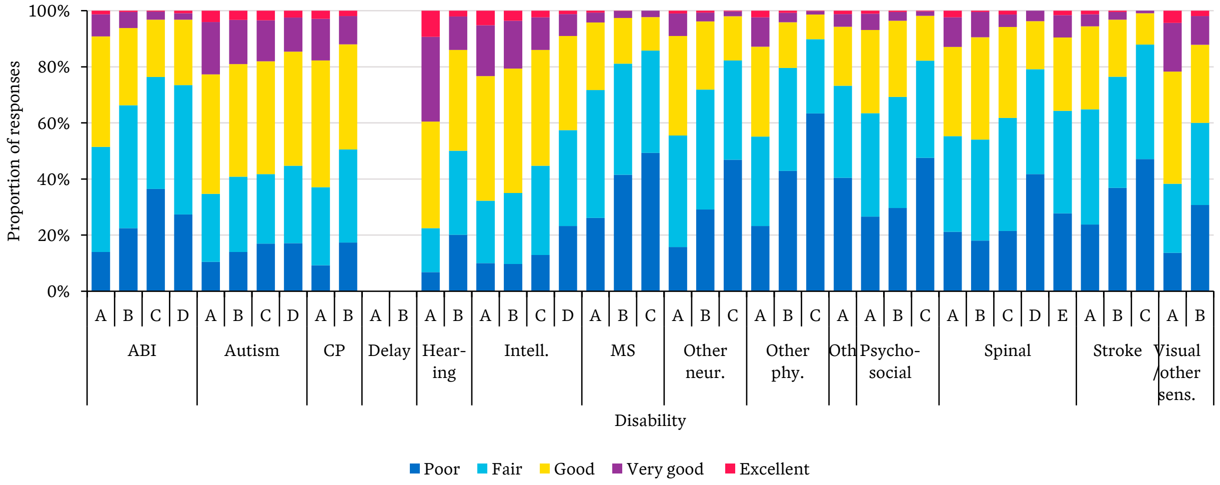
We have not found evidence of improved self-rated health with time in the Scheme.

Introduction

Participants aged 15 and over rate their own health on a five-point scale, which we convert to scores between 1 and 5 (where a higher score indicates better health)[45]. Overall ratings are relatively low – the average score of 2.3 in the year to March 2023 sits between fair and good.

We expect lower scores for people with lower level of function, and this is visible in the data. Relatedly, we would expect declining scores for people with degenerative conditions; for these people maintaining current health could conceivably be a benefit. However, attempting to estimate this requires high confidence in the robustness of level of function information recorded over time. In the absence of this we have searched for evidence of improved health ratings with NDIS support over time, relative to baseline results at Scheme entry.

Figure 5.7 – Range of self-rated health responses in the year to March 2023, by disability-LoF group



Note: Disability-LoF group defined based on data at 2 years duration in the Scheme.

Observed trends

The overall time trend is that health satisfaction falls over time. However, this appears to be driven by composition; average satisfaction at Scheme entry has been falling steadily too (see Figure 5.8), by about half a point over the four years to 2021. An even greater trend is visible by age, which reflects both declining health by age (after controlling for other factors) and compositional effects (for example, people with an autism diagnosis tend to report better health and tend to be younger in the Scheme).

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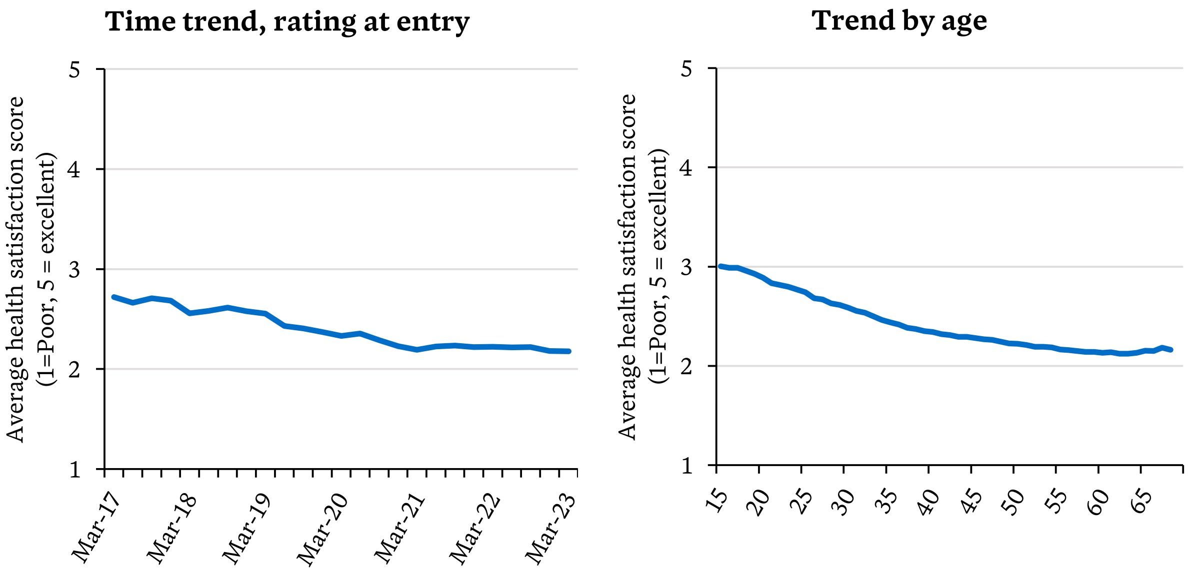
[45] 1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent

Figure 5.8 – Average health satisfaction scores for people in their first quarter in Scheme and by age

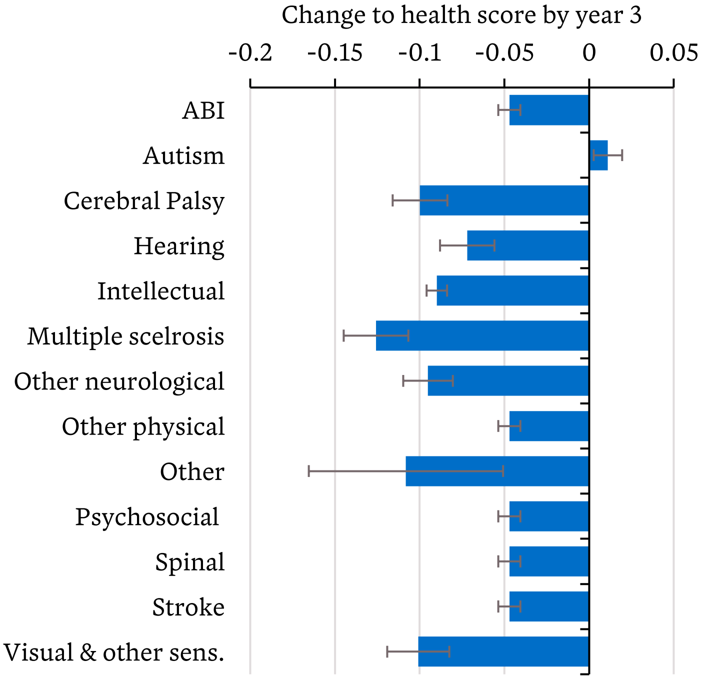


The compositional pattern means we must rely on the longitudinal estimates that arise from our regression approach to estimate impact over time.

Findings

Our regression controls for longitudinal effects (a person's previous rating, say), age, disability type and level of function, age, gender and SIL status. Figure 5.9 shows the modelled change to health score by year 3 in the Scheme controlling for these longitudinal effects, along with their 95% confidence intervals. We observe falling self-rated health for almost all disability types. Larger decreases are observed for multiple sclerosis and other neurological conditions, consistent with diagnoses that tend to be degenerative. A small increase is visible for autism (0.1 points), which is borderline significant. Given its size and the overall direction of change, we have not recognised any benefits for improved health under this measure.

Figure 5.9 – Modelled impact of time-in-Scheme on self-rated health



Notes: Effects for ABI, Other physical, Psychosocial, Spinal and Stroke grouped for statistical significance.

5.4.4 Hospital use

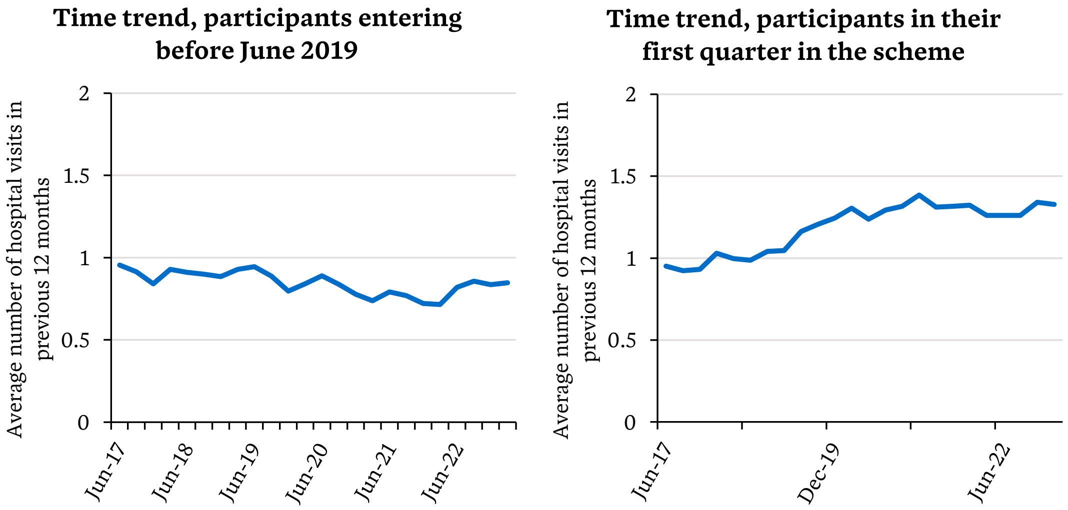
We have found significant decreases in reported hospital use with time in the Scheme. For the current cohort aged 15 and over, the effect equates to a reduction of 0.24 presentations per year, or about a 20% drop.

Introduction and trends

The short-form outcomes survey asks about hospital visits in the previous 12 months. While somewhat blunt (some hospitalisations are more avoidable than others, no measurement of length of stay, and in some cases not going to hospital when appropriate could be a problem), improved care leading to reduced need for hospital is a useful measure and potentially reflects improved participant health and savings to government.

Hospital admissions have been impacted by the pandemic; we observe reduced rates of admission (in the prior 12 months) in late 2020 and 2021, returning closer to pre-pandemic levels in 2022. We have included this time trend in the model.

Figure 5.10 – Trends in average number of hospital visits in the prior 12 months, for people entering the Scheme before June 2019 (left) and for people in their first quarter in Scheme (right)



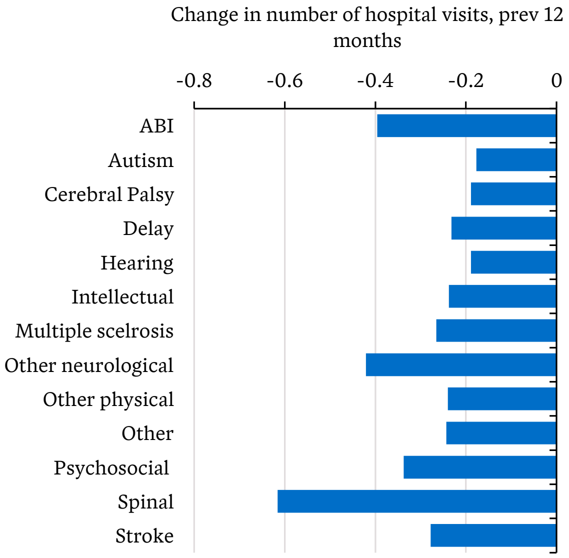
Hospital admission numbers steadily increase with age (overall rate for those aged 60 roughly double that of people aged 20), due to aging and compositional effects. They also vary by disability and level of function, ranging in the year to March 2023 from 0.4 visits per year (lower assessed need autism groups) to 2 visits per year (spinal cord injury with low level of function and other physical disability).

Hospital admissions also appear to be higher for people who have entered the Scheme more recently, as shown in the right panel Figure 5.10. This is largely compositional (the types of new entrants tend to have higher hospital use).

Findings

We find strong decreases in hospital use by duration, with a high degree of statistical significance. This suggests that NDIS supports has led to fewer hospitalisations. Effects are largest for disability groups related to stroke, acquired brain injury, other physical and other categories.

Figure 5.11 – Modelled impact of NDIS duration on hospital admissions in the previous 12 months for the current caseload



The overall effect for the March 2023 is 0.24 fewer hospital visits per year per participant, aged over 15. We have also allowed for an effect of half the size for the cohort aged under 15. We assume the savings to the government per hospital visit is $5,868 based on a blend of emergency and admission costs for hospital[46]. We have not attributed other benefits (such as implied better health due to lower hospital visits) – if these other benefits existed they would captured in other parts of our analysis.

Total estimated benefits for the year to 31 March 2023 are $625 million, accruing to government.

5.4.5 Wellbeing and life satisfaction

Subjective wellbeing for both participants and their families is one of the most important intended benefits of the Scheme, and we have a variety of ways to measure it.

For participants we see some strong improvements in wellbeing based on the life satisfaction in the NDIS long-form outcomes survey. We also see small improvements using a derived wellbeing index from a range of short-form survey questions.

For carers, we similarly see evidence of improved wellbeing from the life satisfaction question on the long-form survey. This estimate is close to that found on the equivalent HILDA model.

Introduction and adopted wellbeing measures

Aggregate wellbeing, or life satisfaction, is an overall subjective measure of someone's life. The Productivity Commission, in their 2011 report, identified subjective wellbeing as the largest benefit of the NDIS, and so exploring changes in this is of particular interest. We have several measures that we explore in our work:

- Responses to a **life satisfaction question** on the long-form survey. The long-form survey is completed by a small fraction of the NDIS population, so has fewer responses to enable sub-cohort analysis. This is available for both participants and carers. There is concern with the NDIA over the representativeness of the survey of the broader NDIS population – we adjust for some compositional effects when applying results, but do not adjust for other effects (e.g. selection effects) in our work.
- A **wellbeing index** derived from a collection of answers on the short-form survey. This takes questions from eight domains:
  - Constructs a score within each domain out of 10. In some cases, a single relevant question is used (e.g. health satisfaction). In other domains a mix of questions are combined.
  - Applied some scaling to align with other measures – the HILDA survey results tend to have higher average satisfaction scores and lower standard deviations across the various satisfaction measures, so these were (roughly) matched.
  - Created an overall score by weighted sum of the domains. The domain weights draw on NDIA-commissioned research related to their own work on wellbeing.

  A more complete description of the index and its limitations is given in Appendix B.5.

  Our measure is a relatively crude index, relying on available questions and judgement in construction. Solids correlations with life satisfaction and consistency with other results suggest some face validity – we believe is a reasonable measure for our purposes that leverages available data. It is not to be confused with the Disability Wellbeing Index (DWI) being developed by the Monash University Centre for Health Economics and the NDIS, which is a much more comprehensive and robust effort to explore participant wellbeing, when implemented.

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[46] See Table 3 of IHACPA (2011). We take a midpoint between the average cost of 'all' and 'admissions only'. We apply 4% inflation for four years.

- Life satisfaction scores from the HILDA survey, including an overall life satisfaction question.

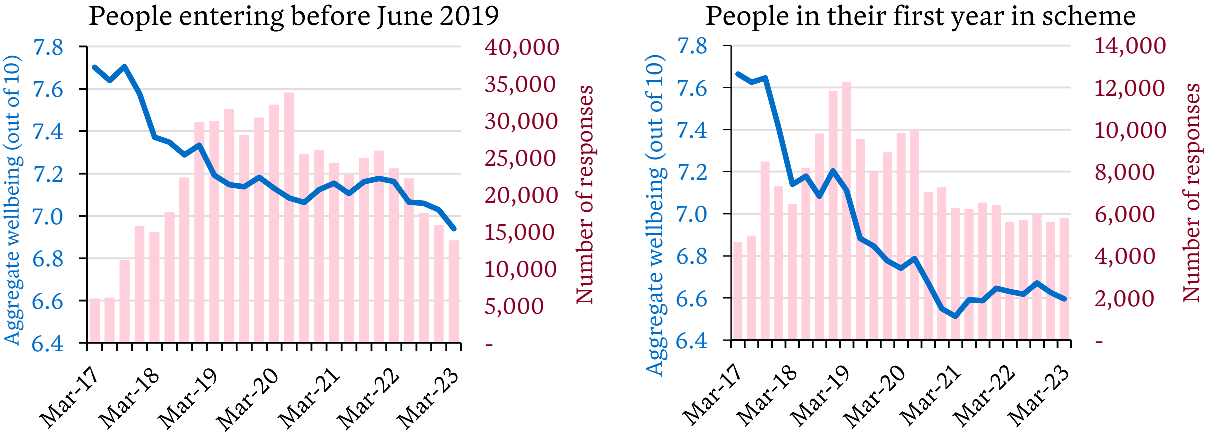
We look separately at these different life satisfaction measures and then settle on a final assumption for benefit modelling at the end of the subsection.

Participant wellbeing index

The composite index has a mean of 6.7 and standard deviation of 1.7 in the past 12 months. About 143,000 scores can be calculated using survey responses for people aged 15 and over in that period.

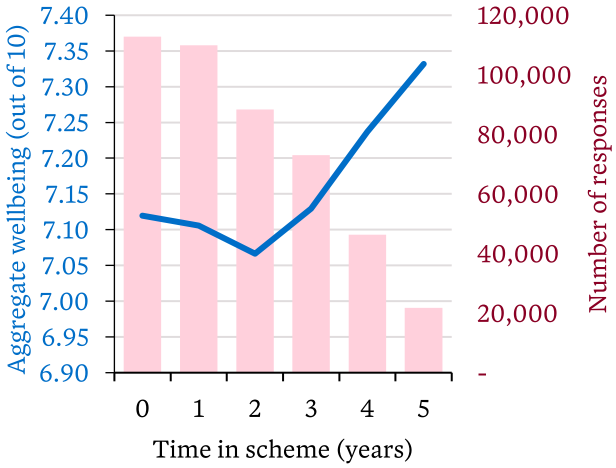
The overall trend shows a substantial decrease through to 2019, and some further (smaller) falls in 2022. These appear genuine time trends but apply equally to more recent entrants and existing participants so does not appear to be a Scheme duration effect.

Figure 5.12 – Trends in wellbeing score, for people entering the Scheme before June 2019 (left) and for people in their first year in Scheme (right)



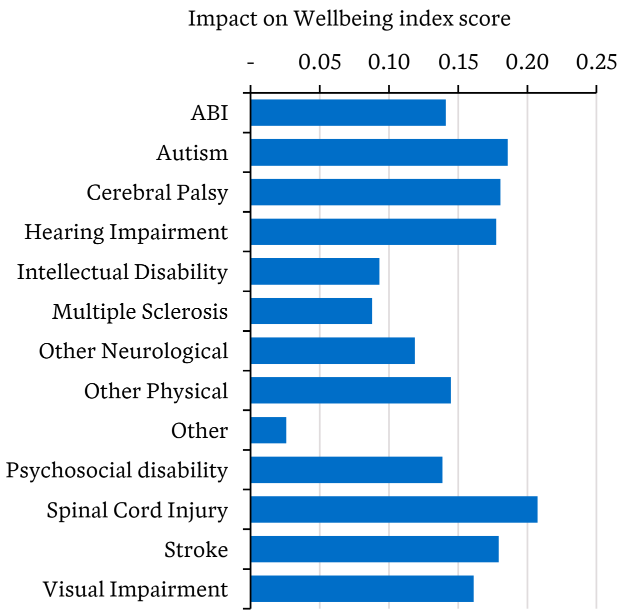
The overall wellbeing score increase for the current population tied to duration in the Scheme was 0.15 out of 10. The trend by duration for last year's scores are shown in Figure 5.13. Virtually all disability groups showed signs of improvement, with slightly larger-than-average gains for autism, spinal and stroke groups.

Figure 5.13 – Average wellbeing by duration in the Scheme for the year to 2023



Note: Roughly one fifth of the visible trend is attributed to underlying duration effects, corresponding to an improvement of 0.15 points – impact by disability is shown below. The remainder is tied to compositional and longitudinal patterns related to when different cohorts entered the Scheme.

Figure 5.14 – Wellbeing index impact of duration in Scheme, estimated separately by disability group

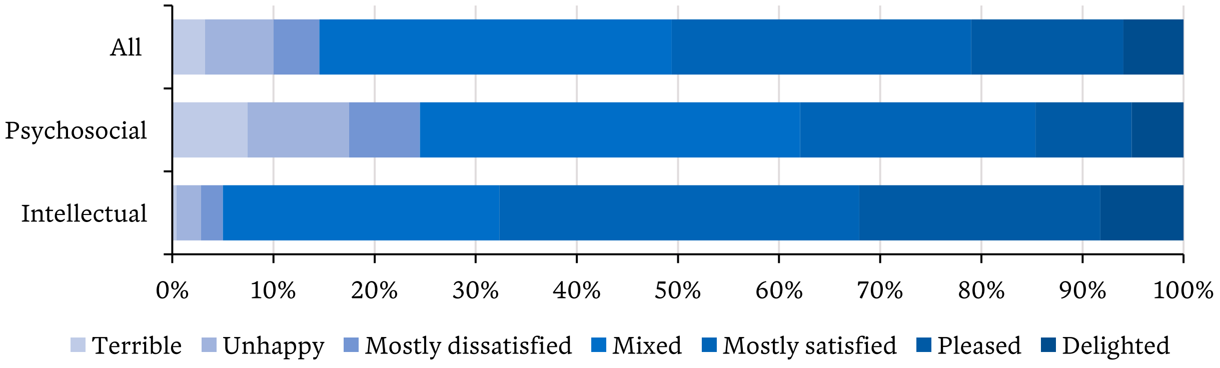


Participant life satisfaction

About 2,000 people aged 15 and over complete a life satisfaction question each year as part of the long-form survey, rated on a seven-point scale. The cohort evolves over time; about 7,000 unique individuals have responses, of which 55% only respond once, 25% twice and 20% three or more times. The dataset size means cohort-specific effects are less feasible.

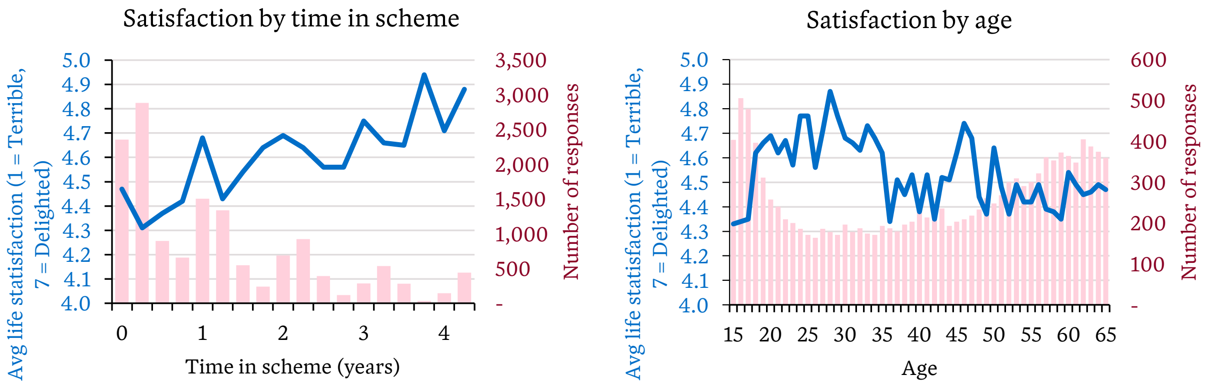
Overall satisfaction on a converted numeric scale is 4.5, which is somewhere between 'Mixed' and 'Mostly satisfied'. Differences are visible; for instance, people with a primary psychosocial disability tend to report lower scores, whereas people with intellectual disability tend to report higher scores (see Figure 5.15).

Figure 5.15 – Overall life satisfaction responses for calendar 2021 and 2022 combined, plus selected disability groups



Notwithstanding this, we find a substantial positive increase in life satisfaction with time in the Scheme – about 0.3 points increase on the 7-point scale by year three in the Scheme. This effect is visible in the average satisfaction by duration in Scheme (left panel, Figure 5.16) and it holds up after controlling for factors such as disability group, LoF, age and gender. No significant difference was found for cohorts, such as the comparison between new and legacy scheme entrants.

Figure 5.16 – Average life satisfaction scores by duration in Scheme and age, participants

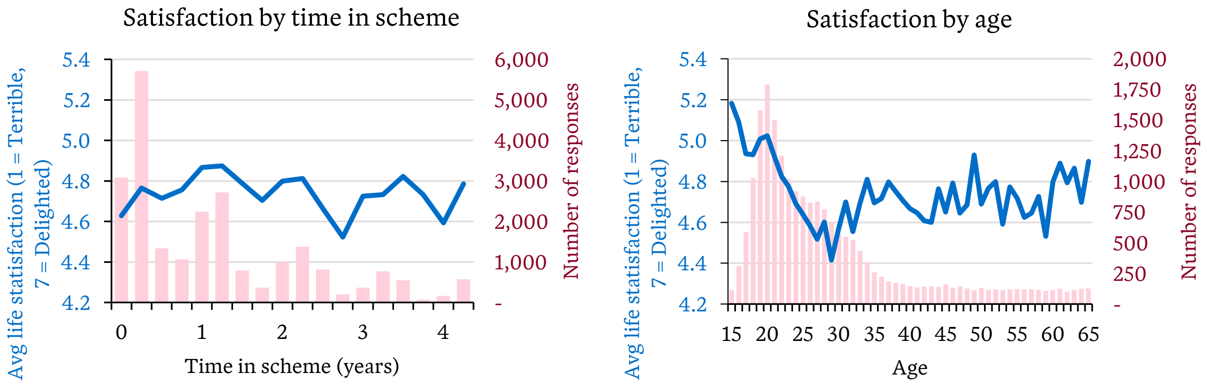


We place more weight on this result compared to the HILDA non-result, given the greater control over factors (such as disability group), Scheme duration, as well as the greater sample size.

Carers life satisfaction

We can expect improvements in subjective wellbeing for family carers as well as participants in the Scheme. A similar life satisfaction question is included in the long-form survey for family and carers. The aggregate trend by duration in Scheme is less pronounced, but a similar shape is apparent by age – see Figure 5.17.

Figure 5.17 – Average life satisfaction scores by duration in Scheme and age, carers



Applying a similar model gives a statistically significant increase of 0.10 (on average) for carers in life satisfaction on a seven-point scale. Increases were slightly larger for carers of non-legacy participants.

These results align closely with the 0.14 increase (on a ten-point scale) for carer life satisfaction change using HILDA data (see Appendix E).

Adopted results and implications

For participants, the alignment between our aggregate wellbeing index and life satisfaction models is encouraging. In both cases we see a small but highly significant wellbeing gain. The improvements on the life satisfaction question are roughly double that of the index; we probably give slightly more weight to the life satisfaction model (given it is more directly related to subjective wellbeing) and have taken a one-third – two-third blend of effect size in applying it to our benefits calculation. The HILDA modelling does not see significant gains; we believe the larger sample sizes and better regression control available in the NDIS models mean that the result for HILDA can be given less weight, and so we have not used it in our ultimate benefit calculation.

For carers we get smaller improvements but still significant; we adopted the results from the long-form life satisfaction question.

We attach a $26,400 value per point of life satisfaction. This follows the methodology guidance of the UK Government on monetisation of wellbeing (McLennan et al., 2021) and the assumption in Vincent et al. (2022) – See Appendix B.2 for more information. Applying our estimates and assumptions around the ratio of family/carers to participants (see section 5.5.3), this translates to an annual non-market value of $4.3 billion for participants and $1.5 billion for family and carers.

The two-thirds / one-third blend between life satisfaction model results and wellbeing index is our assumption; we give the life satisfaction model twice the weight, reflecting our view that the direct life satisfaction measure is more meaningful (and more tightly connected to our monetisation framework). The individual estimates for participant subjective wellbeing benefits are $5,191m and $2,384m for life satisfaction and wellbeing index respectively. This uncertainty, combined with uncertainty in the $26,400 value assumption, is also discussed in 5.2.2.

5.4.6 Psychological distress

People with disability and their carers experience higher rates of psychological distress, which can be exacerbated by financial circumstances or inadequate supports. In our modelling, the wellbeing aspect of distress should be captured in our life satisfaction measures. However there are potentially other benefits from reduced distress such as lower use of health services (hospital, mental health services and pharmaceutical).

Our analysis of HILDA data did not find a significant improvement in psychological distress, and we have therefore not attached a benefit estimate. Linkage work in the future could potentially test for changes in treatments directly.

5.5 Employment and financial security

5.5.1 General comments on the economic benefits of NDIS participant and carer employment

Participants

The Productivity Commission 2011 report pointed to potential benefits of 11 percentage points if Australia could bring its employment rate for people with disability up to the OECD average. This corresponded to about 100,000 people with disability finding jobs. Importantly, this was for a broader group of people than just the NDIS, spanning mild through to profound disability and included some proposed reforms to the DSP and employment services.

The NDIS reported a similar estimate of 117,000 additional jobs if people with disability and their carers were employed at a rate close to the OECD average (NDIS, 2021), which we regard as broadly comparable.

These estimates do not attempt to distinguish between the increase in employment for people in the NDIS, compared to those with higher LoF who are not in the Scheme. For instance, as of June 2023 there are about 195,000 people in the Disability Employment Service not currently placed in employment (DSS, 2023). Most of these people are not in the NDIS and would generally have lower barriers to employment.

Among adults in the NDIS, we estimate that about 48,000 have a job (about half on subminimum wages). Another 100,000 participants report not having a paid job but would like one; of this 100,000, only about a third are actively seeking a job.

In summary:

- About 200,000 people are seeking employment (or are temporarily suspended) in the Disability Employment Service – who are mostly not NDIS participants

- About 30,000 adults in the NDIS are seeking employment, generally with lower level of function than DES participants
- There are also potentially additional people with disability with relatively higher LoF seeking work who are not in DES or the NDIS.

While crude, we believe this implies that the PC scenario would not envisage more than 20,000 NDIS participants finding jobs. Assuming an average of 24 hours a week (using current distributions) and 80% of the hourly wage, this implies a $1 billion economic benefit (in the form of additional employment income) from improved employment among NDIS participants under a strong improvement scenario. Treating this as an upper bound, we observe that **the potential economic benefits from increased employment among NDIS participants are relatively small compared to overall Scheme costs.**

Carers

The Commission also offered a scenario for carers where about 7,500 carers not in the workforce were able to enter the workforce and find jobs, plus another 40,000 carers with existing employment are about to increase their hours. Estimated gains were about $2.2 billion (after inflation from the 2011 values). We would expect improved employment for carers would fall primarily on carers of NDIS participants, who tend to have more significant carer responsibilities. As an upper bound for the medium term, this seems plausible upper limit to potential benefits in the short to medium term.

5.5.2 Paid employment – participant

Overall impacts on participant employment appear small and some sources (such as HILDA) show no improvement. However, we see some cohort-specific effects when modelling NDIS outcome data, with statistically significant gains by a person's third year in Scheme for:

- People entering the Scheme who were not supported by legacy schemes (1.3 percentage point increase)
- Additional increases for some disability groups, notably autism (+0.5 percentage points) and psychosocial disability (+0.7 percentage points).

However, these gains were largely offset by negative effects for legacy participants and some disability groups.

Introduction and trends

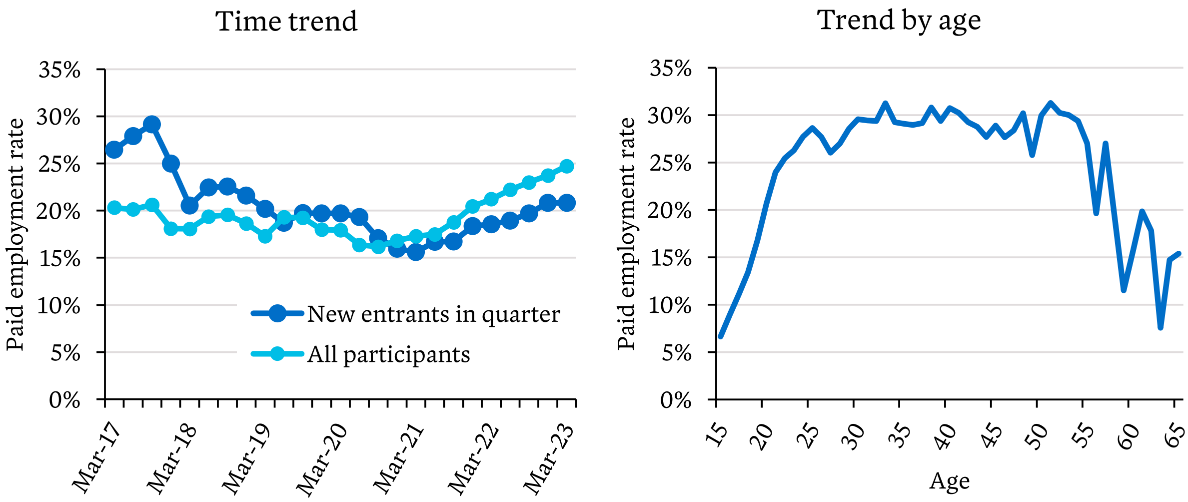
Modelling paid employment status from the short-form outcomes survey directly answers the question of increased employment. The outcome is available for participants aged 15 and over. We model paid employment status across **all** participants for the purpose of benefit estimation; for other outcomes work, looking at the number as a fraction of those with an employment goal can be more meaningful.

Proper statistical control is vital:

- For younger participants, apparent improvements can reflect normal life-stage improvements (e.g. people transitioning from school to the workforce, which may happen even without NDIS support). This dynamic is visible in some current NDIS reporting.
- Global changes in the labour market can affect the apparent effectiveness of the Scheme to support employment.
- Compositional changes, particularly changing levels of function, can skew averages. More people with higher LoF may see an artificial boost in employment rates.

The time trend in Figure 5.18 shows a substantial increase in the past two years following a dip – presumably due to the pandemic and subsequent strength in the labour market. Importantly, the employment rate for new entrants has a similar shape, which means that much of the improvement will be recognised as a time trend rather than a duration impact. The time trends complicate the estimation of underlying duration effects. Employment also increases from age 15, plateauing between 25 and 55 before dropping again.

Figure 5.18 – Average paid employment rates over time and by age, participants



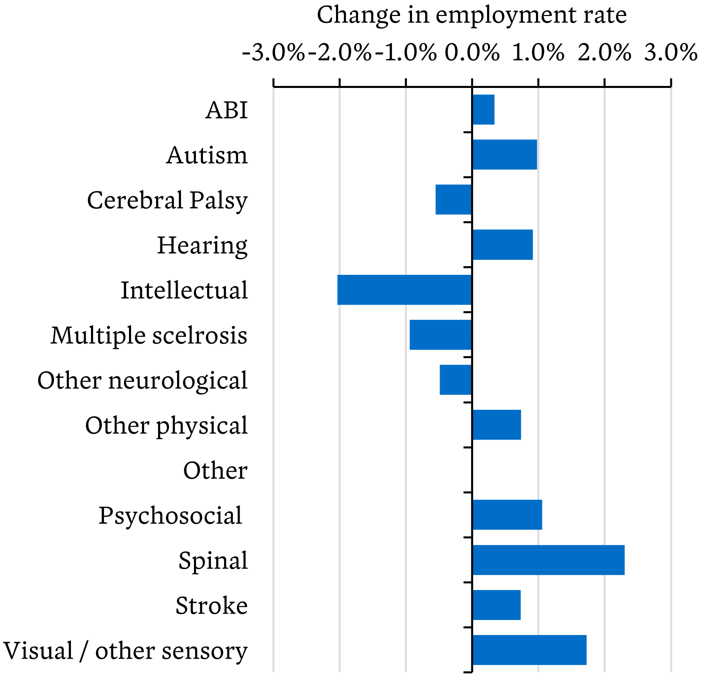
Findings

After controlling for available factors, we find very limited evidence of improvements in employment, but with some moderate cohort-level differences:

- A significantly more positive impact for people who did not transition from legacy programs – an additional 1.3 percentage point by year 3.
- Positive impacts for autism, psychosocial, spinal and visual impairment disability groups. These are on the order of 1 or 2 percentage points by year 3.
- Some negative impacts for other groups, including a 2.5% drop for intellectual disability.

The combined effect for the March 2023 cohort, by disability group, is shown below. Each group is permitted to have its own raw estimate, and non-legacy effects are added to this.

Figure 5.19 – Modelled Scheme impact on paid employment rate



The overall changes are relatively small. For modelling benefits, we have recognised the improvements for Autism, Psychosocial, Spinal and Visual/Other sensory groups, but **not** the modelled impact for other disability groups. While slightly asymmetrical, we do not think it appropriate to assume NDIS is hindering employment for some disability groups.

For market benefits, assuming a mix of part and full time (designed to be consistent with HILDA and NDIS employment surveys) we find about $50m of benefits arising from 1,700 additional jobs, with three-fifths passing to individuals and the remainder to government (in the form of tax and lower welfare transfers). Specific average impacts per additional job are given in Table 5.8.

Table 5.8 – Allocation of economic benefits from additional paid employment ($000)

Item	**Ages 15-24**	**Ages 25+**
Additional net income (after tax and welfare), participant	12,340	19,350
Additional income tax	2,240	6,250
Reduction in welfare	6,620	9,060
Total	**21,200**	**34,660**

For non-market benefits we recognise an additional increase in life satisfaction associated with the positive impacts of work, relative to unemployment. This produces a life satisfaction benefit for participants in paid employment of $22 million.

Our approach assumes an improvement in participant life satisfaction of 0.5 points worth $13,200 for each additional employed participant, e.g. participants exiting unemployment and finding paid employment. The monetisation of the life satisfaction benefits is discussed in section 5.4.5 with further details in Appendix B.2. The 0.5 points of life satisfaction approach was also used in Vincent et al., (2022) and HM Treasury (2021), which provide some additional detail.

5.5.3 Paid employment – family and carers

In absolute terms paid employment rates for family and carers have grown strongly – by about four percentage points compared to 2019. However, our modelling suggests most of this can be attributed to the broader labour market. Our NDIS outcomes data gives a very slight increase with Scheme duration (0.1 percentage points). Converse, HILDA modelling gives a much more significant boost – 5 percentage points after two years. We have selected an intermediate value, giving slightly more weight to the outcomes model.

Introduction and trends

In addition to increased employment among participants, we expect better supports would enable family and carers to enter the workforce, if they desire.

The short-form outcomes survey for families and their carers askes about paid employment. Applying these results is slightly trickier than participants, since it requires (either implicitly or explicitly) assumptions around the population of family and carers. For example, if the mother of a child answers the survey (as occurs 90% of the time for participants aged under 15), should we extrapolate results around more employment (or more hours worked) to their partner or other household members? Other linkage work (e.g. tracking changes in carers benefits or taxable income for households) may shed some light on this topic, although we note many administrative data sources struggle with defining households effectively.

Our results do not formally control for changing survey respondent in the modelling, but note it is a relatively small occurrence (about 3% of participants in the modelling dataset have a respondent change). However, rerunning the regression on a subset where relationship to the participant does not change gives the same findings (for example, no statistically significant differences in duration effects).

Our modelling focuses on parental employment for participants aged 0-14[47]. The overall trend appears encouraging; reported employment in the past year is 4 percentage points higher than equivalent rates before the COVID-19 pandemic. However:

- Some of the trend will relate to labour markets, rather than attributable to the role of the NDIS
- The trend is partly boosted by higher employment rates for new entrants to the Scheme, further suggesting not all the change should be attributed to the NDIS
- Some of the longitudinal patterns visible (higher employment with time) will relate to demographics; employment tends to rise as children and parents age, compared to when children are very young. See Figure 5.21.

We have parameterised the model to account for these factors, noting there is some judgement applied in the parameterisation of time trends – the model setup can affect the balance between ascribing trends to calendar rather than Scheme duration effects.

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[47] Relationship status and anonymised ID information is missing for family of older participants, making modelling more difficult for others.

Figure 5.20 – Average paid employment rate for family responders over time, participants aged 0-14

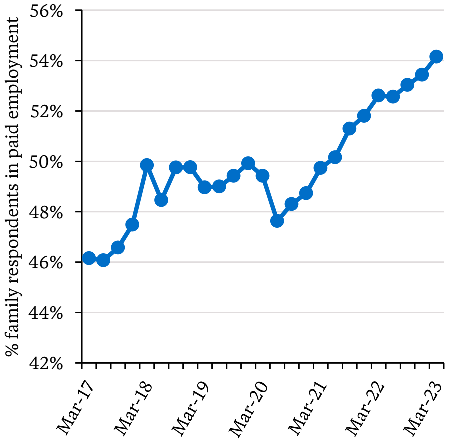
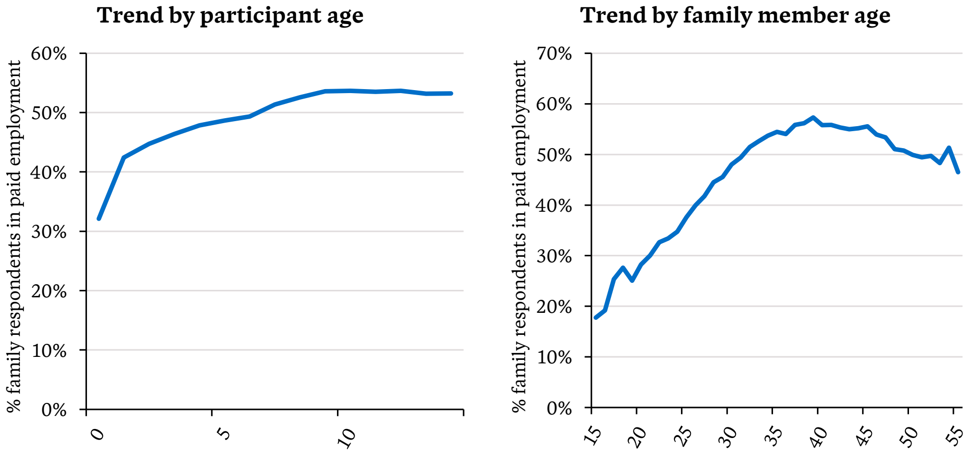


Figure 5.21 – Family employment rate trend by participant and family member age (all time periods)

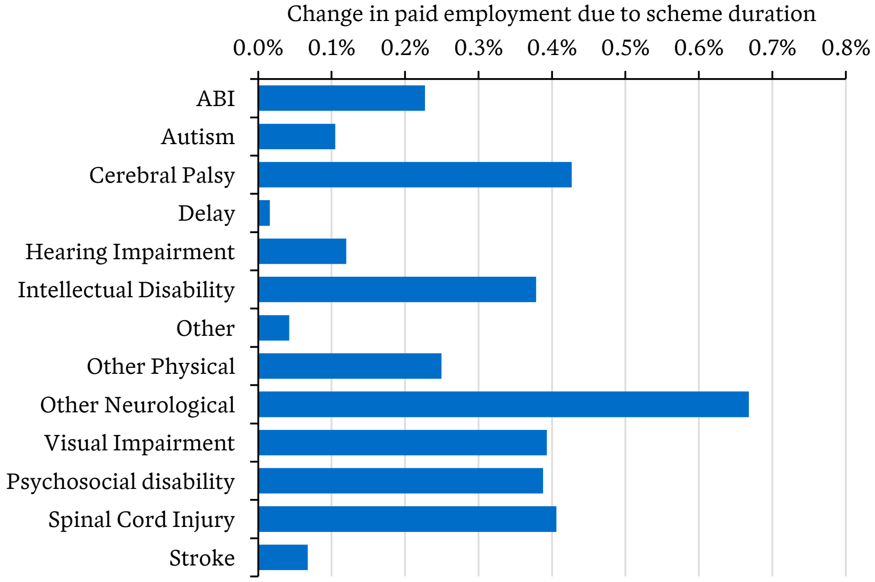


We have also modelled employment using HILDA data, albeit with less granular insight into participant characteristics and using a smaller sample.

Findings

After allowing for time effects, we find very little signal related to improved employment with Scheme duration. A small positive effect is seen, concentrated on households from legacy programs where participants have lower level of function. The overall impact is about 0.1 percentage points.

Figure 5.22 – Modelled impact of time in Scheme for March 2023 cohort, parents of participants aged 0-14



Conversely, our HILDA regressions are strongly positive, with significant increases in part-time work on the longitudinal series. This found a 5-percentage point increase in part time work by two years – see Appendix E.7.

The contrasting results presents a challenge for assumption setting on our benefits model. In comparing the results, the differences primarily relate to:

- Treatment of post-pandemic employment gains – For our NDIS model, it could be argued that if the NDIS improved the ability to find work, the effect was suppressed during the pandemic and then 'bounced up' afterwards. Conversely, the HILDA model does not explicitly discount the labour market strength in this time period.
- Different age ranges – the HILDA analysis spans all carer ages (although outcome dashboard reporting suggests positive trends are centred in the younger cohorts modelled in our NDIS analysis)

We have adopted an intermediate value, in light of this uncertainty:

- For participants aged 0-14, the effects shown in Figure 5.21 plus 2 percentage points gain in employment
- For participants aged 15 and over, an improved family employment rate half that of those aged 15+.

Economic estimates

We adopt a similar approach to that of participants, using income distributions from HILDA to capture increased income and allocation across individual benefits versus government savings.

We assume the 'exposure' of carers (those affected by the increased rate of employment) equals 1 person per participant aged under 15, and 0.5 persons for participants aged 15+. We have not done a detailed analysis of the NDIS carer population, but regard these estimates as likely conservative.

Economic benefits of $340m correspond to about 9,700 additional people in paid employment. About three quarters of the amount accrues to the individual and the remainder to government. In contrast to participants, we do not recognise any additional life satisfaction benefit for carers finding employment since we consider the role of carers to be more abstracted from the type of unemployment underlying the studies supporting this benefit.

5.5.4 Income – household

In addition to people entering employment, it is also possible that participants and carers who are already employed take on more hours, or higher-paying jobs, supported by NDIS services.

Our HILDA modelling showed no significant increase in earnings (via hours or hourly rates) for both participants and carers relative to NDIS entry, and so we have not built these into our current estimates.

We believe **there is a reasonable chance of some uncaptured benefits in this area** – on the same order of the paid employment estimates. The best way to explore this would be to use data linkages (e.g. MADIP or the NDDA) that can directly track income changes.

While there are some NDIS outcome fields on employment hours and income bands, they are less consistently filled out. Further work could be done to assess robustness and determine the strength of evidence for improved income from NDIS data.

5.5.5 Reduced financial distress

The provision of NDIS-funded supports can relieve significant financial pressure for households that would otherwise bear the cost of care for people with disability. Using HILDA, we have tracked a financial distress score across eight categories of spending; people with disability are twice as likely to be experiencing financial distress compared to the general population. The modelling shows NDIS entry is associated with a marked reduction in the ‘gap’ of financial distress scores between people with disability and their carers, compared to the broader population. Roughly 4 percent of the group move from having at least one area of financial distress to no areas.

HILDA measures more directly address issues of financial distress; NDIS outcomes track some responses where financial reasons can be given for not accessing a service, but the picture is less complete.

We do not formally recognise economic benefits related to reduced financial distress (or relatedly, equity arguments– see Section 4.6). Some benefits will be apparent elsewhere – such as through reduced psychological distress and improved subjective wellbeing.

5.6 Inclusive homes and communities

5.6.1 Satisfaction with home

We have found some substantial improvements over time for the proportion of people satisfied with where they live. Effects are particularly pronounced for non-legacy scheme entrants, and for people not receiving SIL or SDA support.

Economic estimates associated with the improvements are relatively small, at $15m.

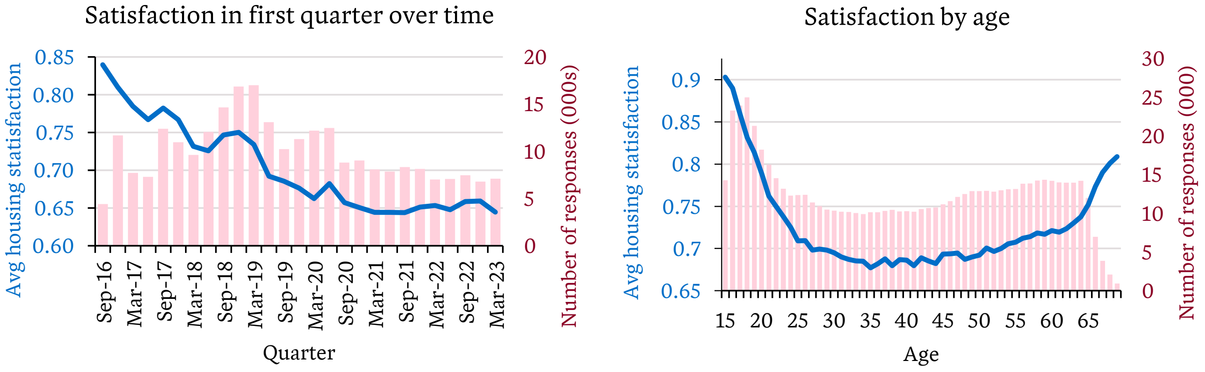
Introduction and trends

Participants aged 15 and over are asked if they are happy with where they currently live (in relation to their disability support needs). We have looked at the proportion of respondents responding as happy.

In the 12 months to March 2023 69% of people were satisfied with where they lived. This is down from 76% in 2018, for compositional reasons – newer entrants to the Scheme have tended to have lower levels of satisfaction, as shown in Figure 5.23. A U-shaped trend is also visible by age, with people aged 30 to 50 having the lowest levels of satisfaction.

The compositional patterns mean we rely on the longitudinal estimates that arise from our regression approach to estimate impact over time.

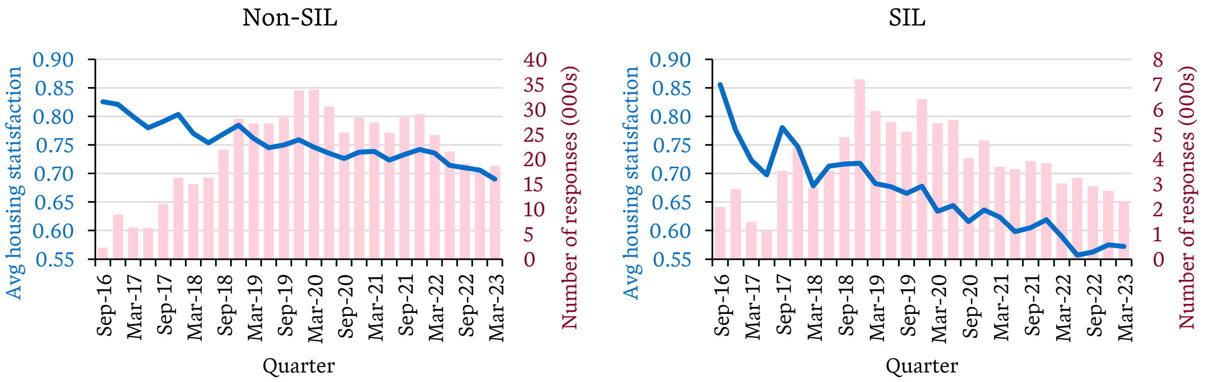
Figure 5.23 – Average satisfaction with where they live scores for people in their first quarter in Scheme and by age


Satisfaction in first quarter over time

Satisfaction by age

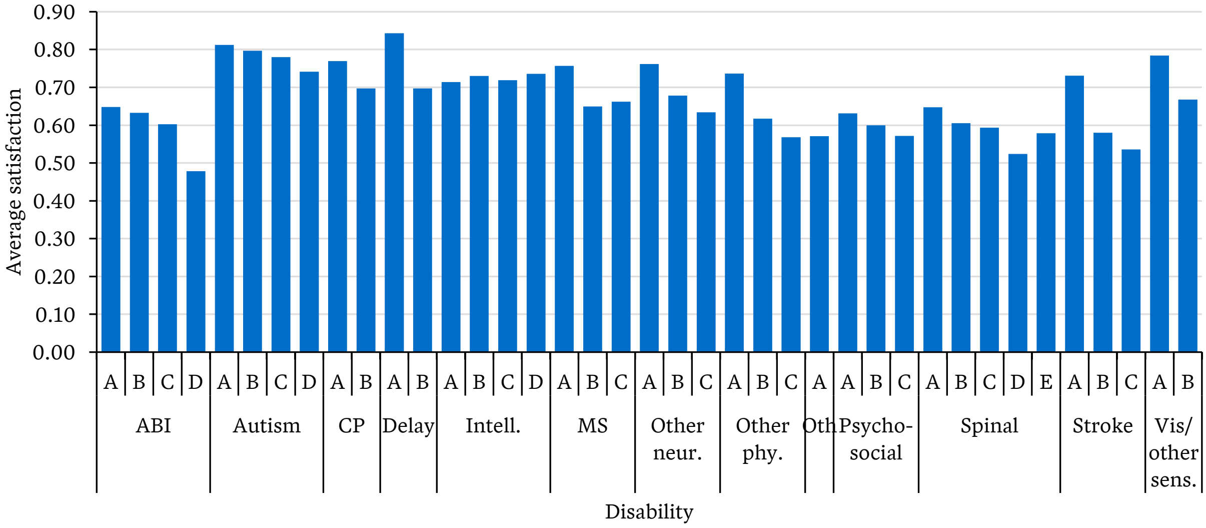
Importantly, we see a large satisfaction gap between those accessing SIL or SDA supports and those who do not. In the year to March 2023 57% (SIL/SDA) versus 71% (no SIL/SDA) a gap of 14 percentage points. Those accessing SIL without SDA had scores about 3 percentage points lower than those with SDA.

Figure 5.24 – Average satisfaction over time


Non-SIL

SIL

Figure 5.25 – Average satisfaction in the year to March 2023



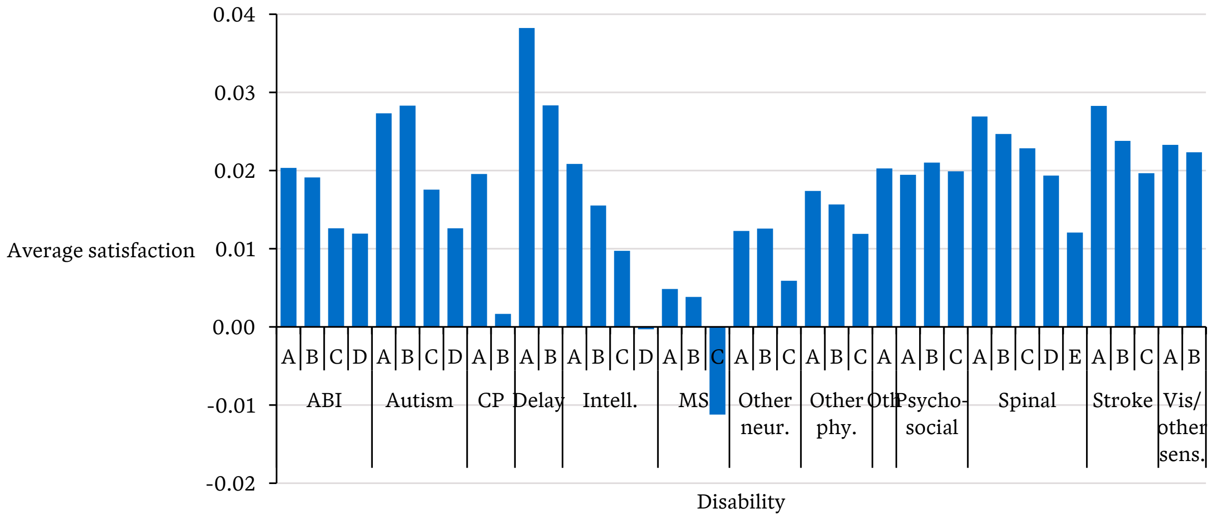
Findings

Despite the overall downward trend visible above, we find a **strong increasing trend** in satisfaction over time; the longitudinal pattern that tracks people over time tends to see increases. Additionally, there are a number of cohort effects identified:

- The average increase for people not from legacy schemes is 4 percentage points higher than those from legacy (by year 3 in Scheme)
- Slight decreases (rather than increases) for people in SIL or SDA
- Smaller increases, and in some cases decreases for people in the Multiple Sclerosis, Other neurological, and Other physical disability groups.

The average impact across disability-LoF groups is shown in Figure 5.26.

Figure 5.26 – Average change in satisfaction with home after entering the NDIS



Note: disability-LoF are defined at duration two.

We regard the effects as relatively large.

Economic impacts

We do not explicitly recognise a dollar benefit associated with improved wellbeing in our combined estimate to avoid double-counting with other life satisfaction estimates.

However, we attribute some benefit associated with reduced direct cost of inappropriate housing. We assume some of the improvements relate to improved accessibility of housing. We assume half the improvement relates to decreased risks associated with inaccessible housing. Following the approach of Vincent et al. (2022), we assume inaccessible housing costs were:

- $3,039 per year in goods and services costs borne by the individual (e.g. cost of medical treatment related to trips and falls, and additional care time required)
- $465 in government costs (e.g. hospital treatment costs from falls).

This gives a small overall annual benefit of $15m, with about five sixths going to households and the remainder government.

Further work is possible – we have not attempted to align improvements with participants who have had relevant home accessibility supports installed, or who moved into new SDA. This type of modelling may be suited to approaches like the IEP (see section 5.2.5).

5.6.2 Access to transport

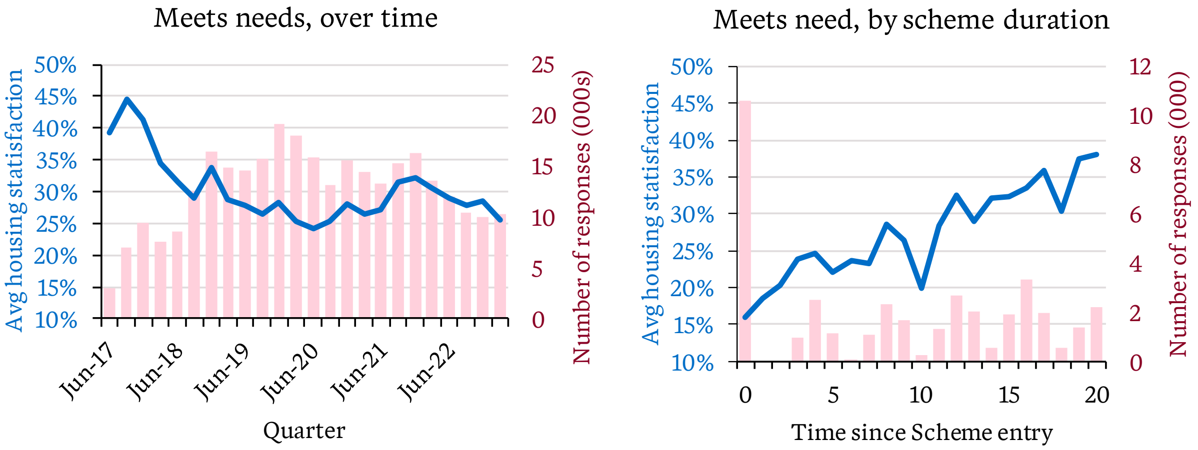
We have modelled the fraction of people who have transport that meets their needs, of those who flag a need, among people aged 15+. A large majority of participants cite a need, although this has fallen somewhat in the past year. Improved access to transport is key to engagement in employment and the community, and many NDIS supports directly improve such access.

We do not include explicit estimates attached to changes in transport access – some of the benefits will be captured already in life satisfaction and participation in other activities including employment and education. Further work could be done to articulate specific benefits that avoid potential double counting issues.

The left panel of Figure 5.27 shows there has been variation over time. The pattern tends to align with changes in reported need; higher rates in 2021 correspond with a greater number of people reporting a transport need, whether due to pandemic impacts or other factors.

Overall, we see very strong improvements in access to suitable transport as a function of duration, shown in the right panel of Figure 5.27. The modelled effect is up to 20 percentage points increase in satisfaction by the end of a person's fifth year in the Scheme. Slightly larger improvements are seen for people in supported independent living (SIL), or who have primary disability in the psychosocial or other neurological groups. Some of the trend may tie to selection effects (people who do not have their needs met may be less likely to report a need over time), but overall appears a strong positive trend.

Figure 5.27 – Proportion of people with a transport need where the supports meet their need. Left panel shows average response over time, right panel the pattern with duration in scheme (quarters)

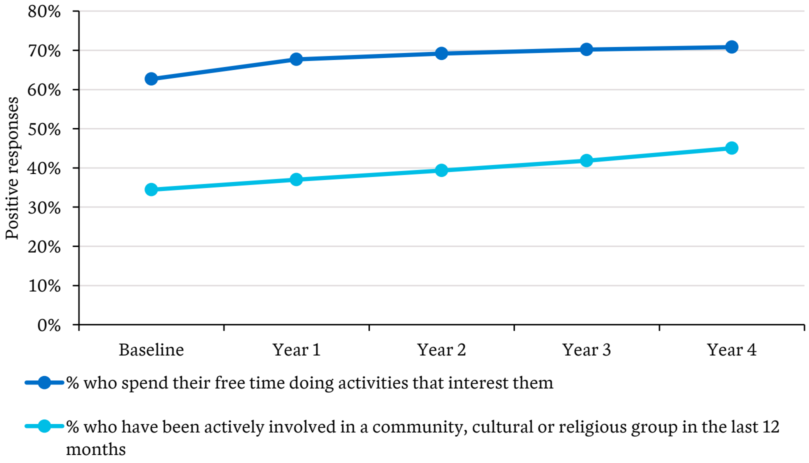


5.6.3 Community participation

Similar to access to transport, we have not attempted to value increased community participation as a result of the NDIS. Much of the benefit is related to improvements in subjective wellbeing, and so are captured in these measures.

This does not mean that community participation is unimportant, and NDIS reporting dashboards show a material increases across a range of community measures with time in Scheme. Two of these are shown in Figure 5.28.

Figure 5.28 – Changes in community-related outcome scores for participants aged 15 and over



Source: 2022 outcomes dashboard

5.7 Safety, rights and justice

5.7.1 Safety at home

We have not found evidence of improved feelings of safety in their home with time in the Scheme.

Introduction

Participants aged 15 and over rate their feelings of safety in their home on a five-point scale, which we convert to scores between 1 and 5 (a higher score represents greater safety)[48]. Overall ratings are relatively solid, with an average score of 3.7 in the past year out of 5. Rates for people receiving SIL or SDA support are broadly similar, with an average of 3.6 in the past year.

Differences by disability type and level of function tend to be smaller. Autism and Intellectual disability have the highest ratings (scores around 4), but some of this is composition; younger people tend to provider higher ratings.

Observed trends

The overall time trend is decreasing safety satisfaction over time. However, as with some other outcome scores, this appears to be driven by composition; average scores at Scheme entry have been falling steadily too (see Figure 5.29), by about 0.4 points over the four years to 2021. A trend is also visible by age, with younger people reporting greater feelings of safety.

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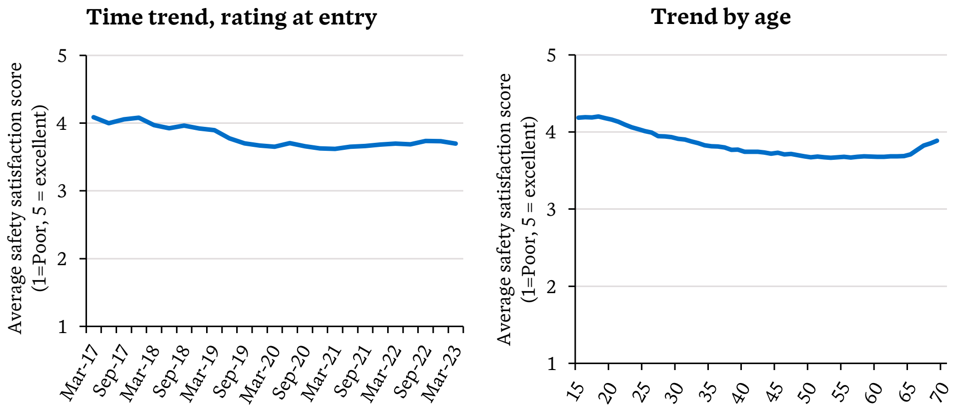
[48] 1 = Very unsafe, 2 = unsafe, 3 = Neither safe nor unsafe, 4 = Safe, 5 = Very safe

Figure 5.29 – Average safety satisfaction scores for people in their first quarter in Scheme and by age



The compositional patterns mean we rely on the longitudinal estimates that arise from our regression approach to estimate impact over time.

Findings

Overall we find a slight **decreasing** trend for feelings of safety with duration in the scheme, after controlling for our usual factors. The overall trend is a decrease of 0.05 points by a person's third year in the scheme. We have found limited evidence of improvements for different cohorts; a slight positive impact for psychosocial benefits (+0.15 points) is the only positive disability group.

No evidence of significant departures in trend was seen for other cohorts such as those receiving SIL or SDA supports.

Given the small scale of changes and relatively few positive effects, we have not recognised specific benefits around feelings of safety at home for participants.

For **carers**, feelings of safety do appear to increase materially once in the NDIS, based on our HILDA modelling (+0.2 points, on a 10 point scale – see Appendix E). This satisfaction measure will overlap with improvements in life satisfaction, so are recognised elsewhere. There may be other benefits (e.g. reduced health system use if improved safety reflects genuine reductions in the number of instances of violence and abuse), but we have not attempted an estimate for this.

5.7.2 Choice and control

We have not found evidence of an increase in participant choice and control with time in the Scheme.

Participant choice and control is a key tenet of the Scheme. There are a number of questions related to choice and control in the short-form survey – for instance:

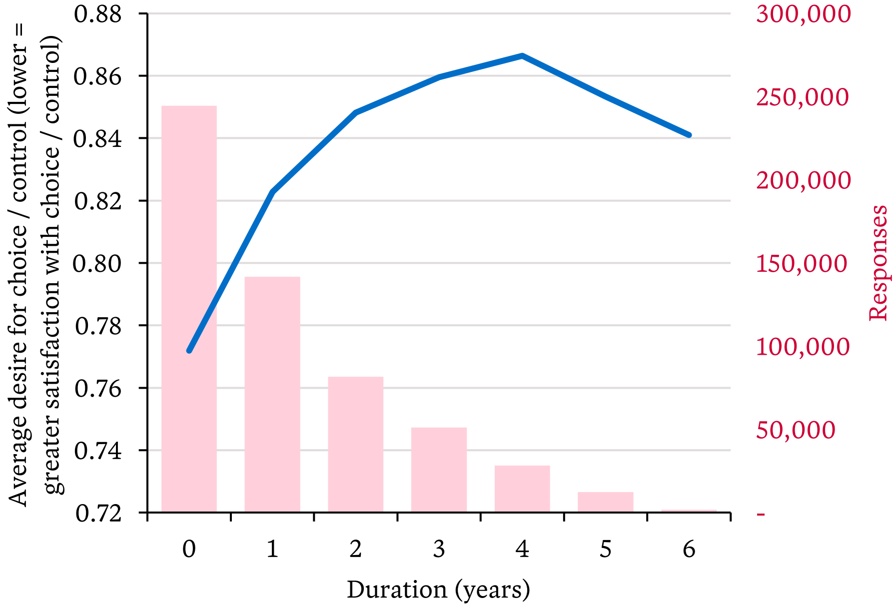
- About 80% of participants aged over 25 say the NDIS helped them have more choices and more control over their life
- About 60% of participants aged over 25 choose who supports them
- About 70% of participants aged over 25 choose what they do each day

We have examined the question for participants aged 15 and over that asks if they want more choice and control in their lives (a lower score represents greater satisfaction in choice and control). This is a good measure of unmet need in this domain, although may be subject to changing expectations over time. Overall, 81% of responses in the past year indicated a desire for greater choice and control, with the highest frequency of affirmative responses from people with lower levels of function.

We observe a sharp decline in choice and control between a person's baseline survey and later years (that is, an increase in people who want more choice and control). The pattern of response with time in the

Scheme is shown in Figure 5.30. The overall effect is about 10 percentage points higher by year 3, for both legacy and new participants.

Figure 5.30 – Average change in desire for more choice and control in March 2023 participants based on their duration in the Scheme



Other measures related to choice and control in the outcomes dashboard appear flat rather than deteriorating, for the 15-24 and 25+ age groups. This suggests some degree of changing expectations over time.

We do not include an explicit benefit for choice and control in our estimates – we have not detected an improvement in outcomes and it would overlap with improvements to subjective wellbeing. There is limited academic evidence on the 'value' of choice and control – see our comments in Appendix B.3. If we were to measure an increase in choice and control, we could arrive at an **experimental** incremental improvement by valuing of choice as a percentage of payments. This is nominally an estimate of the amount people would be willing to pay to obtain choice and control over spending to the extent of improvement visible.

5.7.3 Safety, justice and child protection systems

Numerous sources (see Vincent et al., 2022) recognise that children with disability are heavily overrepresented at all stages of the child protection system. The costs associated with this are large, for both households and government.

Similarly, people with disability are strongly over-represented in the criminal justice system, including in detention. The National Disability Data Asset (NDDA) justice pilot project[49] found that one in three people with custodial episodes were accessing a 'core' disability support (DSP, NDIS funding or prior legacy scheme supports). Rates are particularly high for those with intellectual disability, other cognitive impairment and mental health disabilities. NDIS participants within detention are still entitled to some supports, although we are not aware of data that tracks detention status. Again, the costs to government and the individual are large.

Finally, research shows that people with disability experience violence and abuse at higher rates at each age group (see Section 3.2 of Vincent et al., 2022).

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[49] https://www.ndda.gov.au/about/public-policy-test-cases/

It is reasonable to believe that effective NDIS supports can have some positive impacts on capacity that reduce the need for child protection and justice system involvement. Improved quality of supports may also improve the safety of participants. These could translate in significant personal and economic benefits.

Project data does not allow us to estimate benefits attached to NDIS participation. Continued improvements in data, particularly linkage initiatives such as the NDDA, should enable better estimates to be made in these important areas.

5.8 Education and learning

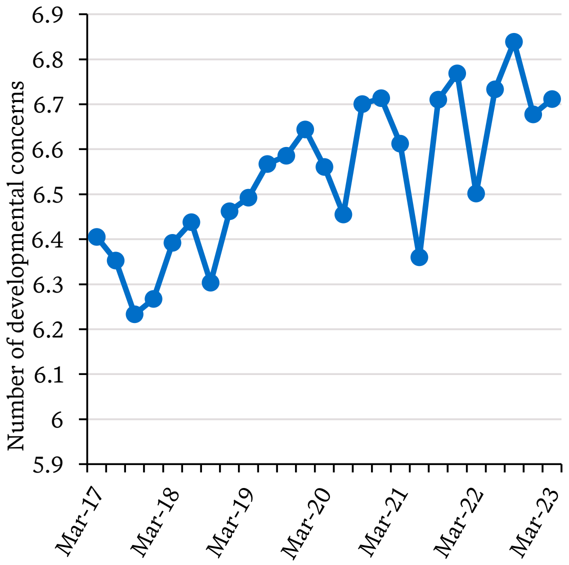
5.8.1 School readiness

Parents and carers are identifying more, rather than less, areas of developmental concern with time in the Scheme. The nature of the survey means have many measures will likely not objectively demonstrate relative improvements in outcomes for children receiving NDIS supports. No benefits have been recognised in this category.

Interventions early in life aim to improve development so that children with disability can participate more fully in education and other childhood activities. The NDIS outcome surveys have a range of questions.

The outcomes survey tracks parental/carer developmental concerns across a range of areas – the NDIS dashboards currently report the percentage of parents flagging six or more areas out of eight. We have modelled the aggregated number of concerns out of eight. The overall number of areas has been trending up over time for participants aged zero to school age, as shown below.

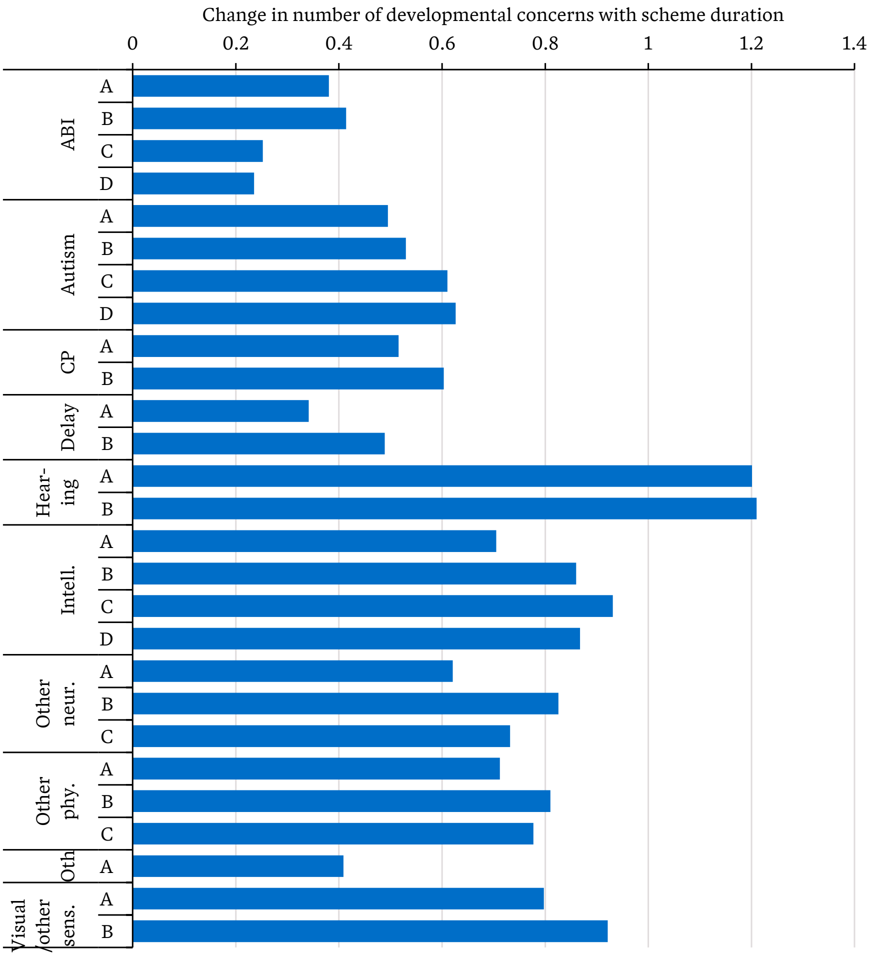
Figure 5.31 – Average number of development concerns flagged for children participants prior to school, out of eight



When modelled to control for the range of observable factors, we find **strong increases** in the number of developmental concerns, on average 0.45 additional concerns across the population. We attribute this to the subjectiveness of the measure; parents may be becoming more aware of aspects of development over time, and issues can emerge over time too (although we do control for age and level of function).

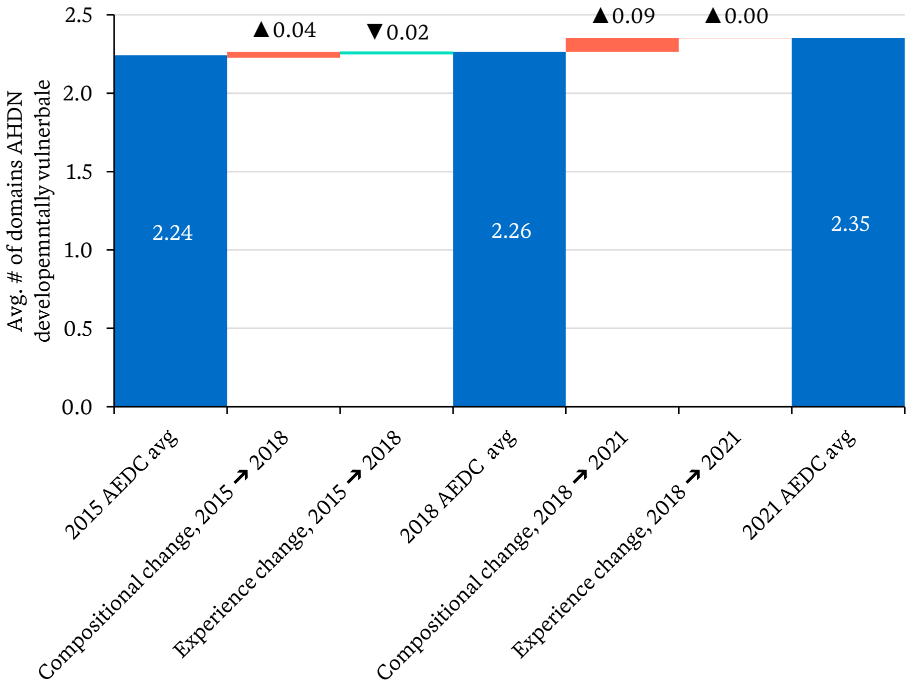
This highlights an issue with many of the child measures, that we do not have many measures that objectively demonstrate relative improvements in outcomes for children receiving NDIS supports.

Figure 5.32 – Change in number of developmental concerns with duration in Scheme, current participants



We note that other objective measures do not show evidence of improvements in developmental readiness. For instance, Miller and Dixie (2022) looked at changes in developmental readiness for children with additional health and developmental needs (AHDN) with in their first year of school, using the Australian Early Development Census (AEDC). We found that for children with a diagnosed special need (which would include most NDIS participants), the number of domains (out of five) that children were flagged as developmentally vulnerable has increased over time (although stable once allowing for compositional effects such as increasing autism rates).

Figure 5.33 – Change in average number of domains (out of five) AHDN developmentally vulnerable across 2015 through 2021 for children with special needs in the AEDC.



Source: Miller & Dixie, 2022

These results highlight it is difficult to demonstrate gains for younger children without tracking of individual needs and goals – see our discussion in 7.4.2.

5.8.2 School attainment

We have not found any improvement in Year 12 attainment for people with NDIS supports before they turn 18. Selection effects and limited time windows may contribute to the non-result.

Improved school attainment is strongly associated with higher incomes later in life (see Appendix B.4), and arguably carries intrinsic benefits too. We focus on Year 12 attainment, noting that it is still too early to see improved attainment for people entering the Scheme at young ages – we can only measure the impact of entering the Scheme as a mid-teenager and associated changes in school completion. By age 25 about 65% of participants have completed Year 12.

Our approach to modelling year 12 attainment is slightly different to most outcomes, given school completion is a single event. We:

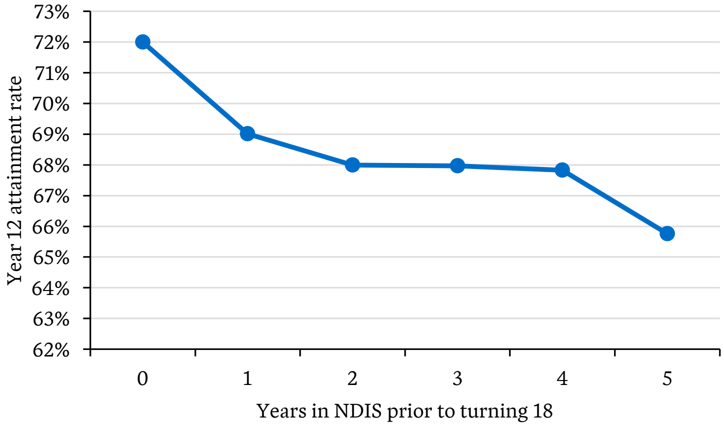
- Take one record for participants aged 19 to 21 and set the response to whether they report having completed year 12.
- Create a variable for number of years in the Scheme before turning 18.
- Include this variable as our experimental variable, controlling for other variables such as disability, level of function, gender and legacy scheme status.

The approach is somewhat crude as it relies on age assumptions rather than detailed information of school training. However, we would expect material improvements in educational attainment to be visible under this setup. We have tested different choices for age slices and found broadly consistent results.

The approach identified about 30,000 people, with about one third having time in the Scheme before turning 18. Average rates of attainment for this group, as a function of years of assistance prior to turning

18, is shown in Figure 5.34. Attainment varies significantly by disability type; for instance, rates are much lower for psychosocial and acquired brain injury disabilities.

Figure 5.34 – Year 12 attainment rate for people aged 19-21, as a function of years in Scheme prior to turning 18



We found no positive effects for more time in Scheme leading to higher educational attainment. After controlling for factors, we observe no effect for non-legacy scheme entrants, and a negative effect for legacy entrants (attainment 1.5 percentage points lower per year of assistance).

Interpretation is difficult; it may be that people more likely to enter the Scheme at younger ages (and who therefore have had more assistance) had lower level of function. We stress that future work with a longer time series is more likely to fairly measure a positive effect, assuming it exists.

The HILDA modelling similarly found no evidence of increased school attainment associated with NDIS entry.

6 Comparison of costs and benefits

6.1 Overall comparison

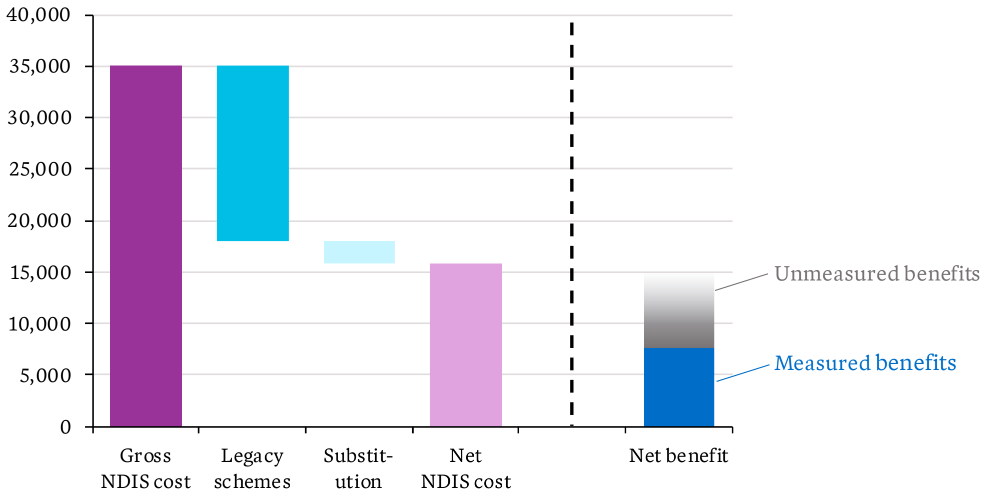
6.1.1 Main results

In this section we combine and summarise the results of sections 3, 4, and 5. Bringing them together is not designed to be a formal cost-benefit analysis, given the nature of some of the limitations discussed in section 6.4.

Figure 6.2 and Table 6.1 compare net NDIS costs with net benefits. The left of the chart illustrates the decomposition of gross NDIS costs into legacy scheme, substitution (from government spending) and net NDIS cost components, and a comparison with net benefits of the NDIS. Net NDIS costs for the 2022-23 year are estimated to be $15.8 billion. This compares to measured net benefit estimate of $7.6 billion[50], so estimated net benefits represent nearly 50% of the net costs.

We reiterate our earlier remark from section 5.1 that **our figures are more likely than not to underestimate broader benefits**. Our approach involves recognising benefits only when improvements in outcomes can be measured and improvements may exist in areas that we have not been able measure. There is likely to be significant unmeasured benefits to the NDIS that our current approach does not capture and which may be recognised with additional data and modelling.

Figure 6.1 – Costs and benefits of the NDIS in 2022-23 ($ million)



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[50] While this is an estimate for the 12 months to March 2023 (1 April 2022 to 31 March 2023), we have applied directly to 2022-23 (1 July 2022 to 30 June 2023) for comparability, without inflation.

Table 6.1 – Costs and benefits of the NDIS in 2022-23 ($ million)

Costs and benefits	Value ($m)
Gross NDIS cost	35,100
Legacy schemes	17,090
Substitution	2,209
Net NDIS costs	**15,800**
Net benefits	**7,568**

Our estimate in net costs reflects a large increase in supports for people with disability under the NDIS, for both the number of people supported and the average level of supports.

We note that there is not an expected ratio of net costs and benefits in our work. The NDIS is subject to a high degree of scrutiny – more than many other government-funded schemes. Some of this increased accountability is by design; the NDIS Act (2013) sets out principles such as the right to participate in and contribute to social and economic life, and so it is appropriate to review progress against some of these principles. However, there are not equivalent estimates of costs and benefits for other large government programs, so we cannot immediately judge relative the merit of the NDIS against other programs.

6.1.2 Impact of alternate design decisions

Deadweight loss of taxation

As discussed in Section 4.2.2, alternative assumptions for the treatment of the deadweight loss of taxation result in different net cost estimates. Using a 30% marginal excess burden assumption to net cost estimates we see:

- Estimated net costs including deadweight loss is $20,541 million
- Estimated net costs using only deadweight costs is $4,740 million.

As discussed in Section 4.2.2, we do not regard the latter figure as appropriate to compare to benefits.

Operating expenses

Section 4.2.7 examined NDIS operating costs and estimated a net increase in costs of $1.2 billion. If this was included in the main estimate it would increase net costs to $17.0 billion.

6.2 Segment level results

Table 6.2 contains a breakdown of the net costs and benefits by disability and level of function segment. The key observations are:

- A general pattern is the *relative* size of net benefits to net costs reduces as level of function decreases. In large part this is because benefits (primarily life satisfaction) remains steady while costs increase.
- There are four segments where total net benefits exceed net costs in the NDIS. These include the highest assessed LoF bands of people with autism, delay, hearing and visual & other sensory. These groups tend to have lower per-person costs and wellbeing improvements remain solid.
- Some groups have low benefits compared to costs, for example acquired brain injury, multiple sclerosis, other neurological, psychosocial disability, spinal cord injury and stroke.

Table 6.2 – Costs and benefits by segment ($ million)

Disability group	LoF band (A = highest LoF)	Gross NDIS cost	Legacy Schemes	Substitution	Net NDIS cost	Net benefit
Acquired Brain Injury	A	149	80	9	59	53
	B	425	189	27	209	61
	C	1,466	859	92	515	106
	D	404	99	25	279	9
Autism	A	499	187	31	281	524
	B	2,468	665	155	1,647	1,392
	C	556	387	35	134	145
	D	3,328	1,742	209	1,377	438
Cerebral Palsy	A	213	112	13	88	91
	B	2,294	1,607	144	543	142
Delay	A	840	66	53	721	1,121
	B	47	17	3	27	25
Hearing	A	116	33	7	75	251
	B	117	44	7	65	74
Intellectual	A	592	253	37	301	253
	B	1,832	1,160	115	557	407
	C	2,632	1,820	166	647	287
	D	4,903	3,264	309	1,330	294
Multiple sclerosis	A	75	22	5	48	35
	B	243	93	15	135	50
	C	616	370	39	207	37
Other Neurological	A	185	69	12	104	73
	B	358	146	23	190	63
	C	2,211	962	139	1,110	135
Other Physical	A	183	77	12	95	127
	B	265	114	17	134	66
	C	793	326	50	417	88
Other	A	614	49	39	526	61
Psychosocial disability	A	397	111	25	261	140
	B	575	183	36	356	159
	C	3,334	1,035	210	2,090	466
Spinal Cord Injury	A	53	21	3	29	13
	B	101	43	6	52	17
	C	212	106	13	93	24
	D	250	148	16	87	19
	E	255	156	16	83	10
Stroke	A	72	15	5	53	28
	B	757	201	48	509	83
	C	261	63	16	182	12
Visual / other sensory	A	118	62	7	48	93
	B	288	134	18	136	70
Total		**35,100**	**17,090**	**2,209**	**15,800**	**7,546**

Table 6.3 compares net costs and benefits by age group. Our analysis shows higher net benefits than net costs for children (benefits to cost ratio of 180%), but for adults, lower net benefits than net costs (benefits to cost ratio of 25%).

Table 6.3 – Costs and benefits by age ($m)

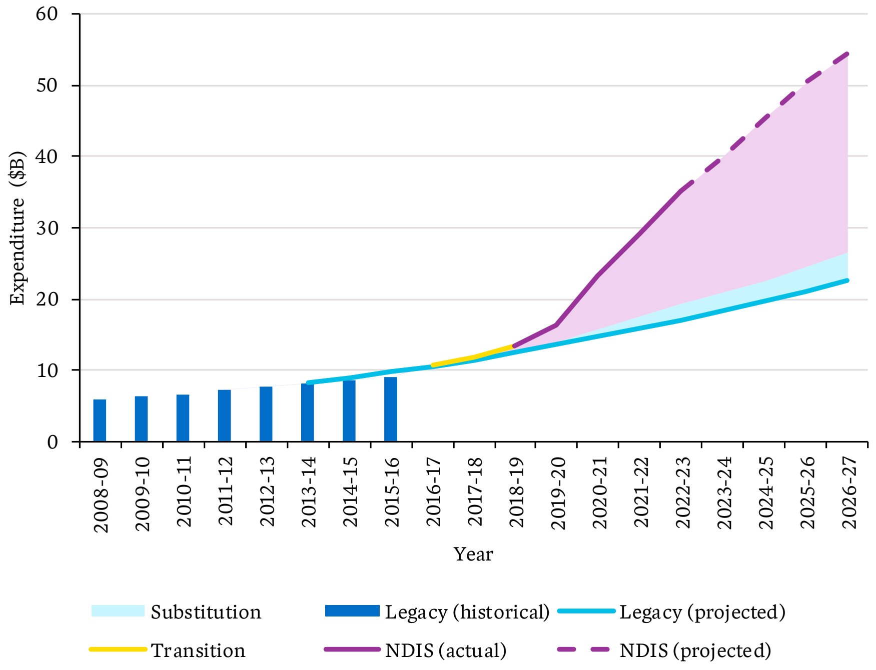
Age band	Gross NDIS cost	Legacy Schemes	Substitution	Net NDIS cost	Net benefit
0 to 6	1,502	582	115	805	1,229
7 to 14	3,230	1,376	219	1,634	1,926
15 to 18	1,791	1,170	137	483	660
19 to 24	3,539	1,813	86	1,640	634
25+	25,039	12,149	1,652	11,238	3,097
Total	**35,100**	**17,090**	**2,209**	**15,800**	**7,546**

6.3 Past and projected net costs of the NDIS

Figure 6.2 is an extension of Figure 3.4 into the future, incorporating the projected gross NDIS costs (section 4.2), the projected cost of legacy schemes (section 3.4.2) and the projected substitution from government spending (section 4.2.7). The figure shows:

- Historical legacy scheme costs (blue columns)
- Projected legacy scheme costs (blue line)
- Estimated costs during the transition to the full NDIS (yellow line), that is a combination of NDA, non-NDA and NDIS expenditure
- NDIS costs for the full Scheme (actual in solid purple line, projected in dashed purple line)
- Substitution from government spending from 2022-23 onwards (light blue shaded area)
- Net costs of the NDIS (purple shaded area), being gross cost less substitution and legacy items.

Figure 6.2 – Net costs of the NDIS



In 2022-23, actual NDIS costs are estimated to be $35.1 billion while legacy schemes are projected to cost $17.1 billion and the estimated substitution from government spending is $2.2 billion. This means the net costs of the NDIS are $15.8 billion.

By 2026-27, the projected NDIS costs are $54.4 billion while the projected legacy scheme costs are $22.5 billion (maintaining similar assumptions for coverage and cost inflation) and the estimated substitution from government spending grows to $3.9 billion. This means the net costs of the NDIS are $27.9 billion[51].

The extrapolation sees NDIS net costs growing faster than the gross costs because the growth in legacy scheme costs is lower relative to the NDIS. This reflects a range of differences, including plan growth, participant growth, and demographic change as the over-65 age group grows as a fraction of the NDIS population.

6.4 Limitations and potential for improved cost benefit analysis

In this section, we perform a simple comparison of net costs and a set of measurable net benefits in aggregate, based on a single year. Limitations around our work have been flagged in previous sections, but we highlight a few key issues in interpreting the results:

- The point in time estimate will likely evolve in the future; Scheme costs will grow, but we have not attempted to estimate how measured benefits will evolve in response.
- Counterfactual legacy costs are ultimately artificial. While the relatively lean growth in funding in this scenario (compared to NDIS cost growth) reflects the operation of legacy schemes, it is easy to believe that gaps in coverage and supports would have been untenable to maintain through to 2026-27.
- Substitution effects carry significant uncertainty, and in some places estimates may be underestimated.
- Impacts on markets that go beyond the Scheme, such as attendant care costs, have not included in our analysis.

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[51] Numbers do not sum precisely due to rounding.

- The Scheme contains large variability in participant goals, needs and supports; this variation means care is needed in applying results to smaller subgroups.
- Our estimate of benefits relies heavily on improvements in subjective wellbeing. While we are happy with our quantification of this effect, some users might prefer to put more or less weight on this factor.
- The recognition of benefits does not recognise later benefits over the life course – we do not capture the ‘investment’ dynamic of the Scheme well. Increased supports, particularly for children, can lead to improved outcomes much later. The current time series shows limited evidence on our tested measures, but we caution against an overly broad inference from this.

We believe there is a bright future for participant-centred modelling of costs and benefits over the life course, but this starts with good data and measurement. The next section goes into more detail on how this could be done in the future.

7 A future measurement framework

7.1 Introduction

While we have estimated currently observable benefits, the NDIS Review Secretariat has also engaged us to provide a view on how a future measurement framework for the NDIS would look like. The vision is for this framework to support the monitoring of outcomes, measurement of benefits and evaluation of investments. In this sense it is broader than outcomes as currently tracked – hence our use of the term ‘measurement’. It would operate in a future where improved data sources will be available, including the National Disability Data Asset (NDDA), providing participants, planners and providers with quality information for decision making. The framework will also assist with understanding Scheme effectiveness through better targeting and accountability for the Scheme.

In this section, we present our views on a potential future framework for the NDIS. These opinions were developed through a rapid review of related frameworks in government policy and social investments, consultation with experts in the disability and care sector, and discussions with the Secretariat. This section focuses on our main findings and NDIS implications. More detailed background research is provided in Appendix F for interested readers.

We emphasise we are **not** presenting a final measurement framework, given the context and timing of our work. Rather, we expect this to input into the NDIS Review, which will in turn drive further development and reform. In the broader context, we recognise:

- The NDIA is currently planning a redevelopment of its existing outcomes framework.
- Any future framework should include genuine consultation with a broader range of stakeholders, including NDIS participants, the families and carers of participants, providers, planners, not-for-profit organisations and government. For example, if a subset of NDIS and Australian Disability Strategy outcomes are to be selected and prioritised, this should be driven by a broader consultation process.
- Design of a future framework needs to consider the context around Scheme design and governance, including the recommendations from the NDIS Review.
- Design of future framework needs to embed a process of continuous improvement, allowing for outcomes that are responsive to actions that government can take.

Our work in this section is primarily Scheme-level and participant-centred. Some considerations are therefore outside the scope of this work:

- Governance arrangements for how data and outcomes are managed across organisations and levels of government.
- Provider-level performance rating and management
- Quality and safety frameworks, which are the primary responsibility of the NDIS Quality and Safeguards Commission.

7.2 View of current measurement frameworks

7.2.1 The NDIS outcomes framework

Since the inception of the NDIS, the National Disability Insurance Agency has managed an existing framework to monitor the benefits of the Scheme to participants. This framework was subject to significant research, consultation and piloting at the time of development.

The NDIS Act (2013) notes the object of the Scheme as supporting the independence and social and economic participation of people with disability, and section 4 sets out principles such as the right to participate in and contribute to social and economic life. An outcomes framework enables this progress against these principles to be measured.

Outcomes vary by age group, to reflect changing needs and goals at different stages of the life course (prior to school, school to age 14, ages 15 to 24 and ages 25+). They are collected by annual survey of the NDIS population. There is both a short-form survey (a subset of questions answered by all participants and their carers) and a long-form survey (a larger set of questions answered by a sample of participants and their carers). Participants and their carers answer the survey at Scheme entry and every subsequent anniversary, generally at the time of planning or plan review. All participants and their carers complete the short-form survey annually, and a sample is invited to complete the long-form. Questions span nine outcome domains as shown in Table 7.1, which provides some example outcome questions.

Table 7.1 – Example indicators from the NDIS outcomes framework

Domain	Number of indicators, age 15+[(a)]	Example outcome (question)
Choice and control[(b)]	6	Age 15+: % who make more decisions in their life than they did 2 years ago
Daily Living[(c)]	1	School – Age 14: % who say child is becoming more independent Age 15+: % who get support for domestic tasks
Relationships	7	Age 0-14: % who say child can make friends with people outside the family Age 15+: % who would like to see their family more often
Social, community and civic participation	10	Age 0 to school: % who would like their child to be more involved in community activities Age 15+: % who know people in their community Age 15+: % who feel safe walking alone in their local area after dark
Specialist services[(d)]	n/a	Prior to school: [Specialist Services] help my child gain the skills she/he needs to participate in everyday life
Lifelong learning	10	School – age 24: % children/ young adults who attend or attended school in a mainstream class Age 15+: % who get opportunities to learn new things Age 15+: % who have completed year 12 or above
Home	4	Age 15+: % say they choose where they lived Age 15+ % say they choose whom they lived with
Health and wellbeing	4	Age 15+: % who rate their health as excellent, very good or good Age 15+: % who did not have any difficulties accessing health services
Work	4	Age 15+: % who are not working and not looking for work Age 15+: Of those in a paid job, % working 15 hours or more per week

Notes

(a) Based on the 2022 NDIS outcomes dashboard, excluding 'Has the NDIS helped' questions and some additional tables – additional questions are asked but not reported

(b) Not applicable for School to age 14 group

(c) Limited questions over age 14

(d) Birth to starting school only.

The NDIA collates the survey responses from participants over time, providing a rich source of longitudinal information on participant outcomes for research. The NDIA has used this information to provide annual reporting on outcomes, published on their website.[52] The first outcomes report was published using data to 30 June 2018 and has been updated annually.

The current NDIS framework has some **significant strengths**. A survey-based measure means there is a strong participant voice (as opposed to administrative data measures). The annual nature of data collection makes tracking longitudinal outcomes possible. The variety of domains and questions offer a reasonably comprehensive picture of outcomes, reflecting the broad nature of NDIS supports and participant goals.

Conversely, some limitations to the framework have been identified by us and others:

- **Relatively few objective measures.** While some questions are objective (e.g. employment status), many are more subjective (e.g. Does your child manage their emotions well). This can be a challenge if expectations change or there are short-term changes in views. Incorporating other administrative indicators may complement current measures.
- **Limited ability to measure comparable outcomes outside the Scheme.** By its nature, the scope of questions are limited to participants and their carers. Unless a question matches other surveys (e.g. employment), the 'gap' is less apparent. Relatedly, it is difficult to track people before and after they enter the scheme. Alignment to external outcome measures such as the Survey of Disability, Ageing and Carers (SDAC), and other measures in the Australian Disability Strategy, will improve comparability. See also the discussion on data linkage in Section 7.4.1.
- **Challenge in managing heterogeneity and shifting cohort characteristics.** Straight reporting of average indicator rates over time will be skewed by compositional change in the Scheme. This can be mostly managed through statistical control.
- **Challenge in measuring progress.** Currently outcomes are often tracked for people by duration in the Scheme, using first response as a baseline. This is reasonable – we adopt a similar approach in our benefit estimation work. However, since outcomes will change with age and other time-varying features (e.g. disability and level of function), appropriate control is needed. For example, the March 2023 quarterly report describes participation in work (percentage in paid employment) for people with intellectual disability, comparing the baseline to the latest outcome the trend is:
  - Increasing from 11% to 20% for people aged 15-24
  - Decreasing from 32% to 30% for people aged 25 to 64.

  However, the first effect is likely to be primarily driven by age effects rather than Scheme duration effects. Controlling for the effect is possible but complicates the presentation.
- **Challenge in distinguishing change from broader trends.** For example, improved employment rates in the past few years require judgement on whether changes seen for people with disability and their carers are better or worse than the increase that would have occurred naturally.
- **The indicator set is relatively large, meaning that presenting a comprehensive view is difficult.** We understand research on combination measures, including the NDIA/MUCHE Disability Wellbeing Index, is underway to ameliorate this issue.
- **Limited ability to tie outcome changes to the goals of participants and the supports provided to help achieve these goals.** An ideal setup should be able to align spending (particularly capacity building spending) and how it links to both goals and outcomes.

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[52] https://data.ndis.gov.au/reports-and-analyses/outcomes-and-goals/participant-families-and-carer-outcomes-reports

7.2.2 The Australian Disability Strategy Outcomes Framework

The Australian Disability Strategy (ADS) 2021-31[53] was launched publicly in late 2021, replacing the National Disability Strategy 2010-2020. The ADS is an intergovernmental agreement, developed by all levels of government in consultation with more than 3,000 people with disability, families and carers and representatives to incorporate their views into the strategy.

The ADS recognises that all levels of government play a role in providing services and supports to people in disability across both mainstream and targeted forms, with different jurisdictions having primary responsibility for different elements of support. The plan has eight guiding principles which reflect the human rights principles of the UN Convention on the Rights of Persons with Disabilities (CRPD). The strategy also recognises the intersectionality and diversity of people with disability.

The strategy includes elements of governance, research priorities and data quality improvement. Other action points will be agreed over the life of the strategy.

Most relevant to this discussion, the strategy includes an extensive outcomes framework with a total of 83 indicators structured around seven outcome domains. These mostly align with the NDIS domains. We perceive the ADS framework to have greater emphasis on safety, rights and justice, community attitudes and inclusion, and a lesser focus on relationships.

A summary of the domains and example outcomes is set out in Table 7.2. Many of the indicators are placeholders – about 50 currently have data, with others added as new data sources become available.

Table 7.2 – Domains and example of indicators from the Australian Disability Strategy

Domain	**Number of indicators**	**Examples (Source)**
Employment and financial security	12	Gap in unemployment rates for people with disability compared to those without % of NDIS young people (15-24 years) in employment (NDIA)
Inclusive homes and communities	17	% of people with disability who had no difficulty accessing buildings or facilities in the last 12 months (SDAC) % of NDIS participants who are happy with current home (NDIA)
Safety, rights and justice	15	% of people with disability 15 years and above who have experienced violence compared to people without disability (PSS) % of NDIS participants who feel able to advocate (stand up) for themselves (NDIA)
Personal and Community Support	10	% of people with disability (aged 15–64, and 65 and over) who are satisfied with the quality of assistance received from formal service providers (SDAC)
Education and Learning	12	% of participants aged 15 and over who responded “yes” to “Has the NDIS helped you have more choice and control over your life?” after two years in the Scheme
Health and Wellbeing	13	Rate of high psychological distress for people with disability (NHS) % of NDIS participants who report feeling satisfied about their life in general now and in the future (NDIA)
Community attitudes	4	% of people with disability who report feeling represented in leadership roles (SDG-CRPD)

In total we count 83 indicators in the ADS. Importantly, only about 50 of these had existing data at the time of strategy release; the others are intended for development over the course of the strategy as part of the data improvement plan.

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[53] https://www.disabilitygateway.gov.au/ads

We observe:

- The regular public reporting of outcomes is important to the strategy – the first annual report of outcomes under the ADS by the AIHW is therefore good, and the staggered approach for missing outcomes appropriate.[54]
- It is appropriate for the ADS to be relatively broad, given its scope for improved lives for people with disability. That said, it is a **very large number of outcomes** to track over time. In practice it may mean that only subsets of the outcomes can be prioritised at a given point in time. Many frameworks in Australia and overseas develop methods of combining indicators to track progress at a domain or overall level.
- As with other frameworks (particularly those not tracking longitudinal changes), there **remain issues with shifting denominators**. If the disability population is changing over time, compositional effects will mean some changes are occurring even if there is not a genuine underlying improvement or deterioration. For example, an increasing fraction of young people with autism but higher assessed level of function will have implications for the expected fraction completing school or in work. Longitudinal tracking can go some way to ameliorating the issue.
- The SDAC is an important and valuable resource, providing many of the indicators. However, its low frequency means **feedback loops for some indicators are slow**; a deterioration in a particular outcome might only be visible after three years. If there is a subsequent intervention, it is another three years to recognise an improvement.
- **Some additional outcomes would be useful for estimating benefits**. These could be considered for inclusion in the context improved benefit measurement. Specifically, we would consider additional outcomes related to:
  - Mortality
  - Life satisfaction, beyond the NDIS population
  - Income (in addition to employment) and measures of financial distress
  - Systemic factors leading to poor health
  - Family resilience (such as falling divorce/separation rates for parents of children with disability)
  - Additional social outcomes including homelessness, justice and interactions with the child protection system (both for children with disability and the relinquishment of children for parents with disability).

  Similar outcomes are found other frameworks, such as the Closing the Gap indicators and research for the Disability Royal Commission (Vincent et al., 2022). Additionally, there is scope to consider indicators that are specific to disability groups, that reflect specific issues or policy responses.

7.2.3 Other relevant Australian and international frameworks

More detail is provided in Appendix F, but in brief:

- Our research report for the Disability Royal Commission (Vincent et al., 2022) used a framework for estimating the costs of maltreatment of people with disability. While drawing on the ADS, the approach is notable since it was developed with conversion to benefits (or costs, in the case of maltreatment) in mind.

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[54] https://www.aihw.gov.au/reports/australias-disability-strategy/australias-disability-strategy-outcomes-framework/contents/about

- Several other surveys collect outcomes, with people with disability a key target group or an identifiable subgroup. Many of these are already recognised in the ADS (such as the SDAC). The ABS Personal Safety Survey, General Social Survey (GSS) and National Health Survey are similarly useful.
- The Closing the Gap outcome framework tracks outcomes for Aboriginal and Torres Strait Islander people relative to the broader population. It is notable for a smaller, more focused list of outcomes, most of which have analogues in the ADS.
- Population-wide frameworks such as the Commonwealth's *Measuring What Matters* Framework, and the NSW Human Services Outcomes framework have broadly similar domain structures to the ADS and many overlaps in outcomes. An emphasis on outcome measures that tie to capabilities and wellbeing would be consistent with the *Measuring What Matters* approach and wellbeing budgeting.
- Internationally, comparable frameworks exist, either specific to disability (such as the Irish Outcomes for Disability Services), or more broadly (US National Core Indicators or the Canadian Index of wellbeing). Many of these were reviewed and findings incorporated in the development of the current NDIS outcomes framework.

7.2.4 Implementable measurement systems

A significant challenge in the operation of a measurement framework for the NDIS is the individualised nature of needs, goals and supports. Looking beyond disability, there has been significant research on approaches to such individualised measurement. Three examples of these are:

- The Canadian Occupational Performance Measure (COPM)[55] – This was developed originally in an occupational therapy context. Participants identify performance problems in their lives for tracking using a semi-structured interview process. These are then rated for importance and participants then rate each on both their performance (how well they can do that activity) and satisfaction (how satisfied they are with their current level of performance). Collecting these scores over time enable tracking of improvements.
- The UK Adult Social Care Outcomes Tool (ASCOT)[56] – This was developed for age and social care, with domains skewed towards those viewed most relevant to those contexts. Various forms have been added over time (e.g. carer tools). Questions under each domain are collated into a small number of outcome states for each, with a focus on needs (ideal state with preferences met, no unmet needs, some unmet needs that affect quality of life, high unmet needs that have mental or physical health implications).
- Goal Attainment Scaling[57] (GAS) – This approach, developed in a rehabilitation context, enables progress on a set of participant-developed goals to be combined into an overall score, relative to expected progress. Scoring recognises both the importance of a goal and its relative difficulty.

All three approaches have significant academic literature supporting the application and validity of these tools (with provided links containing many of these studies). The development context of each tool means that they may not directly apply to disability care, but we believe much will be relevant. In particular, they align well with the elements of investment, capacity building and goals that are already part of the Scheme design.

While we are not advocating direct application, they are useful examples of regularly implemented tools that have a heavy focus on participant outcome measurement in highly individualised contexts.

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[55] https://www.thecopm.ca/

[56] https://www.pssru.ac.uk/ascot/

[57] See for instance Kiresuk et al. (2014).

7.3 Overview of a future measurement framework

7.3.1 The role of a framework

A measurement framework has an important role in the governance of a Scheme such as the NDIS. It ensures there is **accountability on the spending of public funds**, examining questions such as whether:

- The spending is making a difference to the lives of NDIS participants, their families and/or carers
- There are quantifiable or otherwise measurable economic or social benefits for the spending
- There is value for money for NDIS spending, particularly in areas of capacity building and capital investments.

A framework is not intended to drive up or down Scheme spending – but a clear focus on outcomes and benefits provides a valuable lens in discussions about Scheme sustainability. Our commentary also reflects a belief that a good framework integrates tightly with Scheme management, including policy and investment decision-making.

There is also the potential for a framework to be applied to related areas such as whether:

- There is equity in supports for participants who have the same needs despite differences in other factors such as socio-economic status, where they live, ethnic background etc.
- Providers in the market are providing high quality services to participants at competitive prices, and which providers are most effectively improving participant outcomes. Potentially this could support incentives for providers.
- Progress is being made to Australia's Disability Strategy given the NDIS is a key system with which people with disability interact.

A framework exists within broader aims for supporting people with disability. This includes those set out in the Australian Disability Strategy, as well as other commitments, such as the United Nations Convention on the Rights of People with Disability (UNCRPD), of which Australia is a signatory. The aim of the UNPCRD is to ensure people with disability have full and equal enjoyment of human rights. Done well, a measurement framework can establish the goals and track the progressive achievement of these rights.[58] It should also reflect co-production with people with disability so that it appropriately covers their aims and priorities.

Relatedly, the NDIS Act clearly articulates key principles for the Scheme. For instance, Section 4(1) states the *People with disability have the same right as other members of Australian society to realise their potential for physical, social, emotional and intellectual development.*

A focus on rights is complemented by a related focus on wellbeing. The Commonwealth Treasury's wellbeing framework (Gorecki & Kelly, 2012) interprets wellbeing as primarily reflecting **a person's substantive freedom to lead a life they have reason to value,** drawing on the work and wording of Amartya Sen. This includes recognition of an individual's abilities and characteristics and the surrounding environment.[59]

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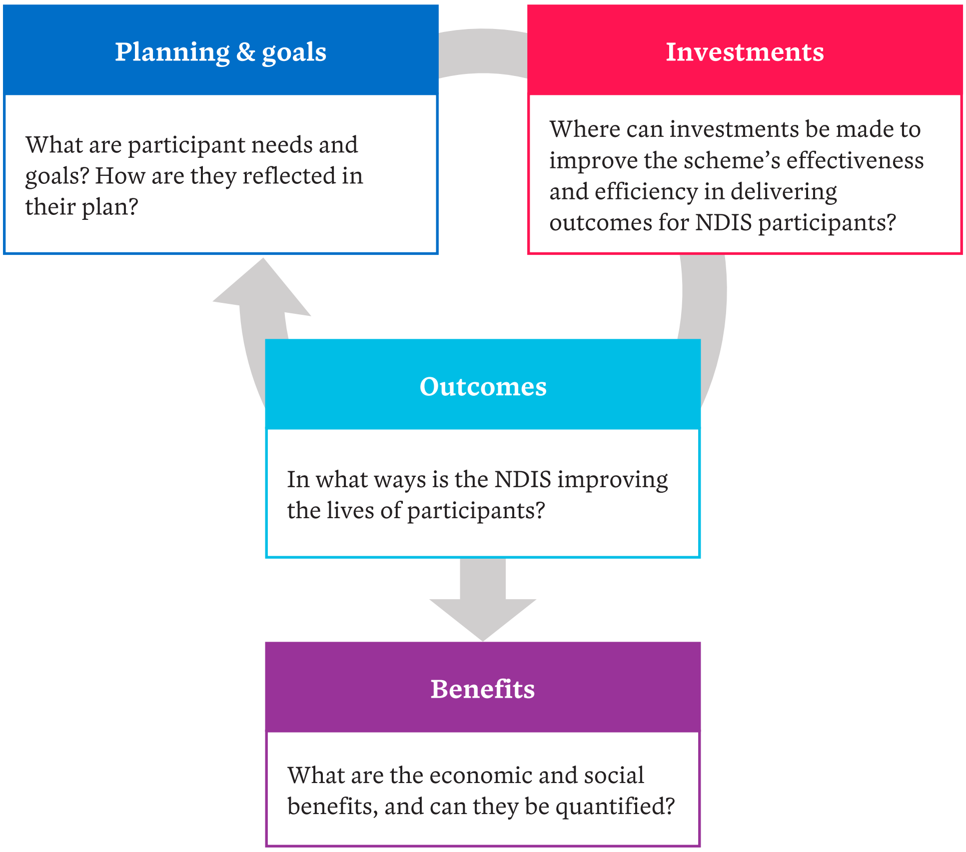
[58] A fuller treatment of disability supports in the context of human rights is given in Quinn (2022) in his statement to the Disability Royal Commission

[59] See the Treasury discussion at https://treasury.gov.au/publication/economic-roundup-issue-3-2012-2/economic-roundup-issue-3-2012/treasurys-wellbeing-framework#P53_11875 for an introduction to the Wellbeing Framework and underpinning philosophy.

7.3.2 Scope of a future framework

We suggest a future measurement framework consider four key components – planning & goals, outcomes, benefits and investments. The fundamental question for each component is given in Figure 7.1.

Figure 7.1 – Summary of the measurement framework components



Planning & goals

What are participant needs and goals? How are they reflected in their plan?

Investments

Where can investments be made to improve the scheme's effectiveness and efficiency in delivering outcomes for NDIS participants?

Outcomes

In what ways is the NDIS improving the lives of participants?

Benefits

What are the economic and social benefits, and can they be quantified?

The four components are related but distinct.

- Planning and goals reflects the importance of individualised supports and participant choice and control. Good planning and goals are needed to understand how well a package of supports is tailored to participant needs.
- The investments component recognises the relationship between goals and outcomes; funding is not infinite, so understanding how outcomes can be achieved through investments (particularly capacity building and capital supports) is important and will enable the Scheme to become more efficient and effective over time. Building the evidence base around investments (including initiatives such as the NDIA's Investment Effective Program) is key. We regard investments as working at both a participant level (what interventions best tie to needs and goals) and an aggregate level (how should NDIS funding be guided).
- Outcome measurement remains vital to ensure the Scheme is delivering for participants and their carers. Outcomes operate at a participant level, but also provide important Scheme-level information for tracking aggregate improvements over time (and so outcomes should be sensitive to policy change).
- Improved outcomes can be recognised as benefits, on an as-needed basis. We expect a broad range of Scheme benefits, including to the general community. Recognising benefits, including those realised over the longer term, puts Scheme costs into a better perspective.

The first three components naturally form a cycle, focused on participants and their carers. As outcomes are realised, participant goals and plans can be reviewed, which in turn leads to different investments.

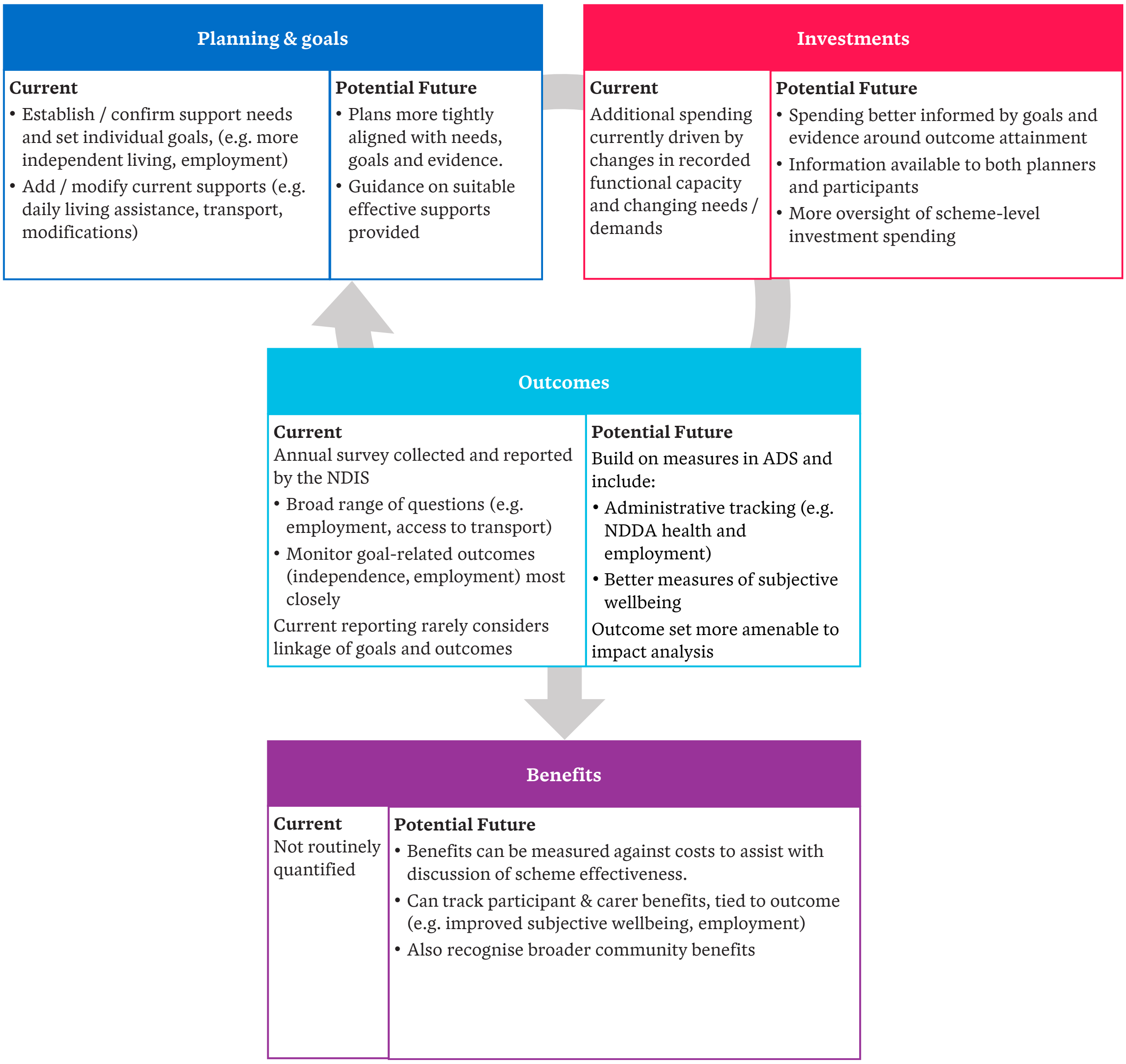
In developing the framework, we recognise:

- A close relationship between many outcomes and benefits. Improved employment outcomes lead to economic benefits that can be readily quantified. There are standard ways to value to benefit of improved health and longer lives. Other outcomes, such as improved subjective wellbeing can be recognised as non-market benefits.
- Some outcomes will not have direct quantifiable benefits. For instance, the Scheme emphasises the value of choice and control, which is an important participant outcome – while we can attach a notional value of this in the benefits framework, the relationship between choice and control and economic benefits is weaker.
- Some benefits might go beyond participant outcomes. For instance, improved community attitudes towards people with disability.
- Ensuring compatibility between outcomes measured and how benefits can be calculated is useful. Our work in this report demonstrates some ways this can be achieved, and we have related suggestions for ADS outcomes in Section 7.2.2.

7.3.3 Comparing current and potential future states

The components of planning & goals, investments and outcomes are already part of the Scheme design. We envisage some strengthening of these components in the future. Figure 7.2 illustrates our view of current and potential future states.

Figure 7.2 – Participant journey through a future measurement framework



Planning & goals

Current
- Establish / confirm support needs and set individual goals, (e.g. more independent living, employment)
- Add / modify current supports (e.g. daily living assistance, transport, modifications)

Potential Future
- Plans more tightly aligned with needs, goals and evidence.
- Guidance on suitable effective supports provided

Investments

Current
Additional spending currently driven by changes in recorded functional capacity and changing needs / demands

Potential Future
- Spending better informed by goals and evidence around outcome attainment
- Information available to both planners and participants
- More oversight of scheme-level investment spending

Outcomes

Current
Annual survey collected and reported by the NDIS
- Broad range of questions (e.g. employment, access to transport)
- Monitor goal-related outcomes (independence, employment) most closely

Current reporting rarely considers linkage of goals and outcomes

Potential Future
Build on measures in ADS and include:
- Administrative tracking (e.g. NDDA health and employment)
- Better measures of subjective wellbeing

Outcome set more amenable to impact analysis

Benefits

Current
Not routinely quantified

Potential Future
- Benefits can be measured against costs to assist with discussion of scheme effectiveness.
- Can track participant & carer benefits, tied to outcome (e.g. improved subjective wellbeing, employment)
- Also recognise broader community benefits

The framework in practice

For concreteness, we provide a hypothetical example of the participant journey to demonstrate how the framework could apply in a **future state**.

Planning stage

Ben is 26 years old with paraplegia and wheelchair bound. His mother, May, is 48 years old and his full-time carer. During the planning stage, Ben identifies his main goals are to become more independent and to find employment. With assistance from his planner and information from the NDIA, Ben chooses to utilise his NDIS plan on the following supports:

- Assistance with daily activities
- Home modifications to ensure his home is accessible
- Transport so he can travel to community activities and look for a job
- Services to build his capacity for employment

Investments and target

At plan review, Ben meets with his planner to reassess his goals and reallocate his funding. The NDIA would provide information to assist Ben and his planner with decision-making. For example, Ben was unable to find employment during the previous year. The information from the NDIA could provide Ben and his planner with guidance on a better combination of employment capacity building activities or different providers. Ben utilises this guidance to change his employer support provider and the support he receives for building his employment capacity.

Using the scheme’s rich data, analysis can be performed on the attainment of goals or outcomes for individual participants and the value for money of expenditure in capacity building or capital investments. This view can also be aggregated to a scheme level to understand if the scheme is achieving its targets (e.g., for improved subjective wellbeing, or for employment). Similarly, assessments can be performed for cohorts of NDIS participants to understand the value for money.

Outcomes

Ben’s increased independence means he can engage more with the community and he is happier. However, he still has not been able to find employment.

At plan review, Ben fills in the annual NDIS Outcomes survey. He records his increased life satisfaction and that he is unable to find employment. As Ben’s carer, May also fills out a survey. May indicates that Ben’s increased independence and supports has enabled her to find employment and her subjective wellbeing has also improved.

Benefits

The NDIA captures the goals and outcomes data filled in by NDIS participants and their families or carers, including Ben and May. This enables longitudinal analysis to understand how outcomes change over time for individuals. Furthermore, the NDIA’s data on individual participants is linked other government data within the NDDA enabling system-wide analysis of NDIS participants and how they interact with other government systems. For example, it could be used to understand how NDIS participants are utilising the healthcare system.

A future measurement framework can quantify the benefits from these outcomes. For example, every point of higher life satisfaction that Ben and Mary record would be worth $26,400 under our proposed approach. In addition, May is now less reliant on her Carers Payment from the Federal Government and her household income has increased. There are economic benefits from May’s participation in the economy as well as increased taxation and reduced welfare spend.

7.4 Key principles for a measurement framework

7.4.1 Key principles

Based on our review of existing frameworks (see Appendix F for details) we suggest that a future framework considers the following principles (not in priority order).

Principle 1: There is value in aligning a framework with existing NDIS and ADS outcome measures

NDIS outcomes have the advantages of a considered development process, and already being in place with longitudinal series going back to Scheme entry. Many NDIS responses are incorporated in the ADS, and we similarly make use of them as evidence of benefits. Removal of indicators should be done with care, and our default assumption is that the survey is very important and most questions should be maintained.

Similarly, there is significant value in the development of the ADS and its outcome framework, including significant government and stakeholder buy-in. While there are many alternative indicators possible within domains, in many cases practical judgement has already been applied, and there is significant value in consistency rather than a competing framework. Many measures that apply to the whole population can be tailored to the NDIS population, either by incorporating into to the NDIS outcomes survey or through linkage (e.g., extracting SDAC results limited to NDIS participation).

We envisage the vast majority of future outcomes will come from the existing set of NDIS and ADS lists. Consistency enhances flexibility, comparability and makes good use of the existing consultation in determining those measures.

Principle 2: Outcomes for carers and family are needed as part of the framework

The wellbeing of carers and families of people with disability is important. This principle is already well-reflected in the NDIS outcomes framework, but perhaps less well in the ADS. Some outcomes (such as financial wellbeing) are best considered at a household level, including carers and family. Also, benefits will accrue across the household – both subjective wellbeing and workforce participation are likely to improve for carers if the person with disability has appropriate disability supports.

Principle 3: There is value in having outcomes that can be tied to economic benefits, including those that are broader than core NDIS services

While they are not currently in NDIS and the ADS, substantial potential improvements exist across areas such as:

- Child protection
- Justice, in the form of reduced offending
- Housing and homelessness
- Mortality and morbidity.

We understand this covers areas outside of the Scheme’s direct influence, but disability supports are intended to improve outcomes across a broader range of domains. Ensuring these improvements can be reflected in benefits estimation is therefore logical. Indeed, we have considered some of these in our benefit estimation (see section 5). It also helps with forming a holistic view of government services for NDIS participants and if expanded into the ADS, more broadly for people with disability.

Additionally, the NDIS and ADS frameworks track employment but have less focus on earnings (both rates and hours). Improvements in these areas (including potential increases for people with disability on subminimum wages) have direct economic quantification.

Principle 4: Improved data linkage offers significant opportunities for improved outcome measurement and benefit estimation

The two most relevant linkages projects are Multi-Agency Data Integration Project (MADIP) – the ABS's main person-centred centralised linkage project – and the National Disability Data Asset (NDDA). These datasets can offer:

- Easier collection of data (e.g., employment and income can be examined without participants having to provide in a survey)
- Easier comparisons to the broader population
- Direct estimation of related benefits (e.g., increased employment impacts on income, welfare and taxation can be seen).

The NDDA is still in negotiation and development, with an initial version likely available in the next year or so. It is likely to be very extensive, drawing in data related to health, employment and income. It should also include data related to state and territory delivered services such as education, justice and housing. Inclusion of NDIS datasets enables outcomes to be reported specific to this population, as well as comparisons made to non-NDIS participants.

These datasets, particularly the NDDA, represent a future step change in outcome and benefit measurement. We understand that many of the placeholder outcomes in the ADS may draw on the NDDA when it is ready. This means that (conditional on adequate dataset agreements, governance and refresh cycles) the availability of linked datasets should be a key component of planning for outcome and benefit measurement.

Linked datasets do carry limitations too. Often data timing lags are substantial. Some effects are not well captured in administrative information (e.g., health status is difficult to infer from health service usage) and cannot be a full substitute for surveys. Household and carer information are significantly harder to construct and interpret. Despite the limitations, the opportunity remains large.

Principle 5: There is significant opportunity in building and using evidence around how NDIS spending relates to outcomes

It is feasible to build evidence for how different types of supports enable outcomes and achievement of participant goals. This would assist with value for money assessment, particularly for capacity building and capital investment spending. Understanding how to better achieve educational attainment, employment, accessible housing and other outcomes is a key opportunity of a large centrally managed Scheme.

There might be less scope for this logic for the provision of core supports which are likely to be an enduring need; in these cases quality and efficiency considerations may be more relevant.

This would require significant work and investment, from government, the NDIA and researchers, including a commitment to research and evaluation. Much of it happens at a granular level, evaluating specific interventions and supports. Best practice then needs to be tested and propagated.

Good data is important to facilitating this, including the potential of large linkages such as MADIP and the NDDA. Analysis is required to assess the link between the spending and achievement of outcomes and participant goals.

Cost-effectiveness is also part of this equation – interventions that are cheaper and remain effective can form part of the evidence base.

Principle 6: Participant goals are a central part of the Scheme design

A social model of care aligned to insurance principles means that supports should be tailored to participant needs and barriers. Necessarily, this means understanding these needs, and these are inherently tied to participant aspirations. Goals are a natural way to understand need and construct an appropriate package of supports. We believe this means a greater emphasis on setting goals, rather than less.

This principle is possibly the most debateable; schemes like Medicare do not require detailed participant goal collection to provide payments. Instead relying on benefit schedules to support the delivery of health services. It could be argued that most 'core' disability support (the largest category) does not have to be tightly tied to goals. While we agree with that core supports have less need for goal-based design and measurement, we believe the scope of the NDIS (which includes capacity building and capital supports) requires an emphasis on participant goals.

A framework that focuses on progress against (potentially improved) participant goals, as well as enabling higher-level tracking of Scheme performance represents a significant increase in effort compared to current operations. It is data intensive, asks more of the planning process and looks for greater use of analysis and evaluation; it is likely additional resources would be needed to deliver fully.

Principle 7: An expanded framework requires a commitment to use it to drive evidence, activity and improvement

Under the measurement framework, the vision is for regular monitoring of the NDIS performance. This would cover the outcomes and goals of NDIS participants, and trends over time tracked against Scheme spending.

One risk with outcome frameworks is that, even with regular reporting, they are not used to manage or drive change in the Scheme. We do not have evidence for the extent to which the current outcomes framework drives Scheme changes, but the lack of improvement across a broad range of indicators is suggestive. More generally, Productivity Commission research suggests the Closing the Gap agreement (and related framework) has not driven implementation beyond 'business as usual' (Productivity Commission, 2023). Significant investment in the framework will not drive improvements without a broader commitment.

Part of this commitment includes ongoing independent research and evaluation activity. This often must go deeper than outcome dashboards to understand impacts in specific areas. This is particularly true for policy experimentation, where changes in the scheme can be studied for impacts on participants.

Learnings from the monitoring and research can be shared across levels of government to ensure continuous improvement.

Principle 8: Outcomes measurement and goal setting must be underpinned by good data to understand participant needs

In section 2.2 we discuss relatively high volatility of level of function scores in Scheme data. This data is still useful – we use it extensively in our work in this report. However, improvements (and greater consistency) in objective measurement of participant function and need will enhance the ability to deliver on other parts of the measurement framework and research on improvement to participant outcomes more generally.

7.4.2 Comments on the principles and the current outcome framework

Section 7.3.3 identified some limitations in the current outcomes framework, and the principles go some way to addressing these. For instance:

- Better use of linkage can increase the use of objective measures
- Consistency with other outcomes in the ADS will improve comparability outside the Scheme
- Building evidence around spending impacts and goals will help track progress despite the heterogeneity of Scheme participants and make progress easier to measure

- The ability to tie outcomes to economic benefits is one way of managing a large indicator set, since it provides a common currency for comparison (albeit one where some outcomes are harder to value).

7.5 Detailed comments on framework components

7.5.1 Planning & Goals

Current goal setting

The setting of goals and the related plans is a core mechanic of the NDIS. A detailed review of the planning process is outside the scope of this report, but it makes sense that outcome attainment is heavily dependent on how well goals are set and the plan for goal attainment. Points made by stakeholders in our consultations:

- There is some (anecdotal) concern that goals may be set in a cursory way in some cases, either because of low participant engagement with goals or the time pressures of setting up plans.
- Goals do not always have to reflect improvement. For people with degenerative conditions, maintaining current functions and activities may itself be a reasonable goal.
- Some frameworks would assign (subjective) importance and/or difficulty scores to different goals, to reflect that not all goals are equal.

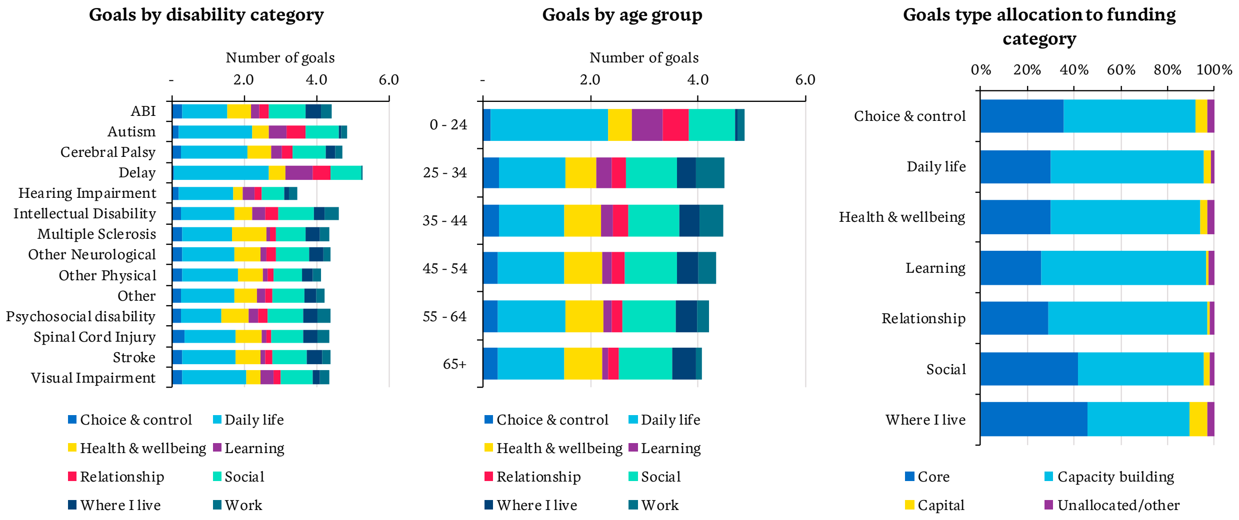
Most NDIS participants set goals – we count 85% of participants with a recorded goal set in the past two years on the data provided. Goals are set at the plan level, and may or may not be renewed upon plan renewal. In the goals data provided to us, each goal is associated with one of eight outcome domains, along with a more detailed description of the goal. Additionally, each goal is associated with one or more of the following funding types: Core, Capital, or Capacity Building.

Amongst current participant goals (set in the past two years), we observe the following:

- The average number of goals per plan is between 4 and 5 goals.
- The most common domains associated with goals are Daily Life and Social and Community Activities. More than half of all goals (58%) fall into one of these two domains.
- There is some variation in the distribution of goal domain and funding type by disability-LoF segment. Participants with Autism and Delay have a greater proportion of goals for Capacity Building in the domains of Daily Life and Learning. Conversely, these participants are less likely to have goals in the domains of Daily Life (Capital), Social and Community Activities (Core), and Where I Live.
- Most goals are associated with capacity building allocations in the plan, but sizeable components for core supports and a small fraction associated with capital supports. Goals related to choice & control, and living arrangements are more likely to be tied to core and capital supports.
- The distribution of goal domain and funding type is generally similar across different age groups, with some differences seen in the youngest age group (0-24). In particular, participants aged 0-24 are more likely than other age groups to have goals for Capacity Building in the domains of Daily Life, Learning, and Relationships.

Further summaries are provided in Figure 7.3.

Figure 7.3 – Allocation of goal types across disability group, age and funding category. Most recent participant plans, conditional on being set in the two years to March 2023



Outcome reporting relative to goals

There is a tension between tracking 'generic' outcomes (such as the employment rate across the whole NDIS population) and targeted outcomes tied to participant goals (such as education enrolment and attainment for those with an education goal). Some degree of both is likely required:

- At an individual level (e.g. assessing the effectiveness of planning process), it makes most sense to track progress relative to goals, rather than on a very large suite of generic measures.
- At an aggregate performance level, both views are important. Using employment as an example, we are interested in both the overall level of employment amongst participants and their carers, and also the improvement for those that have an explicit employment goal.

For overall dashboard reporting, generic outcomes not tied to goals may be the most consistent way to track over time – this is the current approach taken by the NDIS and ADS.

7.5.2 Outcomes

What outcomes should be included?

In discussing NDIS outcomes, we recognise very substantial past work on the topic. This includes the NDIS outcomes framework, the ADS, and many others.

We note that the ADS distinguishes between **outcomes** (e.g., hospitals provide high-quality and suitable services to people with disability) and **indicators** (e.g., the percentage of people with disability who reported unmet need for hospital admission in the last 12 months). We have used them interchangeably in our discussion, although we can see the value in the distinction for any final framework.

Our principle 1 suggests the frameworks are largely inherited from existing NDIS and ADS work. Rather than working through the whole list and giving our prioritisation, we instead make some general comments and then focus on those outcomes we view as most useful for benefits estimation.

Generally, we observe:

- The Survey of Disability, Aging and Carers (SDAC) is relatively prominent in the ADS. This is appropriate, but as mentioned in section 7.2.2 its low frequency and reporting lag means that it carries a very slow feedback loop. This means it is less useful for contexts where more timely operational tracking is required.

- The NDIS outcomes framework includes a series of 'Has the NDIS helped…' questions. These have relatively low value in benefits estimation since they focus more on process than outcomes. However, they may have some value beyond outcome attainment (for example, operationally linking specific supports to perceptions of help) which should be considered before removal.
- Combined measures of wellbeing (at both domain and aggregate level) may have value, given the likely large number of outcomes in any final framework. This would simplify reporting and interpretation.
  - There is an existing research project to develop the 'Disability Wellbeing Index' (DWI) that is underway exploring this topic. The Monash University Centre for Health Economics is supported by the NDIS in developing a question set and weighting to provide a robust and validated measure.

In terms of outcomes that lend themselves to benefits estimation:

- Some outcomes that we find useful are not tracked in either the NDIS or ADS:
  - Participant mortality. Within this, deaths by suicide would be a valuable indicator, if possible.[60] Age-adjusted mortality rates for different cohorts are a natural measure, but summary measures such as average age at death could also be tracked.
  - Systemic health issues such as smoking, poor diet, obesity and high blood pressure are more prevalent for people with disability and contribute significantly to overall health and quality of life.
  - Potentially avoidable hospital admissions (and potentially avoidable extended hospital stays).
  - Measures of financial distress. Some NDIS questions allow affordability to be given as a reason, but HILDA evidence of reduced financial distress suggests this is a real Scheme benefit.
  - Wealth accumulation (including home ownership).
  - Homelessness rates, either through the census or through presentation rates to specialist homelessness services.
  - Out of home care rates for people with disability, and for children of people with disability (in addition to the child protection rates of re-substantiation already in the ADS).
  - Adult incarceration and youth detention rates. Other related justice measures (e.g. police offending or victims data) could also be considered.
- Life satisfaction (or other overall subjective wellbeing question) is not in the wider short-form NDIS survey; only the long-form variant. We rate this as important enough to elevate to the short-form for both participants and carers – the Productivity Commission flagged subjective wellbeing as the largest benefit of the Scheme. Statistics for those outside the Scheme would similarly be useful.

We summarise the outcome domains and those outcomes that are most relevant to benefits estimation (our focus in this report) in Figure 7.4.

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[60] For instance, the AIHW has previously found the rate of death by suicide to be ten times higher than the general population for people with psychosocial disability (AIHW, 2023b).

Figure 7.4 – A potential future outcomes framework

	ADS Domains	Outcomes that can be directly linked to benefits	Other outcomes
Participant outcomes	Health & wellbeing	• Increase in lifetime • Improved physical QoL • Improved subjective wellbeing • Lower pot. avoidable deaths & avoidable hospitalisations • Fewer hospitalisations, shorter stays • Reduced maltreatment	Most relevant outcomes selected from the existing set of NDIS and ADS outcomes
	Employment & Financial security	• Increased employment rate • Increased incomes	
	Inclusive homes and communities	• Reduced homelessness • Improved access to suitable housing • Reduced use of aged care services • Reduced use of extended hospital stays • Increased engagement in community activities • Increased access to transportation	
	Safety, rights & justice	• Reduced interaction with justice and child protection system • Improved quality of service / lower abuse in system	
	Personal & Community support	• Improved choice and control	
	Education and learning	• Improved school-readiness • Better access to school/attendance • Better educational attainment (school and post-school)	
	Community attitudes	• More productive economy	
Carer outcomes		• Improved subjective wellbeing / quality of life • Increased employment rate • Increased income • Financial distress	

Targets versus tracking of outcomes

The NDIS and ADS track outcomes on a relative basis (‘have scores been getting better or worse?’) rather than setting explicit improvement targets (as done in the Closing the Gap framework, for example).

There are practical advantages to tracking relative outcomes rather than setting targets – setting targets that are both achievable and meaningful is a challenge. We do not have a strong opinion on this topic but suspect that high priority outcomes with underlying action plans may benefit from targets.

Data requirements for outcomes

The current outcomes framework is relatively simple, in that it is dominated by a single participant survey managed by the NDIS. A broader framework in line with the ADS, places greater demands on drawing data from different sources and collating in meaningful ways. Tighter linkage to goals also means more detailed work on the participant survey.

The approach taken by the ADS in setting both current (data is available) and future (data is expected to be available) outcomes is sensible, and provides impetus to data initiatives to the NDDA.

Overall, we believe the proposed framework is feasible with current and planned data availability. Data challenges are greater for people with disability outside the NDIS (e.g. the effectiveness of mainstream supports), given the challenges of definition, identification and routine data collection of outcomes. A more frequent SDAC would go some way to address this.

Intersectionality and outcomes monitoring

There is an ongoing need to ensure the funding and benefits of the Scheme are equitably distributed across different cohorts across Australia.:

- First Nations people have challenges in both accessing the Scheme and accessing culturally appropriate services once in the Scheme (for example see Deloitte, 2023, for the Disability Royal Commission)
- People from culturally and linguistically Diverse (CALD) backgrounds have specific challenges in accessing and using the scheme, including issues of communication, workforce capacity and cultural awareness.[61]
- Issues of thin (or non-existent) markets can affect access to services in regional and remote communities. This can be evidenced by lower utilisation of plans (Miller and Frank, 2021).

The NDIA is alive to many of these challenges, including specific reporting and strategies.

Consideration of vulnerable subgroups and issues of intersectionality will remain an ongoing issue in the scheme. Monitoring of outcomes by gender, First Nations, ethnicity, geography, LGBTIQA+ identification and other relevant participant characteristics will be important in any eventual framework.

Potential role of provider-collected outcomes

Discussions with the Secretariat have raised the possibility of provider-collected outcomes. These potentially offer an additional data source more tightly tied to the impacts of specific service provision – and for this reason may be useful in building the evidence of effective supports. The questions of outcomes and performance are distinct from issues of quality and safety, which are managed separately by the NDIS Quality and Safeguards Commission.

While provider-level outcome tracking clearly has some value, we suspect this would be difficult to integrate into an overall outcomes framework:

- The timing and consistency of data would make comparisons between different people and providers hard. A large degree of standardisation would be needed to make this a valuable centralised data resource.
- The reporting complexity would be substantial; for instance, if a person is tracking similar outcomes (e.g. health status) across multiple service providers.
- Clarity would be needed around which therapies would realistically be expected to see measurable outcome improvements, and the degree of dependence on related supports.

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[61] See for instance, the Discover Summary at https://www.ndis.gov.au/about-us/strategies/cultural-and-linguistic-diversity-strategy

The related question of how best to assess provider performance in driving participant outcomes is important, but beyond the scope of this report.

7.5.3 Benefits

Role and design of benefits estimation

Scheme benefit estimation provides a link between outcomes being delivered and the Scheme costs. We have attempted a quantification in this report – no doubt it can be improved upon in the future with improved data and design.

Most of the conceptual issues around benefits estimation are discussed earlier in the report, where we estimate current benefits (see Section 5.3, for instance). To reiterate some points:

- Non-market benefits, such as improved health and subjective wellbeing, are important to recognise. While this introduces subjectivity (e.g. the value of a human life) in the assessment, such approaches are relatively mainstream and separate itemisation means people can discount these factors if desired.
- Recognition of where benefits accrue (government, people with disability, households or general community) is similarly important.
- The quality-adjusted life year framework for recognising mortality and morbidity benefits is a useful framework, but not without challenges. Our modified approach (see Appendix B.1) does not discount the value of a life year for pre-existing disability impairment. This ensures the value of life for people with disability is not rated lower than the broader population, but can lead to inconsistencies, particularly when disability-related level of function is changing.
- Observed Scheme benefits may not necessarily have to be greater than costs; this is particularly true where long-term benefits from investment are both not yet apparent and hard to measure.
- Having outcomes that can be tied directly to benefits greatly simplifies the process.
- Making best use of a variety of data sources (including linked administrative data), improves the breadth and robustness of benefit estimation.

Frequency and reporting of benefit estimates

Benefits estimation does not require the same regular public reporting as Scheme outcomes. Indeed, Scheme outcome report is more participant-centred and a shift to more reporting of dollar benefits could be interpreted negatively.

While outcomes reporting needs to be frequent (annual at a minimum), benefit estimation could reasonably occur less often (every few years). That said, we would expect that benefit considerations would be prominent in building evidence around investments, and other detailed evaluation work. More standardised approaches to the calculation of these benefits would make such work quicker and easier.

7.5.4 Investments

Introduction

The NDIS was envisaged as an insurance scheme, which takes a lifetime approach to a participant's support needs. This naturally leads to an investment dynamic where upfront spending can be made in the context of future outcomes and benefits. The Priority Investment Approach to welfare is one example of this investment approach logic applied in a social context (see Appendix F.7.3).

This investment dynamic intersects with Scheme sustainability and planning. The seven principles[62] that are followed to make plans in a way that ensures the financial sustainability of the Scheme include:

- fair for everyone, both today and for future generations
- fair funding to pursue participant goals
- evidence-based best practice
- fair early investments
- fair support across service systems
- fair supports for a participants disability needs
- fair assistance from multiple programs.

To achieve these principles, and manage the NDIS to a budget constraint, the investment framework should have a more direct focus on outcomes, to ensure that investments are made that achieve participant goals in a financially sustainable way.

Outcomes investing in practice

Outcomes investing typically requires consideration of both bottom-up and top-down effects:

- At the individual level, investments need to be well-aligned to goals and consistent with evidence of best practice.
- At the Scheme level, investment spending should be consistent with prioritised outcome areas and overall Scheme objectives.

The investment cycle benefits from measurement and governance that provides information on how to implement and manage the scheme – these elements are summarised in Figure 7.5. The cyclic nature refers to the process by which the impact of different types of investment spending is measured, evidence of what works for who is collected, and future investment activity is informed by the patterns in outcomes. Steps 2, 3, and 4 refer specifically to what government and scheme administrators should do as a matter of course to improve scheme effectiveness. As the scheme, and the provider market, matures, opportunities to reward and penalise patterns of access to the scheme will become clearer to ensure that the scheme is providing best value to those that need its support.

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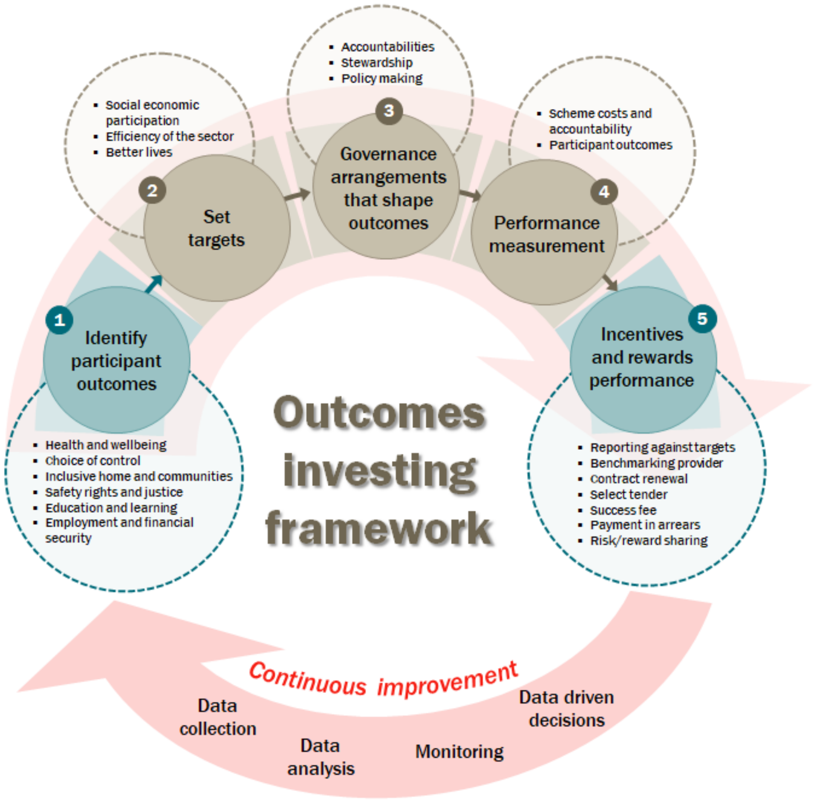
[62] https://ourguidelines.ndis.gov.au/how-ndis-supports-work-menu/what-principles-do-we-follow-create-your-plan/what-principles-do-we-use-create-your-plan

Figure 7.5 – Outcomes investing framework



This approach to tying investments and outcomes is consistent with the trend that across all levels of government towards outcome budgeting. Related principles in this approach are:[63]

- Measures should consider the inputs, outputs, efficiency, effectiveness and equity of the program
- Measures should tell the story of how successful the program has been in reaching its objectives, the challenges experienced, lessons learnt, and any revision to the program delivery that will impact performance measurement
- Measures provide a holistic view of performance
- There should be a high level accountability of outcome measures.

The steps involve:

- Identifying the organisational priorities and change programs that will deliver outcomes
- Establishing outcome and performance indicators and targets
- Analysing where resources and base budgets are spent, and the effectiveness in driving outcomes, and then developing internal investment allocation and prioritisation processes to support outcomes delivery
- Providing a governance and accountability framework to ensure outcomes delivery (NSW Treasury, 2021).

Some elements of the NDIS are likely to be more suitable for funding via outcomes investing than others. However, all elements benefit from the discipline of linking supports to outcomes. From a provider perspective, outcomes investing introduces risk and reward sharing arrangements that need to be underpinned by clearly defined targets and evidence.

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[63] See for example, NSW Treasury (2018).

Provider performance and incentives

It is hard to talk about improved outcomes through investment without consideration of provider effectiveness. While we do not explore specific classes of investments and providers, and we refrain from formal recommendations, we note two general strategies available in this area:

- **Provider performance and quality assessment –** Improved visibility of performance should, in the context of a competitive market for services, improve consumer choice. Many government-funded services (e.g. aged care, employment services etc.) have developed approaches to provider rating. In the context of the NDIS this would require service-specific definitions of performance.
- **Payment by outcomes designs –** Payment by outcomes is where provider remuneration is explicitly tied to outcomes. Such approaches are used in other government programs, such as various social impact investments and the Disability Employment Service. Significant practical challenges exist to avoid poor incentives:
  - Clients with more complex needs may require more support than others – this means variable outcome fees or other tool to avoid cherry-picking of easier-to-assist participants.
  - Milestones for payments need to be well selected so that providers are not given an incentive to target the milestone at the expense of other supporting activity.

Neither of these approaches are easy – particularly in a context of heterogenous needs and people accessing a variety of supports over time. In both cases significant enhancements would require careful design and significant ongoing overheads in terms of data collection and monitoring.

7.6 Summary and next steps

In this section we have proposed an enhanced measurement framework that:

- Places greater emphasis on the goal-setting stage, and how this is tied to plan setting
- Points to greater measurement and accountability on the investment dynamic of NDIS spending, with greater need
- Expands the outcomes framework to better align with the ADS and draw on administrative and survey sources outside the existing NDIA survey
- Facilitates regular benefit estimation, to track overall progress and support evidence and evaluation work.

If this future state was to be pursued, natural next steps across these components would include:

- Refine a final set of outcomes, in a broad consultation process. This could be the responsibility of the NDIA, given their current intent to review the framework or external to it.
- Determine any high-priority outcomes and associated targets.
- Redesign governance of investment spending to align better with insurance principles and ensure impacts can be tracked.
- Assign responsibility and frequency for Scheme outcomes reporting and benefits estimation.
- Review the goal-setting and planning process to ensure evidence-based interventions can be considered, while respecting participant choice and control.
- Ensure the ongoing data strategy for the Scheme will support the ongoing improvement of the Scheme through tracking impacts and building evidence.

A major change to the measurement framework requires ongoing assessment of its effectiveness over time.

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Appendix A Stakeholder consultation

Table A.1 provides a list of stakeholders consulted during the project. Methods and findings in this report have benefited from consultation with a range of experts in the field. However, the findings, estimates and views expressed in this report are those of Taylor Fry and the CIE alone.

Table A.1 – List of stakeholders consulted

DSS – Australian Disability Strategy team, National Disability Data Asset team
DSS – National Disability Data Asset team
NDIA – Meetings related to outcomes, service interfaces, investment effectiveness program and scheme costs
John Walsh
Kathy Eager
Sue Olney
Richard Madden
Productivity Commission

Appendix B Conceptual decisions and assumptions

B.1 Modified approach to QALYs

We have modified our approach to using Quality Adjusted Life Years (QALYs) for this project. In health economics, it would be standard to reduce the value of a year of life if it is affected by disability, reflecting a lower quality. Used without adjustment, this would reduce any benefits accruing to people with permanent disability. We believe this approach is only suited to cases where people are starting without disability and so inappropriate for the NDIS participant population. Our approach is to not reduce the value for existing (or unavoidable future) disability. Any avoidable conditions considered (e.g., looking at benefits of lower mobility reductions with supports) would be included, since it allows us to recognise the benefits.

We further note there are challenges to the use of QALYs.

- **Statistical value of a lifetime versus a year of life.** Models of the value of a statistical life generally have assumptions for either the value of a whole life (which can be converted to a value per year) or a fixed value per year of life (which can be converted to remaining life value based on life expectancy). Life expectancy is lower for many groups of people with disability. Choosing the first approach (fixing value of a lifetime) then implies a higher annual level for people with disability, which is non-standard. The second approach (fixing value per year) is more practical for measuring the value of improved life expectancy but carries an implication that the future lifetime of a person with disability is on average less than others. We adopt the second approach, and it has the advantage of being the more conservative assumption.
- **Concerns about putting a dollar value on life.** Many advocates would caution against convert non-market concepts such as health, wellbeing and life on a monetary scale. This is fair, since the approach is necessarily reductive. However, we believe it has some value, since doing so on a consistent basis allows some comparisons between benefits in different areas, and provides a common currency for comparing to costs.

Throughout we have used the value of statistical life year of $227,000, consistent with current PMC guidance (PMC, 2023).

B.2 Valuing subjective wellbeing

The value of a 1-point increase in life satisfaction, measured on a scale from 0 to 10, over a 1-year period is $26,400. This is based on the average between:

- An approach relying on the Value of a Statistical Life Year, where a seven-point change in wellbeing is equated to a 1-year QALY. The UK guidance describes this approach as being a standard practice in the UK, and being 'assumption-driven', although logical. A one-point change is therefore valued at $32,400, based on our assumed Australian value of a statistical life-year.
- A Willingness to Pay approach, where an elasticity of 1.25 is used for subjective wellbeing with respect to income. The estimate is based on a study by Fujiwara (2021). This is converted to an estimate of the WTP for a 1-point increase in subjective wellbeing for a year, which is equal to approximately £16,000. We have recalculated this to set it to the Australian median income, giving a value of about $21,000.

This follows the approach taken in UK guidance (see MacLennan, et al., 2021), and also our Disability Royal Commission work (Vincent et al., 2022), where some additional detail is provided. The difference between the two approaches reflects the legitimate variability when attempting to monetize subjective wellbeing.

The UK Government publication *Wellbeing Guidance for Appraisal: Supplementary Green Book Guidance* and the associated discussion paper (HM Treasury, 2021) give a holistic overview of approaches to measuring subjective wellbeing, valuation approaches, when to use subjective wellbeing measures rather than other ways of measuring social/public outcomes, and a summary of the literature applying these methods.

The UK guidance gives ±23% for a low/high range (reflective of the two sources for estimation) – in our case equates to $26,400 ± $6,000, which we have used in our discussion on uncertainty.

B.3 Valuing choice and control

The NDIS represents an important contribution to increasing consumer choice in accessing support for Australians with disability.

The value of choice and control can be considered in terms of:

- Its instrumental value: how an individual benefits from a decision they are able to make
- Its intrinsic value: how an individuals' psychological well-being and integrity is benefitted, irrespective or independent of the consequences of the decision.

Most recently, Freundt, Herz, and Kopp (2023) examined the empirical foundations of intrinsic preferences for autonomy, using a preference elicitation method.[64]

It found that:

- The average and median willingness to pay for autonomous choices is significantly positive, and that on average individuals have intrinsic preferences for autonomy. This was found to be similarly distributed across socio-demographic groups such as age and income.
- The average intrinsic utility component of autonomy amounts to 4.8 per cent of the total expected utility received from an individual's choice.
- There is substantial heterogeneity in the willingness to pay for autonomous choices, with 54.7% displaying positive willingness to pay for autonomous choice, 36.5% exhibiting a negative willingness to pay, and 18.8% assigning choice a value of zero.

B.4 Valuing educational attainment

There is a widespread literature concerning the social and economic benefits of education. A recent Australian study on this topic is Leigh (2008), which attempts to quantify the economic benefits of education from multiple waves of HILDA data using the following three measures:

- Hourly wages
- Annual earnings
- Indicator for receiving a positive income

The study finds significant positive effects on these measures from completion of year 10-12, as well as tertiary education and most forms of VET. In particular, there is a 57% uplift in annual earnings for those who complete year 12 compared with those who leave school at the end of year 9, after controlling for selection effects. We have updated the Leigh modelling to include people with disability and find that the effect of education on earnings is at least as large for those with disability as for those without. We therefore regard the Leigh estimates as suitable conservative estimates for the returns to education for people with disability.

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[64] The method involved a two-step approach of first establishing choices between which a person is indifferent, and then estimating an individuals' willingness to pay to make a choice from the choice set. The method is considered to measure a different psychological construct to perceptions of own autonomy, locus of control, and self-efficacy, which are commonly measured in the psychology literature (e.g. Rotter, 1966; Deci and Ryan, 2012).

B.5 Construction of a wellbeing index from short-form survey responses

We have constructed a numerical measure of overall participant wellbeing using responses to the short-form NDIS survey. To construct this measure, we selected a sample of relevant questions from the following domains – Health and Wellbeing, Home, Daily Living, Choice and Control, Relationships, Community, Learning, and Work. We mapped each answer to a number between 0 and 10, and took a weighted average of scores within each domain to determine scores for each domain. We then took a weighted average of domain scores to produce an overall score for each participant.

Scores were generally non-missing across responses, with about 90% of survey responses able to have a wellbeing score constructed.

We regard our composite model as relatively crude, but with reasonable face validity. The NDIA, and research group headed by Monash university (MUCHE) are exploring a more comprehensive approach to wellbeing scoring, with early results encouraging[65]. However, the research has found existing outcome questions are not ideal for tracking composite wellbeing. We expect measures using new questions to be superior to our index, but acknowledge the early work in setting our domain-level weights. Further, within domains, selected questions and weights are largely by judgement, rather than detailed work.

Despite the above limitations, we see substantial correlation (0.28, p-value <0.0001) between the composite index and the life satisfaction score from the long-form survey, for those with both scores in the same year. A one-point improvement on wellbeing composite corresponds to ~0.6 points increase on life satisfaction (scaled to a score out of 10).

The following table sets out the questions used to construct the wellbeing index, the numerical mapping applied to each answer, and the weights applied to each question and domain.

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[65] See for example the second half of the seminar, Macquarie University Centre for the Health Economy (MUCHE) https://www.youtube.com/watch?v=NU8wnUYssnk .

Table B. 1 – Questions and answers used for wellbeing index

Domain	Domain weight	Question	Answer mapping	Question weight
Health and Wellbeing	15	Overall, do you think that your health is excellent, very good, good, fair or poor?	Excellent = 10, Very good = 8, Good = 6, Fair = 4, Poor = 2	100%
Home	15	Will you want to live here in 5 years' time?	Yes = 10, –o - I want to choose my home = 5, –o - for another reason = 5, –o - because of factors related to my support needs = 0	40%
Home	15	Thinking about where you currently live in relation to your disability support needs: Are you happy with the home you live in?	Yes = 10, –o - I want to choose my home = 5, –o - for another reason = 5, –o - because of factors related to my support needs = 0	40%
Home	15	How safe or unsafe do you feel in your home?	Very safe = 10, Safe = 7.5, Neither safe nor unsafe = 5, Unsafe = 2.5, Very unsafe = 0	20%
Daily Living	15	For those who receive support for personal care: Does the support you receive meet your needs?	Yes = 10, N/A (do not receive support) = 5, No = 0	30%
Daily Living	15	For those who receive support for domestic tasks: Does the support you receive meet your needs?	Yes = 10, N/A (do not receive support) = 5, No = 0	30%
Daily Living	15	For those who receive support for travel and transport: Does the support you receive meet your needs?	Yes = 10, N/A (do not receive support) = 5, No = 0	10%
Daily Living	15	For those who receive support for communicating with others: Does the support you receive meet your needs?	Yes = 10, N/A (do not receive support) = 5, No = 0	10%
Daily Living	15	For those who receive support for getting out of the house: Does the support you receive meet your needs?	Yes = 10, N/A (do not receive support) = 5, No = 0	10%
Daily Living	15	For those who receive support for reading and/or writing: Does the support you receive meet your needs?	Yes = 10, N/A (do not receive support) = 5, No = 0	10%
Choice and Control	13	Who makes most decisions in your life?	I do = 10, My friends = 5, My family = 5, My service providers = 0, Others = 0	33%
Choice and Control	13	Do you choose what you do each day?	Yes = 10, Sometimes = 5, No = 0	33%
Choice and Control	13	Do you want more choice and control in your life?	No = 10, Yes = 0	33%
Relationships	13	Are you happy with how often you see your family?	Yes = 10	25%

Domain	Domain weight	Question	Answer mapping	Question weight
			No – I would like to see them less = 5 No – I would like to see them more = 0	
Relationships	13	Do you have someone outside your home to call when you need help?	Yes, family = 10 Yes, friends = 10 Yes, paid staff only = 5 No = 0	25%
Relationships	13	Do you have friends other than family or paid staff?	Yes, people with a disability = 10, Yes, people without a disability = 10, No = 0	25%
Relationships	13	Are you happy with how often you see your friends?	Yes = 10, No – I would like to see them less = 5, No – I would like to see them more = 0	25%
Community	10	Do you spend your free time doing activities that interest you?	Yes = 10, No = 0	20%
Community	10	In the last 12 months, is there anything that you wanted to do but couldn't?	No = 10, Yes = 0	20%
Community	10	Have you been actively involved in a community, cultural or religious group in the last 12 months?	Yes – a general community group = 10, Yes – a group for people with disability = 10, No – but I would like to be = 0, No – I don't want to be = 0	20%
Community	10	Do you know people in your community?	Yes = 10, No = 0	20%
Community	10	Do you feel safe getting out and about in your community?	Yes = 10, No = 0	20%
Learning	10	Do you get opportunities to learn new things?	Yes = 10, No – I would like to learn new things = 0, No, and that's OK = 0	50%
Learning	10	In the last 12 months, is there any course or training that you wanted to do but couldn't?	No = 10, Yes = 0	50%
Work	9	Are you currently working?	Yes, in a paid job = 10, Yes, in an unpaid job = 5, No = 0	66%
Work	9	Have you had difficulty in getting health services?	No = 10, Yes – attitudes and/or expertise of health professional = 10, Yes – access issues = 10, Yes – I don't have support =10 Yes – I don't have transport = 10, Yes – I can't afford it = 0	33%

The main logic for constructing the measure is:

- Domain weights are set using rounded numbers from NDIA/MUCHE research on relative preference work.
- Questions selected within each domain are those judged most relevant to satisfaction and wellbeing within that domain. In the case of Health and wellbeing, the self-rated health question was judged a suitable for a domain score, whereas in other domains a mix of questions is used.
- The scores and question weights are ad hoc and set by judgement. Generally, we seek scores to range from 0 to 10 for each question, with scores between these extremes for answers that are intermediate in nature regarding wellbeing. Question weights within domains are generally equal , but down-weighted for questions viewed as less directly relevant to the core domain question.

The index is subject to several limitations, with some common to any index:

- The short-form survey questions were not designed with aggregate indices in mind. The NDIS/MUCHE work identifies all short-form questions having issues with wording, ceiling and floor effects and the lack of responsiveness of the items to differences between participants.
- Our index relies on the robustness of underlying data. Feedback from the NDIA Research & Evaluation Branch notes that approximately 10% of responses are copied by the planner from the previous planning meeting. This would slightly bias our measured impacts to be too small.
- Choices in questions, question scores and weights, plus domain weights will affect the ultimate result. We have not comprehensively tested the impact of different selections.

Appendix C More detailed methodology of costs and benefits

This table provides a summary of all potential benefits that we identified as feasible – either now or in the future. Those that we have attempted are flagged, as well as some comments on potential approaches.

C.1 Benefits identified and approach to modelling

Outcome	Feasible now?	Attempt now?	Feasible future?	Approach & comments	Benefit conversion
Health and Wellbeing					
Increase in lifetime - participants	Y	Y	Y	Model mortality directly using NDIS data COVID-19 pandemic impacts likely to swamp underlying improvements.	QALY framework for additional years of life
Improved subjective wellbeing - participants	Y	Y	Y	Apply standard NDIS outcomes model to both: ▪ A composite wellbeing indicator (Appendix B.5) ▪ Long-form survey life satisfaction HILDA model of life satisfaction Also significant work modelling subcomponents (e.g. impact on health)	Convert to monetary values using a mix of QALY and willingness to pay results (See Appendix B.2)
Improved subjective wellbeing - carers	Y	Y	Y	As above for participants	Convert to QALY scale (See Appendix B.2)
Improved (physical) quality of life	Y	N	Y	Handled within subjective wellbeing in our model.	Conversion of health to QALY framework
Reduction in health risk factors	N	N	Y	In the absence of lifetime and quality of life (above), could look at specific factors such as changing rates of smoking poor diet, obesity and high blood pressure	Conversion of health to QALY framework
Potentially avoidable hospitalisations	N	N[(a)]	Y	Best done using a hospital-NDIS linkage, potentially the NDDA	Unit cost assumptions for hospital (e.g. IHACPA)
Potentially avoidable deaths	N	N	Y	In the absence of lifetime, could look at this subgroup . For example, improved COVID-19 vaccination rates might be one direct measurable benefit	Conversion of health to QALY framework

Outcome	Feasible now?	Attempt now?	Feasible future?	Approach & comments	Benefit conversion
Reduction in hospital stay frequency and length	Partly	Y	Y	Standard NDIS outcomes model % who have been to the hospital in the last 12 months. Some consideration of COVID-19 pandemic impacts required Best done using a hospital-NDIS linkage, potentially the NDDA	Unit cost assumptions for hospital (e.g. IHACPA)
Reduction in psychological distress	Y	Y	Y	Standard HILDA test on psychological distress Check on Psychologist access in NDIS payment data and compare to changes in health status and wellbeing.	Recognise lower treatment costs Quality of life elements likely captured in subjective wellbeing
Employment and financial security					
Increased income for participants	Y	Y	Y	▪ Standard HILDA models for changes in employment status (including separate for full / part time), hours worked and hourly wage. ▪ Standard NDIS outcomes model for employment status. Also related tests on hours and income. ▪ Future work can leverage linked data sources, such as MADIP or the NDDA	Recognise the personal income benefits, as well as fiscal benefits (increased taxation and decreased welfare). Income distributions taken from HILDA where needed Convert to monetary values using a mix of QALY and willingness to pay results (See Appendix B.2)
Increased income for carers	Y	Y	Y	As for participants Future work can leverage linked data sources, such as MADIP or the NDDA, although this requires good identification of carers and/or households	As for participants
Fewer absences from work	N	N	Maybe	Better supports and improved community attitudes should reduce absenteeism. Further research connecting visible outcomes (e.g. health status) to work attendance may enable recognition of this benefit.	Recognised as productivity gains, based on average wages for the cohort (HILDA)
Equity benefits associated with meeting basic needs	Y	N	Maybe	Some economic arguments recognise the redistributive impacts of a scheme as a benefit, with a range of utility approaches applied	Harder to incorporate utility gains in the existing dollar framework, but could have as a standalone estimate.
Inclusive homes and communities					
Improved access to suitable housing	Y	Y	Y	Standard NDIS outcomes model for satisfaction with current housing. Additional work is possible, such as attempt to link to capital spending tied to home accessibility for improvements, or	Follow methodology of Vincent et al. (2022) based on CIE (2021) in valuing cost of inaccessible housing, averaging $7,600 per person per year

Outcome	Feasible now?	Attempt now?	Feasible future?	Approach & comments	Benefit conversion
				Improving the understanding of accessibility issues at through the NDIS annual survey	
Reduced homelessness	Maybe	Y	Y	To determine if a plausible fraction of SIL entries can be tied to participant risk of homelessness. Future work can leverage linked data sources, such as the NDDA	Direct cost of homelessness services already allowed for in NDIS cost substitution estimate Other costs related to life quality, human capital and justice interactions allowed for in line with Melbourne Sustainability Institute (2017) and Vincent et al. (2022) of $7,600 per person affected by homelessness in a year. Modification of human capital component to be consider as part of this.
Reduced use of extended hospital stays	N	N	Y	While NDIS now tracking data on extended hospital stays where patient are ready for discharge. Future monitoring could recognise ongoing improvements.	
Engagement in community activities	Y	N	N	Feasible to apply a standard NDIS outcomes model for % who have been actively involved in a community, cultural or religious group in the last 12 months	Outcome results important, but may not be converted to benefits to avoid double-counting with subjective wellbeing.
Access to transportation	N	N	Y	Standard NDIS outcomes model for % who require transport assistance who receive it, as well as % who answer transport supports meet their needs.	Depending on results, we may report outcome result but not ascribe benefits (since it will double-count with subjective wellbeing)
More resilient families	N	N	Y	Reduced household separations, particularly for parents of children with disability, should improve relationship satisfaction and economic outcomes.	Existing estimates related to economies of scale, and costs of separation
Safety, rights and justice					
Reduced offending and subsequent interaction with police, courts and corrections (youth and adult)	N	N	Y	Review evidence from NDDA Pilots, but research is largely not there. Future work can leverage linked data sources, such as the NDDA	n/a

Outcome	Feasible now?	Attempt now?	Feasible future?	Approach & comments	Benefit conversion
Reduced interaction with child protection system, where participant is parent	N	N	Y	Future work can leverage linked data sources, such as the NDDA	n/a
Reduced interaction with child protection system, where participant is child	N	N	Y	Future work can leverage linked data sources, such as the NDDA	n/a
Lower rates of maltreatment in disability service delivery	Partly	N	Y	Standard NDIS outcomes model for % who feel safe at home – perhaps restricted to those receiving SIL Using objective rates of reported instances is likely not feasible at the moment – reporting rates appear to be moving too much to prevent sensible inference (for example, trends in restrictive practice reports at https://www.ndiscommission.gov.au/sites/default/files/2023-06/Attachment%20A%20URP%20Annual%20report.docx)	Wellbeing impacts would generally overlap with overall wellbeing. Some market costs can be attached to decreased health, legal and investigations for measurable decreases in maltreatment.
Increased feelings of safety for carers	Y	Y	Y	HILDA model of life satisfaction	Primarily through improved life satisfaction elsewhere
Increased choice and control	Y, although monetisation non-standard	Y	Y	Standard NDIS outcomes model for % who are happy with the level of independence/control they have now Will consider other similar questions too.	**Experimental estimate** based on proportion of spending, to reflect the value of control estimated by Freundt, Herz, and Kopp (2023).
Education & learning					
Improved school-readiness	Y	Y	Y	Standard NDIS outcomes model for % of parents/carers with concerns in 6 or more areas, targeted to early school age Look at recent AEDC evidence on changes in school readiness for children with disability or health conditions. Future work can leverage linked data sources, such as the NDDA. AEDC linkage is particularly important for tracking readiness	To the extent school readiness affects school attainment, this may result in double-counting. There is evidence that school readiness impacts on other outcomes, such as NAPLAN scores, but we likely cannot value these changes.
Better access to school	N	N	TBC	No good outcomes identified on school accessibility or barriers	
Improved school attainment	Y	Y	Y	Standard NDIS outcomes model for Year 12 completion, post-school qualification, and wanted to but could not do education & training	Leigh (2008) estimates the impact of high school completion for the general population on average annual earnings and employment rates. This analysis used

Outcome	Feasible now?	Attempt now?	Feasible future?	Approach & comments	Benefit conversion
					HILDA survey data, and we could replicate it for the cohort of people with disability. Literature estimate will be scaled down based on estimate of ratio of lifetime earnings for people with disability in the NDIS compared to broader population.
Post-school attainment	Maybe	N	Y	Some NDIS outcomes around further education, but significant work required to track enrolments, attainment and subsequent benefits such as employment Future work can leverage linked data sources, such as the NDDA.	Leigh (2008) estimates the impact of post-school qualifications for the general population on average annual earnings and employment rates. This analysis used HILDA survey data, and we could replicate it for the cohort of people with disability.

Notes:

(a) Some results may be available from the NDIS Secretariat work using the current MADIP-NDIS linkage, but falls outside our report

(b) ‘Standard’ model forms for HILDA and NDIS outcomes data are described in the next section

Appendix D NDIS Outcomes modelling

D.1 Standard models for NDIS outcomes data

The NDIS outcomes data is longitudinal panel data, where we have multiple rows per person (corresponding to their responses each year). We fit a standard mixed model:

$$y_{it} = g^{-1}(\beta X_{it} + v_i) + e_{it}$$

Where, for person i at time t, the expected value of the response y_{it} is the inverse of a link function g applied to some fixed effects β applied to participant characteristics, as well as person (cluster) random effect v_i. The difference between mean and actual observations is reflected in independent zero-centred error e_{it}.

We have adopted the identity function through for simplicity - $g^{-1}(z) = z$. This simplifies interpretation, but conceivable leads to predictions outside the allowed target range; we have checked for this and capped predicted responses on occasion.

Terms related to fixed effects βX_{it} span participant duration, disability group and level of function band (generally set to responses at year 2), gender, age, SIL/SDA status, legacy vs new participant at entry, and some limited time effects. Carer models also include carer characteristics, including carer age. Continuous variables are typically converted to a set of linear splines to better capture shapes visible in the data. Interactions are added to the model and insignificant terms pruned from the model.

Duration effects are most important – these we attribute to scheme impact. For testing the impact at March 2023, we:

- Score the model with current duration on the full March 2023 cohort
- Set duration to zero and re-score the model on the same cohort
- Measure the difference between the two scores.

This effectively ‘nets’ out the impact of duration in scheme from other factors.

The participant terms $v_i$are modelled as random effects from a normal distribution. Their primary impact is to adjust participants predictions up or down if they tend to answer higher or lower than the fixed effect average. For instance, a person entering with higher rated health will tend to maintain higher scores for subsequent surveys.

All NDIS outcomes were modelled in R using the lme4 package, with some exploratory modelling done using generalised linear models.

D.2 Model design and coefficients

We have provided a separate spreadsheet appendix that covers the detail of our model fits that support our benefits estimation work in Section 5.

Appendix E Detailed HILDA modelling results

E.1 Introduction

Commenced in 2001, the Household, Income and Labour Dynamics in Australia (HILDA) Survey is a nationally representative longitudinal study of Australian households. As of June 2023, 21 waves (years) have been released. The survey collects a wide range of information on relationships, childcare, employment, income, health and wellbeing, from all household members aged 15 years and older. We use the HILDA data to model the impacts of NDIS participation on people with disability, carers and non-carers.

E.2 Modelled cohorts

HILDA collects information on disability through health-related questions directly asked to respondents. We define someone with disability as someone who responds that they have a ‘long-term health condition, impairment or disability that restricts you in your everyday activities, and has lasted or is likely to last, for 6 months or more’. In addition, there are household level questions where one person from the household answers for all household members. We include people as having a disability if the household responder says yes to the question ‘Does anyone here have any long-term health condition, disability or impairment that has lasted, or is likely to last, 6 months or more; restricts everyday activity; and cannot be corrected by medication or medical aids’. We exclude people over 65 years of age from the cohort of people with disability to reflect NDIS eligibility.

Carers are defined through responses to questions about whether the person cares for someone in the household. As someone who identifies themselves as a carer can provide care to people who are not disabled (such as elderly), we check that a person in the household has a disability and assume the carer provides care for this person.

A non-carer is defined as someone who is in a household with someone with a disability but have indicated that they do not provide caring responsibilities for anyone within the household.

We note that there are limitations on our cohort definitions, where:

- Carers are treated the same if they care for one or multiple people with disability within a household, which may make our results more conservative
- Carers may only care for people outside of a household or in addition to someone in their household, which may make our results more conservative
- Not all people with disability in a household may receive NDIS support but the carer and non-carer will still be treated as if the person in the household being cared for receives NDIS, which may bias a stronger result.

On balance, our cohort definitions should provide reliable results despite potential bias in either direction.

Modelling approach follows a broadly similar shape to NDIS outcome survey modelling (see Appendix D.1), except the panel data covers before and after NDIS entry. Models were fit with Stata using the xtreg package.

E.3 Summary stats from HILDA

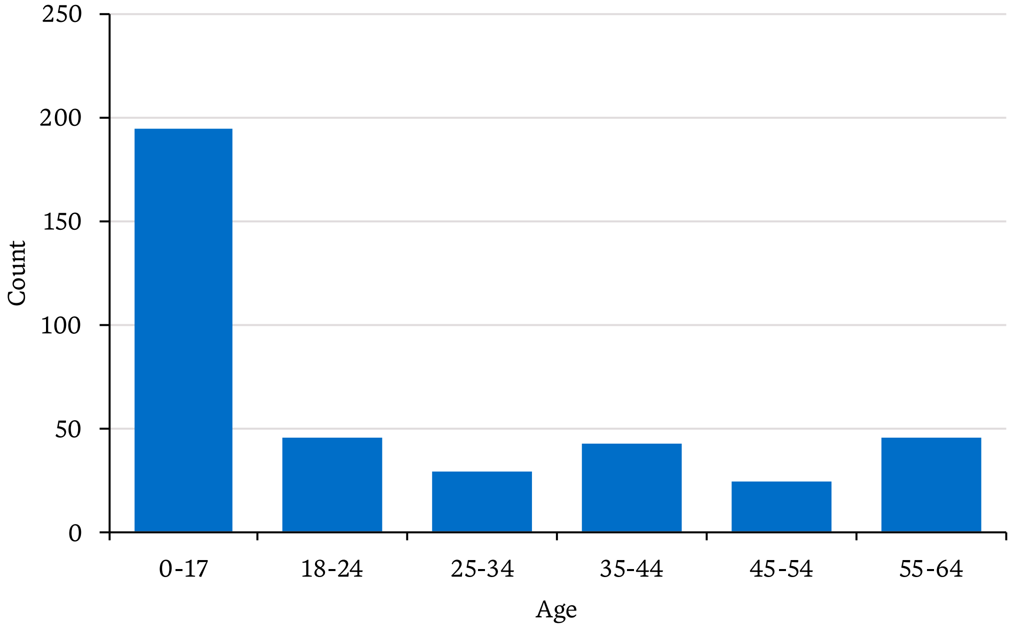
HILDA has between approximately 17,000 and 23,000 responses for each wave, see Table E.1. Persons with disability are approximately 17 per cent of respondents across all waves. HILDA has an NDIS flag which signals whether someone receives NDIS, which first appears in wave 17 (survey fieldwork was conducted from 25 July 2017 to 4 February 2018). This means we can model both the step change associated with entry, along with effects associated with time in the scheme (up to a maximum of four years).

Table E.1 – Persons with disability and NDIS participants from waves 1 to 21

Wave (annual, 21 = 2021)	Total respondents	Persons with disability	NDIS participants
1	19,907	3,272	0
2	18,290	2,662	0
3	17,674	3,237	0
4	17,199	3,116	0
5	17,464	3,200	0
6	17,452	3,021	0
7	17,188	2,982	0
8	16,941	2,735	0
9	17,631	3,224	0
10	17,855	3,106	0
11	23,386	4,027	0
12	23,159	3,851	0
13	23,263	4,343	0
14	23,086	3,988	0
15	23,285	4,097	0
16	23,476	3,934	0
17	23,385	4,158	152
18	23,206	3,795	234
19	23,215	3,693	302
20	22,895	3,590	349
21	22,370	3,708	386
Total	**432,327**	**73,739**	**1,423**

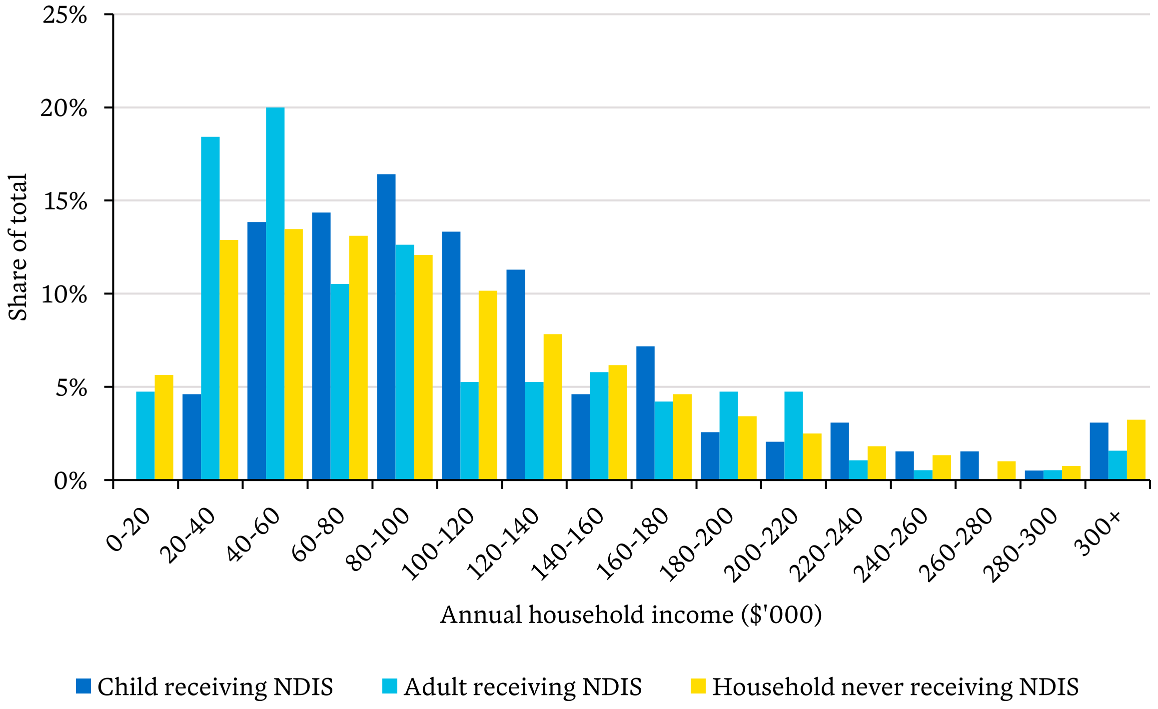
In wave 21 there are 195 children (<18 years old) receive NDIS, see Figure E.1. The second largest cohort are the 18-24 year olds with 46 participants.

Figure E.1 – Age distribution of NDIS participants in wave 21



Households that receive NDIS typically have lower household income than other households, see Figure E.2. Households where an adult receives NDIS have significantly high representation in the lower income categories between $20,000 and $60,000 dollars per year. This suggests that there might be selection bias, whereby NDIS households have lower incomes which might translate to worse outcomes.

Figure E.2 – Household income for children receiving NDIS, adults receiving NDIS and never receiving NDIS



E.4 Outcome domains

The NDIS funds a range of supports and services which may include education, employment, social participation, independence, living arrangements and health and wellbeing. These supports are expected to help participants to:

- pursue their goals, objectives and aspirations
- increase their independence
- increase community and workplace participation, and
- develop their capacity to actively take part in the community.

We expect NDIS participation to positively impact the outcomes of not only people with disability, but also their carers and other household members. Table E.2 summarises the outcome domains we tested with statistical modelling and whether an impact on a cohort was detected.

Table E.2 – Summary of results from statistical models

Dependent variable	**Have we found a statistically significant impact?**		
	Person with disability	Carer	Non-carer
Various satisfaction measures	No	Yes	No
Financial distress	Yes	Yes	No
Labour force status	No	Yes	-
Hours worked	No	No	-
Earnings	No	No	-
School outcomes for children	No	-	-
Social functioning	Tbc	Tbc	-
Loneliness	Tbc	Tbc	Tbc

Notes

(a) '-' indicates that a model has not been tested because no effect is expected.

We expect people who receive NDIS support to have higher levels of social and emotional wellbeing compared to before they received support. For example, we expect that receiving additional funding would make NDIS participants feel more financially secure and additional mobility aids would make them feel happier where they live and more engaged with their local neighbourhood and community. For children receiving NDIS, we expect that outcomes relating to school engagement would improve, such as overall achievement, stronger relationships with classmates and expectations to continue studying.

Measuring changes in life and other satisfaction metrics for people with disability is challenging due to many endogenous and exogenous factors which can influence it (such as extent of disability, mental wellbeing, availability of support). Evidence from our HILDA analysis below shows people with disability have lower scores for life satisfaction and other satisfaction metrics compared to people without disability. People who receive NDIS generally have more serious disabilities than people without NDIS, so within the disability cohort we expect differences in life satisfaction as people receiving NDIS are more likely to have more complications arising from their disability. This poses a challenge for our modelling of life satisfaction as we encounter strong selection bias, where the outcomes for people with NDIS will be worse than people with disability who do not receive NDIS. We control for this by using within regression methods which identify the person level change when switching from not receiving NDIS to receiving NDIS and do not draw comparisons with cohort who never receive NDIS.

Carers of people with disability should see some benefits from the person they care for receiving NDIS. As a carer, they can be responsible for financially, socially and emotionally supporting the person with disability. Therefore, when additional funding is received through the NDIS, this should provide relief to the carer and we expect the carer's view of their financial situation to improve. In addition, carers' life satisfaction can be improved by knowing that the person they are caring for is receiving more support. Furthermore, where NDIS allows carers more time due to outsourcing of the caring duties, carers are more freely able to re-enter the workforce. We expect to see labour force participation of carers increase, particularly for those where the caring burned prevented them from entering the labour force. Labour productivity may also improve for carers as they can find more stable employment and utilise their qualifications more easily through more structured caring supports via the NDIS.

We expect a smaller impact for non-carers in a household with someone with disability who receives NDIS. Additional funding could increase the household budget which can improve the wellbeing of all household participants who may have had to ration budgets prior receiving NDIS. However, there is considerable heterogeneity in the closeness between non-carers and other household members which weakens any associations identified in the modelling.

E.5 Satisfaction

E.5.1 Differences in satisfaction by cohort and over time

The HILDA dataset has a variety of questions which directly measure a person's life satisfaction and satisfaction with specific aspects of their life such as financial situation, free time, the neighbourhood in which you live, health, local community, safety, employment opportunities and the house in which you live. Each question measures satisfaction on a scale of 0 to 10, where 0 is totally dissatisfied and 10 is totally satisfied.

Figure E.3 to Figure E.5 show the average satisfaction for the three outcome domains of life, financial situation and safety for people in the following groups:

- People with disability who receive NDIS supports in lifetime
- People currently receiving NDIS supports
- People with disability who never receive NDIS supports
- All other people.

People without disability have the highest average scores across each satisfaction measure, followed by people with disability who never receive NDIS. This suggests that the cohort who receive NDIS have more serious forms of disability, which have greater impacts on the satisfaction measures. We observe that when this cohort receives NDIS, they report higher levels of satisfaction.

Figure E.3 – Average life satisfaction by wave

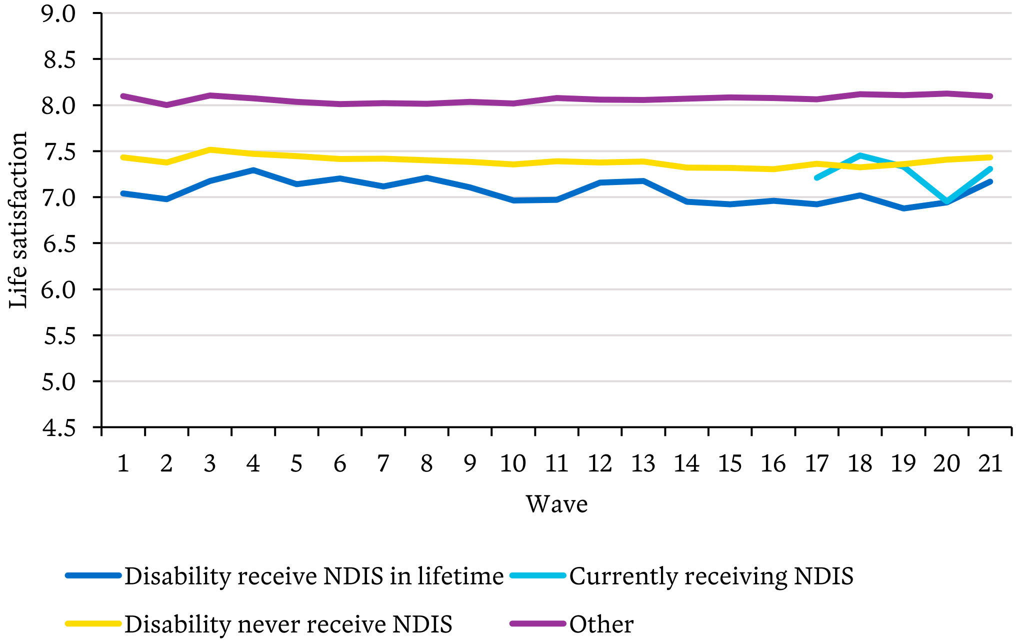


Figure E.4 – Average satisfaction with financial situation by wave

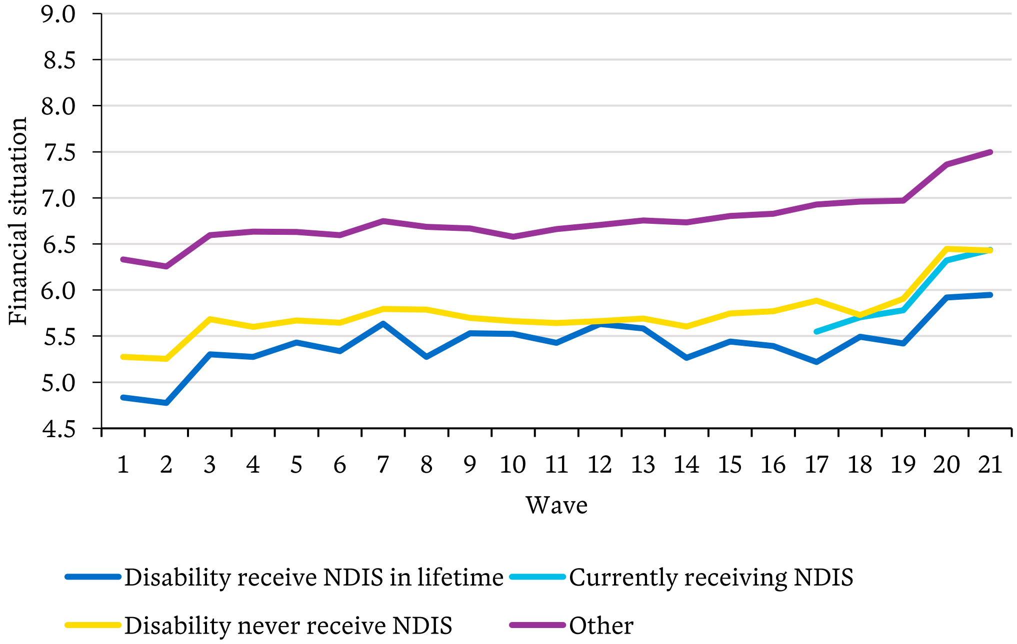


Figure E.5 – Average satisfaction with safety by wave

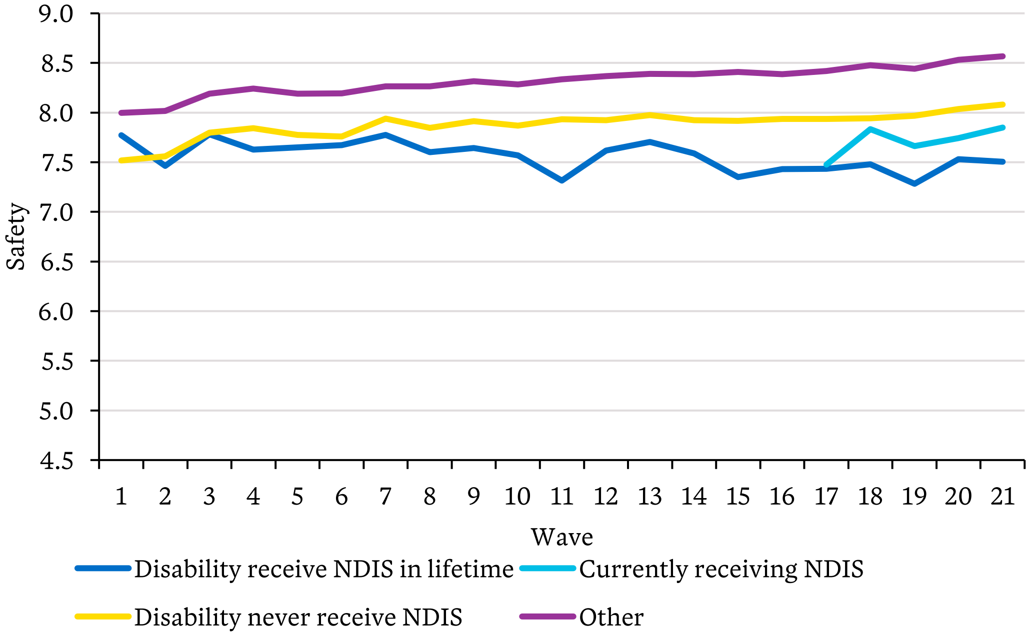


Figure E.6 to Figure E.8 set out corresponding satisfaction results for the following groups of carers:

- Carers who in their lifetime have cared for an NDIS participant
- Carers currently caring for an NDIS participant
- Carers who have never cared for an NDIS participant
- All other people.

We find consistently across each satisfaction measure that carers score the lowest, which increases when NDIS is received.

Figure E.6 – Average life satisfaction by wave for carers

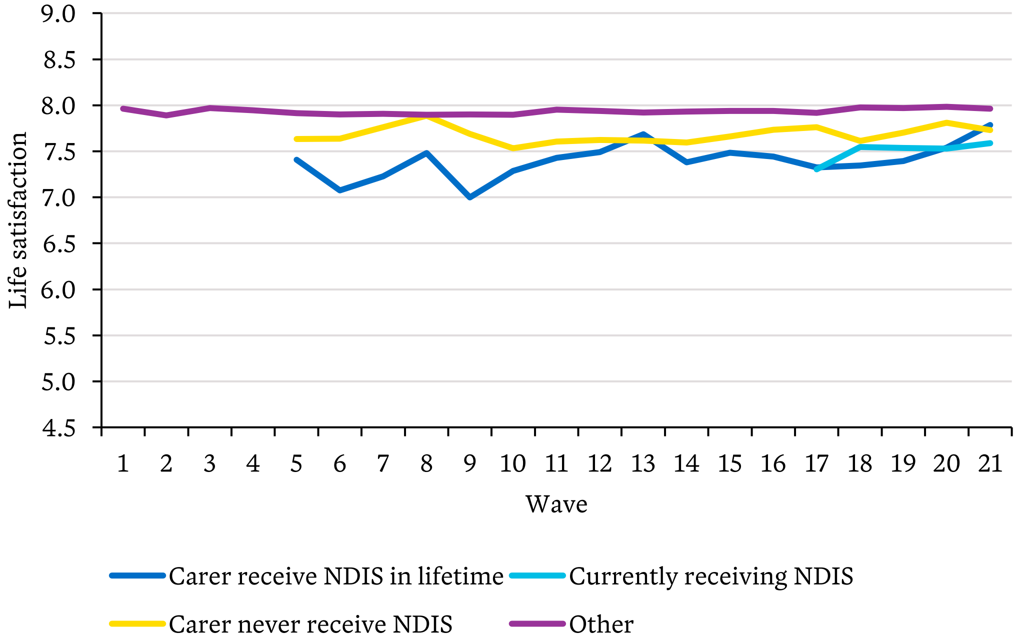


Figure E.7 – Average satisfaction with financial situation by wave for carers

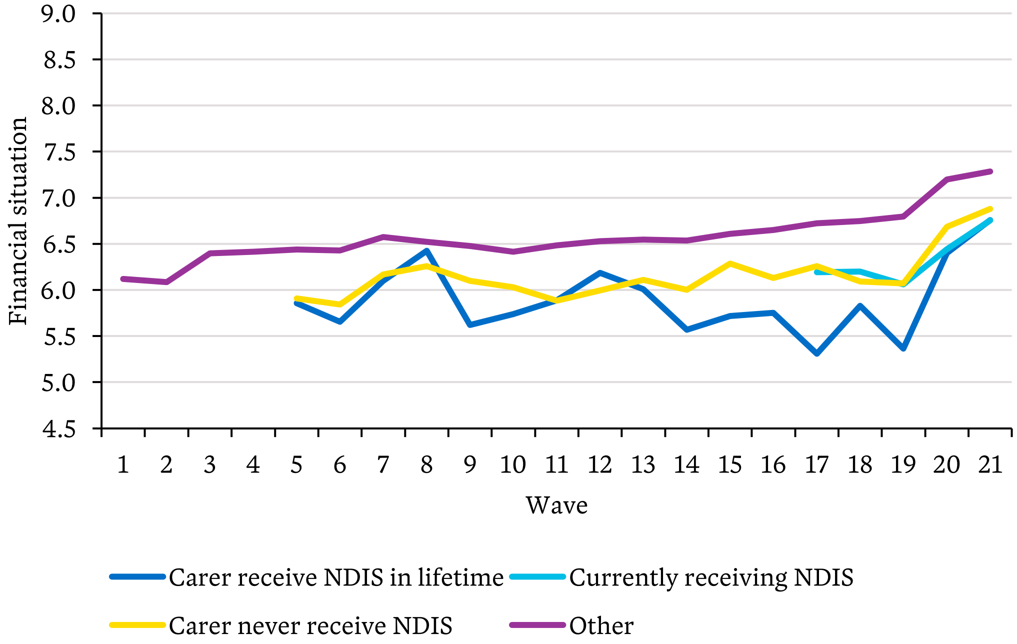
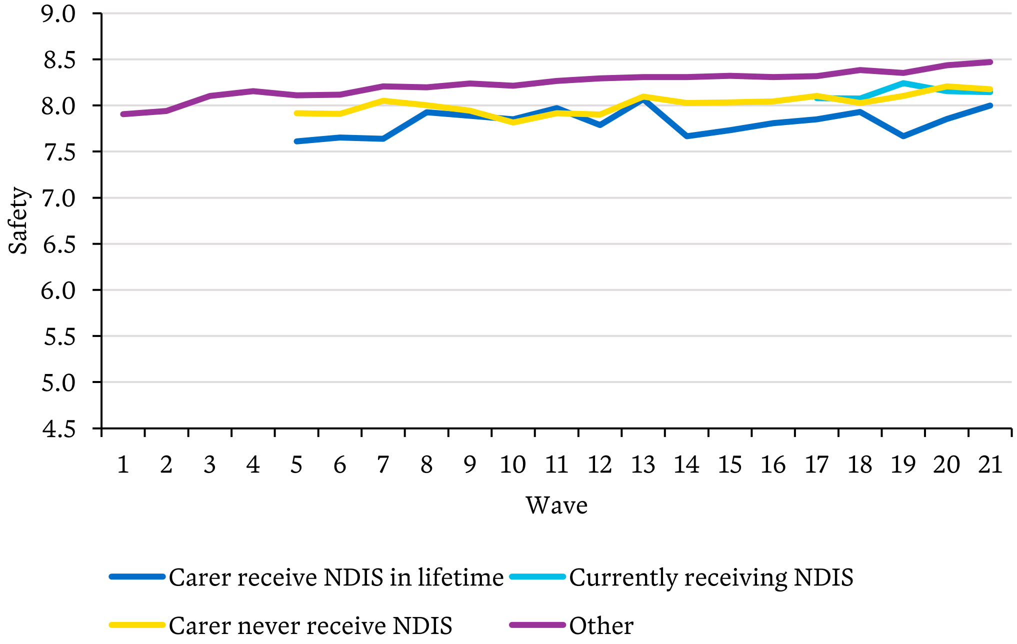


Figure E.8 – Average satisfaction with safety by wave for carers



E.5.2 Estimating differences in satisfaction using regression modelling

To estimate the impact of NDIS across these outcomes we run a series of linear regressions with fixed effects with each satisfaction measure as the dependent variable, see Table E.3. Each model contains a range of time invariant controls and standard errors are clustered for each respondent. The model coefficients have a linear interpretation, for example having a disability decreases life satisfaction by 0.368 points.

Across almost all domains we find a statistically significant negative impact of satisfaction for people with disability, carers and non-carers. This result was expected as generally disability has a financial and emotional toll on the person with disability and their close network.

For persons with a disability, we did not find any statistically positive significant impact of receiving NDIS across any domain. The health domain had a statistically significant negative result, however this may be due to the regressive health impact of disabilities where the condition can worsen over time even with interventions.

For carers, we find a positive impact of the NDIS on life satisfaction (0.142 points), financial situation (0.160 points) and safety (0.199 points). These effects are statistically significant. There was no statistically significant impact related to the number of years the person the carer had provided for an NDIS participant.

For non-carers, we find a person's satisfaction with their financial situation increases by 0.109 points per year that someone in their household receives NDIS. This effect is statistically significant. We find a weakly significant result for the health of a non-carer however this may be due to spurious correlation. We also find two statistically significant negative results for someone in the household receiving NDIS for free time and local community satisfaction however these are likely also due to spurious correlations.

Table E.3 – Satisfaction models for persons, carers and non-carers receiving NDIS

Variable	Life	Financial Situation	Free Time	Neighbourhood	Health	Local Community	Safety	Employment Opportunities	House
Disability	-0.368 ***	-0.400 ***	0.074	-0.226 ***	-1.371 ***	-0.100	-0.183 ***	0.007	-0.017
Years disabled	0.004 ***	0.001	-0.002	0.002 *	0.019 ***	0.003 **	0.003 ***	0.002	0.001
Receive NDIS	-0.114	-0.015	-0.100	0.002	-0.227 **	-0.157	-0.139	-0.237	-0.034
Years received NDIS	-0.026	0.043	0.006	-0.063	-0.075	-0.044	-0.018	-0.040	0.047
Carer	-0.103 ***	-0.189 ***	-0.317 ***	-0.063 **	-0.034	-0.109 ***	-0.034	-0.094 **	-0.104 ***
Years carer	-0.003	0.001	-0.011 *	-0.004	-0.010 **	-0.006	-0.004	-0.010	-0.001
Cared for person receives NDIS	0.142 **	0.160 *	-0.151	0.041	-0.026	0.011	0.199 ***	0.063	0.053
Years cared for person receives NDIS	-0.014	0.022	0.020	0.015	0.036	-0.003	-0.002	0.052	-0.007
Non-carer	-0.028 ***	-0.087 ***	-0.051 ***	-0.019 **	-0.024 ***	-0.040 ***	-0.001	-0.090 ***	-0.015
Years non-carer	0.000	0.007 ***	0.005 *	0.002	0.002	-0.006 ***	0.001	0.000	0.003 *
Person in household receives NDIS	-0.073	-0.032	-0.212 **	-0.047	-0.037	-0.250 ***	0.030	-0.040	-0.030
Years person in household receives NDIS	-0.002	0.109 ***	0.002	0.041	0.055 *	0.066	0.003	0.028	-0.017

Notes

*** p<0.01, ** p<0.05, * p<0.1

E.5.3 Controlling for the impact of COVID-19 on satisfaction

The COVID-19 pandemic coincided with the biggest uptake years of NDIS participation. We expect COVID-19 to impact satisfaction results as the COVID-19 period consisted of heavy restrictions on personal movement, significant employment declines, large government stimulus and greater concerns of personal health.

We introduced a series of controls for our modelling to moderate the effect of covid and isolate impacts of NDIS.

For all satisfaction except financial situation we included controls based on the following COVID-19 specific questions:

- Compared with your life before the coronavirus crisis, would you say your relationship with your partner 'improved a lot', 'improved a little', 'stayed about the same', 'worsened a little', or 'worsened a lot'?
- How much has your life changed because of the coronavirus crisis and has that change because of the coronavirus crisis been for better, worse or neither better nor worse?
- As a result of the coronavirus crisis, started or increased the amount of time spent, working from home?

For the financial situation model we controls based on the following COVID-19 specific questions:

- Received Economic Support Payment
- Personally received or employer claimed on your behalf, any JobKeeper payments
- Received COVID-19 pensions/assistance
- As a result of the coronavirus crisis, started or increased the amount of time spent, working from home?

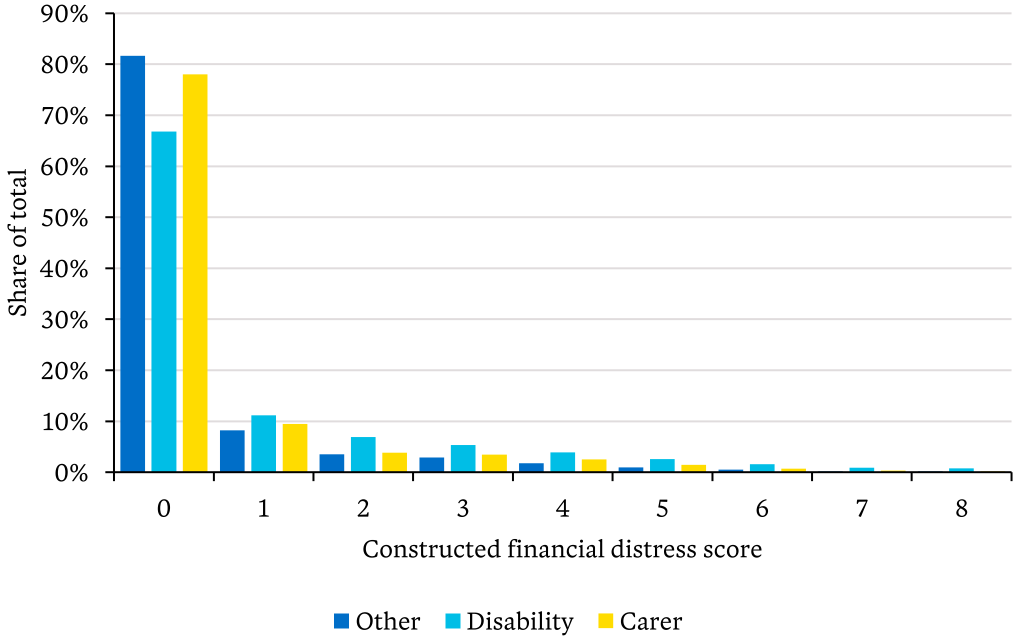
E.6 Financial distress

HILDA reports a series of questions focused on indicators of financial distress. The questions are structured as 'Since January [year] did any of the following happen to you because of a shortage of money?

- Could not pay electricity, gas or telephone bills on time
- Asked for financial help from friends or family
- Could not pay the mortgage or rent on time
- Pawned or sold something
- Was unable to heat home
- Went without meals
- Asked for help from welfare/community organisations.

We proxy each answer as a contributor to being in financial distress and then sum all responses such that answering yes to more of these questions results in a higher score for this constructed financial distress variable. Figure E.9 shows the distribution of financial distress scores for people with disability, carers and others. People with disability are 15 percentage points less likely to score zero for financial distress and are the most likely for all other scores. Carers are also less likely to score zero than others by 4 percentage points.

Figure E.9 – Constructed financial distress score for people with disability, carers and others



The average score (the number of areas where a person has struggled financially) is 0.92 for people with disability, 0.53 for carers and 0.42 for other people in the survey. We estimate the impact of the NDIS on financial distress using a linear regression with fixed effects. We find that each year a participant receives NDIS supports there is a statistically significant reduction in the constructed financial distress score of 0.093 points. When the person being cared for receives NDIS support, the carer experiences a 0.116 reduction in constructed financial distress. This corresponds to a 20% reduction in the gap for people with disability and virtually all the gap for carers. These results add additional evidence to the impact of NDIS support on satisfaction with financial situation and life satisfaction[66].

Table E.4 – Constructed financial distress regression output

Financial distress	**Coefficient**	**Standard error**	**t**	**P>t**	**Lower bound (95% CI)**	**Upper bound (95% CI)**
Age	0.178	0.012	14.880	0.000	0.155	0.202
Age squared	-0.005	0.000	-14.220	0.000	-0.006	-0.005
Age cubed	0.000	0.000	12.500	0.000	0.000	0.000
Age quartic	0.000	0.000	-10.770	0.000	0.000	0.000
Female	2.300	0.030	76.350	0.000	2.241	2.359
Disability & age	-0.005	0.001	-5.150	0.000	-0.006	-0.003
Disability	0.318	0.045	7.040	0.000	0.230	0.407
Years disabled	-0.001	0.001	-0.680	0.496	-0.002	0.001
NDIS	**-0.033**	**0.089**	**-0.370**	**0.711**	**-0.208**	**0.142**
Years NDIS	**-0.093**	**0.038**	**-2.450**	**0.014**	**-0.168**	**-0.019**
Carer	0.066	0.026	2.560	0.010	0.015	0.116

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[66] Regressing the constructed financial distress variable and satisfaction with financial situation and life satisfaction yields a statistically significant (P>0.000) correlation.

Financial distress	Coefficient	Standard error	t	P>t	Lower bound (95% CI)	Upper bound (95% CI)
Years Carer	-0.014	0.003	-4.020	0.000	-0.020	-0.007
Carer NDIS	**-0.116**	**0.063**	**-1.840**	**0.066**	**-0.239**	**0.008**
Years carer NDIS	**-0.019**	**0.032**	**-0.600**	**0.547**	**-0.083**	**0.044**
Non-carer	0.014	0.008	1.920	0.055	0.000	0.029
Years non-carer	0.000	0.001	-0.340	0.735	-0.003	0.002
Non-carer NDIS	**-0.072**	**0.053**	**-1.360**	**0.172**	**-0.176**	**0.032**
Years non-carer NDIS	**0.006**	**0.027**	**0.210**	**0.831**	**-0.047**	**0.059**
Employed full-time	-0.332	0.018	-18.430	0.000	-0.367	-0.297
Employed part-time & wants more hours	-0.105	0.021	-5.080	0.000	-0.145	-0.064
Employed part-time & doesn't want more hours	-0.212	0.017	-12.650	0.000	-0.245	-0.179
Not in labour force voluntarily	-0.192	0.017	-11.130	0.000	-0.226	-0.159
Not in labour force involuntarily	-0.107	0.019	-5.570	0.000	-0.145	-0.069
Works more than 40 hours per week	0.012	0.008	1.540	0.124	-0.003	0.028
Married	-0.197	0.029	-6.860	0.000	-0.253	-0.141
De facto	-0.110	0.025	-4.430	0.000	-0.159	-0.061
Separated	0.054	0.040	1.330	0.184	-0.025	0.133
Divorced	0.018	0.040	0.450	0.649	-0.061	0.098
Widowed	-0.165	0.035	-4.700	0.000	-0.233	-0.096
Single	-0.203	0.029	-7.050	0.000	-0.260	-0.147
Child under 15 years	0.005	0.005	1.050	0.296	-0.005	0.016
Log household income	-0.123	0.006	-22.180	0.000	-0.134	-0.112
Owns house currently residing in	-0.086	0.011	-7.880	0.000	-0.107	-0.065
Renting from government accommodation currently residing in	-0.034	0.041	-0.830	0.409	-0.114	0.046
Renting privately accommodation currently residing in	0.018	0.014	1.240	0.216	-0.010	0.045
Socio-disadvantage decile	-0.001	0.002	-0.660	0.508	-0.006	0.003
Member of club	-0.018	0.006	-3.120	0.002	-0.030	-0.007
Living in a capital city	0.043	0.018	2.330	0.020	0.007	0.079
Negative life event within 12 months	0.095	0.005	20.890	0.000	0.086	0.103
Positive life event within 12 months	-0.035	0.007	-5.020	0.000	-0.049	-0.022
Covid support payment	-0.041	0.015	-2.840	0.005	-0.070	-0.013
Received JobKeeper	0.026	0.025	1.050	0.292	-0.023	0.075
Covid pension/allowance payment	0.009	0.069	0.140	0.891	-0.125	0.144
Worked more from home during COVID	0.037	0.044	0.840	0.403	-0.050	0.124

Financial distress	Coefficient	Standard error	t	P>t	Lower bound (95% CI)	Upper bound (95% CI)
Constant	-0.692	0.154	-4.480	0.000	-0.994	-0.389

E.7 Employment impacts

Carers for people with disability may have to reduce their employment partially or all together to uptake caring duties. The impact on disability on carers was noted in the Productivity Commission Disability Care and Support report (PC 2011), which found that of the 220,000 primary carers of people who would be eligible for the NDIS, around 15,000 reported that they had left work because alternative disability supports were not available or too costly, or because they could not change their working arrangements to be compatible with a carer's role. The Productivity Commission conservatively estimated that approximately 50 per cent would return to work if NDIS support was made available to them, which represents 3.4 per cent of the carer population.

Table E.5 shows the labour force status of working age people who are carers and not carers. Carers are almost half as likely to be full-time employment and almost three times as likely to be voluntarily not in the labour force.

Table E.5 – Labour force status of working age people who are carers and not carers

	Not a carer*	Carer
Full-time	51%	27%
Part-time	24%	23%
Unemployed - health	1%	1%
Unemployed - other	4%	4%
NLF – health	2%	4%
NLF - non-health	5%	11%
NLF - other	2%	2%
NLF - voluntary	12%	29%

Note

*Not carers are distinct from non-carers as they are the population who are not coded as a carer, whereas non-carers are household members of someone with disability.

We ran an ordered logistic model which predicts the likelihood of being in certain employment circumstances, controlling for multiple confounding variables. The results of the model are shown in Table E.6. We find a statistically significant positive result on part time work for carers where the person being cared for receives NDIS support. The adjusted risk difference (ARD) is 3 per cent for 1 year receiving NDIS support, which means that where the person being cared for receives NDIS support the carer is 3 percentage points more likely to be in part time employment. This impact increases with the years receiving NDIS support, increasing to 11 percentage points after 4 years.

We also find reductions in the likelihood of being not in the labour force due to health or other reasons and being unemployed due to health or other reasons. This result is statistically significant for both the linear and log (non-linear) significance tests[67]. We expect that the increase in part time employment is drawn from people who from these categories, i.e. people are increasing the hours they work.

Table E.6 – Employment impact for carers based on the years the person being cared receives NDIS support

		0-1 years	**0-2 years**	**0-3 years**	**0-4 years**
Not in labour force - involuntary due to health	ARR	-14%	-28%	-40%	-51%
	ARD	-1%	-1%	-2%	-2%
	Significance	0.19	0.13	0.09	0.05
	Log Significance	0.22	0.20	0.18	0.17
Not in labour force - other	ARR	-27%	-47%	-62%	-73%
	ARD	0%	-1%	-1%	-1%
	Significance	0.16	0.09	0.04	0.01
	Log Significance	0.22	0.21	0.20	0.19
Part time employment	ARR	12%	23%	35%	47%
	ARD	3%	5%	8%	11%
	Significance	0.00	0.01	0.01	0.01
	Log Significance	0.00	0.00	0.00	0.00
Unemployed - health	ARR	-59%	-83%	-93%	-97%
	ARD	-1%	-1%	-1%	-1%
	Significance	0.00	0.00	0.00	0.00
	Log Significance	0.04	0.04	0.04	0.04
Unemployed - other	ARR	-20%	-38%	-51%	-63%
	ARD	-1%	-1%	-2%	-2%
	Significance	0.06	0.03	0.01	0.00
	Log Significance	0.09	0.09	0.08	0.08

Note: ARR = Adjusted Risk Ratio, ARD = Adjusted Risk Difference

E.8 Earnings

Carers may to work more hours or re-enter the workforce when the provide care to someone who starts receiving NDIS support. We tested whether there was an observable increase in earning per hour for carers as well as for people receiving NDIS support using a linear regression model with fixed effects. We did not find any statistically significant results for carers or the person with disability. This suggests that carers are not more productive when they re-enter the workforce. The heterogeneity of disabilities means it is difficult to abstract wage changes for people with disability as there are various factors which impact productivity, such as limits of the disability and supports available at the workplace. Therefore we believe there is no conclusive result with regards the impact on wages per hour for people with disability.

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[67] The significance tests determine whether the changes in the outcome are likely due to chance or not

E.9 Hours worked for carers

Carers may increase their employment by working more hours when the person being cared for receives NDIS support. We estimated a logistic regression model that predicts whether an employed person reports they work part-time and want more hours. We use the same set of controls as in the labour forces status modelling above. We find that there was no statistically significant impact of receiving NDIS support on carers wanting more hours.

E.10 Educational outcomes for children

NDIS participation from children would be expected to improve school related outcomes for the children as they are able to access greater supports to assist in their education. The HILDA dataset has limited coverage of children’s school related outcomes, with responses only provided by parents.

For our analysis, we rely on a set of questions directed at parents about their children’s outcomes at school, as follows:

- To the best of your knowledge, in the last 12 months, has this child been bullied at school?
- To the best of your knowledge, in the last 12 months, has this child been bullied online?
- In the last 12 months, has your child's school contacted someone in this household because this child has behaved poorly at school?
- How would you describe your child's overall achievement at school in [year]?
- Do you think that this child will go on to university when they finish their schooling or at some time in the future?

We ran logistic and ordered logistic regressions for each of these questions and did not find a statistically significant impact for students receiving NDIS support. These questions were only asked in waves 12, 16 and 20, which restricts the regression to the relatively small sample of a single wave (wave 20) that captures the impacts of the NDIS. For child outcomes, our finding is inconclusive, as opposed to the result being zero.

E.11 Detailed statistical model output – satisfaction measures

Refer to the spreadsheet ‘Appendix E HILDA coefficient tables.xlsx’ for detailed regression model outputs. Tables E.7 to E.15 contain coefficient estimates and results as follows:

- Table E.7 –Life satisfaction regression output
- Table E.8 – Financial situation regression output
- Table E.9 – Safety regression output
- Table E.10 – Free time regression output
- Table E.11 – Neighbourhood where you live regression output
- Table E.12 – Home where you live regression output
- Table E.13 – Health regression output
- Table E.14 – Local community regression output
- Table E.15 – Employment opportunities regression output

Appendix F Further background for future measurement framework

F.1 Upcoming redevelopment of the outcomes framework by NDIA

To form our view on a future measurement framework, we consulted with stakeholders, including the NDIA. We discussed the outcomes framework with the NDIA. We understand that many of the limitations are already recognised and there is a current workplan to enhance the outcomes framework ('Outcomes 2.0').

We recognise that this process will likely supersede any proposed framework in our report – it will have the benefit of more time and greater engagement with people with disability and other stakeholders. In proposing outcomes in this report we aim to reflect:

- Our observations on what would be useful in a future outcomes framework, which the NDIA may want to consider.
- Our views on which outcomes are most relevant to the estimation of benefits (and indeed, how they can be brought together in our estimation).

F.2 The Australian Disability Strategy Outcomes Framework

F.2.1 Obligations and governance under the ADS

In terms of obligations under the ADS:

- The strategy affirms existing roles and responsibilities of governments, including who has *primary* responsibility for delivery of a system. For example, the Commonwealth has responsibility for income support payments while state and territory governments have responsibility for public hospitals, public schools and public housing while local governments have responsibility for local parks. Each layer of government needs to act to deliver the strategy and would need to contribute to regular reporting so progress can be tracked.
- Major decisions on the Strategy are approved by a disability ministers forum across all Commonwealth, state and territory jurisdictions. Ministers are supported by their own government departments with responsibility for disability matters in their jurisdiction. An advisory council provides advice, which includes reflecting views form their engagement with people with disability.
- Governments have committed to improved reporting under the strategy. This includes
  - Outcomes reporting under the outcomes framework
  - Reports related to action plans, implementation and evaluation.
- The strategy includes a commitment to data improvement and building the evidence base through research and evaluation.
- Additional action plans will be agreed over the life of the strategy.

F.3 The estimation of economic costs for violence, abuse, neglect and exploitation of people with disability, Disability Royal Commission

Our research report for the Disability Royal Commission (Vincent et al., 2022) included an outcomes framework as a reporting and modelling structure. We note:

- One feature is that the outcomes were developed with an explicit focus on measuring benefits[68]. This is obviously not strictly necessary – many outcomes are important even without a direct link to economic impact. But the focus is relevant to people interested in NDIS benefits.
- Compared to NDIS and ADS frameworks, it included some specific outcomes that may be relevant:
  - It placed more emphasis on premature death and systemic factors leading to poor health; improvements in mortality and morbidity have standard ways of ascribing value.
  - It estimated absentee rates from work – if NDIS supports and more inclusive workplaces decrease absenteeism, this similarly can be quantified.
  - It included some additional social outcomes including homelessness, justice and interactions with the child protection system (both for children with disability and the children of parents with disability). In all cases material costs can be affected by the presence (or absence of suitable supports. Similar outcomes are found in the Closing the Gap framework.

F.4 Observations on other Australian frameworks

We note a range of other surveys or frameworks that cover similar areas of domains and indicators. We list them here with limited comment. Most were considered in the development of both the existing NDIS and ADS approaches.

Table F.1 – Relevant Australian surveys that have questions that could be used as indicators

Survey or framework	**Description**	**Comment**
Survey of Disability, Ageing and Carers (SDAC), ABS	Probably the best estimate of broader population disability rates and related outcomes	Increased frequency would have significant value Some limitations in coverage and scope (e.g. remote communities,
Personal Safety Survey, ABS	Population wide survey allowing gaps to be measured for various measures related to safety and experience of violence and abuse	Disability-specific results can be extracted and are used in the ADS
General Social Survey (GSS), ABS	A key set of wellbeing measures, which can be split by disability status	
National Health Survey	Focuses on the health status of Australians and health-related aspects of their lifestyles. Results can be split by disability status	Two measures included in the ADS
Household, Income and Labour Dynamics in Australia (HILDA)	Broad-ranging survey than enables both longitudinal and	Sample size makes detailed inferences on disability sub-cohorts less feasible.

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[68] In the context of the Royal Commission, we actually expressed estimates as costs rather than benefits, since we were looking at the negative impacts of maltreatment on outcomes. The logic applies equally well to benefits of improved outcomes.

Survey or framework	Description	Comment
	household views on a wide range of topics.	Definition of disability not fully consistent with ABS definition.

Table F.2 – Relevant Australian frameworks that make use of outcomes/indicators

Framework	Description	Comment
Closing the Gap (CTG)	Closing the Gap represents a joint governmental effort to implement the National Agreement. Under the agreement, Aboriginal and Torres Strait Islander people and governments to work together to overcome the inequality experienced by Aboriginal and Torres Strait Islander people, and achieve life outcomes equal to all Australians. Productivity Commission maintains a dashboard of 4 priority targets, plus 17 socio-economic targets	The number of targets is significantly smaller than the ADS, reflecting an initial prioritisation. All socio-economic targets have analogues in ADS measures, with the exception of home overcrowding.
Measuring What Matters, Treasury[69]	Framework for measuring societal progress, with OEDC wellbeing framework as a starting point.	Resources include comparisons to other international approaches.
NSW Human Services Outcomes Framework	Outlines the population outcomes that the NSW Government is seeking to achieve in the delivery of human services	Domains align well to ADS. The number of indicators is much smaller compared to ADS.

F.5 Comparable international frameworks

Table F.3 – Relevant international frameworks that make use of outcomes/indicators

Framework	Description	Comment
US: National Core Indicators	Measuring wellbeing through a variety of surveys, with a view to improve practice at the state and federal levels, as well as shape policy	
Ireland Outcomes for Disability Services	Outcomes measurement for deliver of person-centred disability services	Relatively sophisticated framework. The 2016 background paper (NDA, 2016) includes international

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[69] https://treasury.gov.au/consultation/measuring-what-matters-2022, which includes a link to a relevant chapter 4 in the October 2022-23 Budget Statement

Framework	Description	Comment
		comparisons and is due for an update soon.
Canadian Index of wellbeing	Broader range of wellbeing indicators	Includes some indicators not found elsewhere, such as time use
Canadian Occupational Performance Measure	Framework used by occupational therapists to measure outcomes for clients, examining different areas of life such as self-care, leisure and productivity. It is designed to be tailored to the individual client.	A stakeholder suggested this could be adapted for use in the NDIS to measure outcomes linked to capacity- building or capital investment spend
UK: Adult Social Care Outcomes Toolkit	Framework used to measures outcomes in social care within the UK. Measure accounts for the priority of goals and the degree of difficulty tailored for the individual client	A stakeholder suggested this could be adapted for use in the NDIS to measure outcomes linked to capacity- building or capital investment spend

F.6 Intersections of framework and governance

There are important considerations around how governance and accountability intersect with a framework. Much is outside the scope of our work, but we note here:

- Both the NDIS and ADS frameworks (and by extension our proposed framework) are broad. This is appropriate, recognising that NDIS supports will have far-reaching impacts for participants and their carers. However, it also introduces overlaps in accountability. If NDIS supports help a child prepare and attend school, an outcome around attainment will also depend on appropriate in-school supports, not an NDIS responsibility. This emphasises the value of a framework that spans across jurisdictions, like the ADS.
- Benefits and costs accrue in different sectors. For example, improved financial security may reduce remand for state-run housing and homelessness programs
- How the scheme interfaces with mainstream services is crucial to improved outcomes – much of this will depend on issues of design and governance.

F.7 Examples of outcomes investing approaches in Australia

One possible direction of the ‘investments’ part of the framework of Section 7.3 is structuring payments so they more directly tie to outcomes. While there are many challenges with good implementation (see Section 7.5.4), we provide some examples of where this approach has been applied.

F.7.1 Social Impact Bonds

Social Impact Bonds (and to some extent Payment by Outcome programs) use the rigour of tying investment returns to program effectiveness.

All Australian State and Territories have experimented with some form of social impact bonds. Current examples include:

- Newpin Social Benefit Bond (SBB) commenced in 2013 and provides upfront private funding to service providers to deliver improved social outcomes, in this case restoration outcomes for families. If outcomes are delivered, cost savings to government are used to pay back the upfront funding as well as provide a return on that investment (Urbis, 2014).
- Resilient Families SBB also commenced in 2013, funding the Resilient Families program through a partnership with the NSW Government, The Benevolent Society, the Commonwealth Bank of Australia, and Westpac Institutional Bank. The 2018 evaluation of the program showed positive results of families being supported to stay together, and lower rates of out-of-home care, reduced Helpline Reports from six months after entry to the services, and a reduced number of safety and risk assessments. Outcome measurements were taken throughout the investment and compared to an independently certified control group. It delivered a 6% return on investment to capital-protected investors, and 10.5% to capital-exposed investors. In 2021 the SSB was replaced by a Human Services Agreement (OSII, 2017).
- Foyer Central, which provides targeted housing options to prevent homelessness or chronic homelessness for high-risk groups, is currently delivered through an outcomes-based contract between Uniting and the NSW Government, which provides upfront capital to fund the Foyer Central Program. Outcomes payments from the NSW Government to Uniting NSW.ACT and investor returns are linked to performance on ‘successful outcomes’, where a participant achieves nine months of independent housing, sustained income and/or educational engagement during the 12 months following their exit from the program (EY, 2022).

Performance payments require contract negotiations between a provider and funder to select the most relevant outcome(s) for triggering performance payments for that provider.

The two major design forms include:

- **Outcomes funding**, with payments predicated on a client or participant achieving an agreed outcome, paid in arrears. Outcomes might be based on achieving a health or social outcome, or a change in behaviour.
- **Performance-based funding**, with payments conditional on performance targets, often additional to core funding. Performance based payments are where providers receive an income source directly linked to the achievement of certain process or operational measures, such as the proportion of clients or participants that successfully complete a care episode.

Generally, data informing outcome funding measures are collected post an episode of care (such as client experience), while performance-based measures are collected during an episode of care (such as successful completion of an episode of care).

An outcomes investment model would mean that at least some provider funding would be dependent on achieving set KPIs, and the NDIA would use the KPIs to inform future funding.

F.7.2 Payment by outcomes

Payment by outcome programs pay providers for outcomes achieved rather than a service basis. Incentive fee structures may be incorporated with bonus or penalty fees awarded for superior or inferior performance against a target or benchmark.

The largest government-funded payment-by-outcome programs in Australia are employment services – Workforce Australia and the Disability Employment Service. While some payments are still provided for service provided, significant money is reserved for outcomes – typically sustained employment over a period of weeks. For example, largest outcomes under the Disability Employment Service relate to people who find and sustain jobs for 26 weeks.

F.7.3 The investment approach

Many social sector areas in Australia and New Zealand have begun an investment approach to government spending. These are typically characterised by a long-term liability estimate that is then 'managed', but tracking how it moves with policy intervention. In its best form, it provides the evidence that upfront investments in people generate long-term benefits. The approach has been applied to welfare, child protection, justice, veterans' affairs, social housing. They are often supported by long-term projection models that estimate long-term cost and the change over time attributed to policy, operations and other factors.

F.7.3.1 The Australian Priority Investment Approach to Welfare

The 2015 Review of Australia's welfare system (DSS, 2015) recommended that an investment approach be adopted aimed at reducing future liability associated with the welfare system by investing in those groups of people with the largest future lifetime costs, and the capacity to move to self-reliance. This approach had already been introduced in New Zealand with a focus on investment in evidence-based services to get people into jobs.

The approach relies upon an actuarial valuation to estimate lifetime costs of the income support system, with annual revaluations. The change in the long-term financial liability of the income support system between revaluations can be used as a measure of the return on investment from investments. The approach was also recommended to feature:

- evidence-based interventions and locally-designed services,
- a flexible funding pool with ability to substitute funding from those with poor outcomes towards new programs,
- ongoing monitoring of service outcomes to contribute to evaluations and revaluations, and
- rigorous evaluation of services to ensure outcomes for individuals are met.

The 2015 Review states that targeted investments aimed at achieving a return on investment will also improve the lives of people at risk of long-term income support reliance and improve the long-term fiscal and social sustainability of the social support system.

Since implementation, the Australian Priority Investment Approach has resulted in release of a baseline valuation report in 2016, and subsequent valuations between 2016-2022.

The valuation process of the Australian Priority Investment Approach implicitly establishes the long-term financial liability of the income support system as the key measure of outcomes. The annual valuation reports do not include measures of individual non-financial outcomes. The Approach is intended to achieve non-financial outcomes as a consequence of reducing long term income support reliance and through increasing employment, which has associated wellbeing, health and social benefits for the individual.

When launched, the approach was coupled with the Try, Test and Learn fund, which offered grants to people trailing programs with target cohorts identified as at risk of long-term welfare receipt. Evidence from the trials have informed ongoing program funding and design.

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