Actuaries Institute

Not a level playing field

Exploring issues of inequality

GREEN PAPER
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About this paper

This Green paper was commissioned by the Actuaries Institute and was prepared by actuaries Hugh Miller and Laura Dixie.

We would like to thank the people who generously contributed to this project. The reference group of Anthony Lowe, Peter Martin, Kristen Sobeck and Hazel Bateman provided valuable feedback and oversight throughout the project. Vanessa Beenders and Elayne Grace similarly offered helpful advice throughout. Sharanjit Paddam and Calise Liu assisted in tailoring data for insurance affordability measures. Thanks too goes to the staff and interns at Taylor Fry who contributed to this project – Libby Finch, Matthew Winfred, Michelle Xie and Henry Xiong.

This paper uses unit record data from Household, Income and Labour Dynamics in Australia Survey, HILDA. HILDA is conducted by the Australian Government Department of Social Services (DSS). The findings and views reported in this paper, however, are those of the author[s] and should not be attributed to the Australian Government, DSS, or any of DSS' contractors or partners. DOI: 10.26193/KXNEBO

Our Public Policy principles can be viewed here.

The Actuaries Institute acknowledges the traditional custodians of the lands and waters where we live and work, travel and trade. We pay our respect to the members of those communities, Elders past and present, and recognise and celebrate their continuing custodianship and culture.

Contents

1 Executive summary

Given the difficult economic conditions we are faced with, Australia should brace itself for the inequality gap to increase even further.

Elayne Grace, CEO, Actuaries Institute

In recent years, inequality has become a prominent topic in both academic policy debates and popular media. 'We are the 99%' is now a political slogan and books on inequality can turn otherwise niche academics into rockstars. A full 80% of people in the Organisation for Economic Co-operation and Development (OECD), and 70% within Australia, feel income disparities are too large in their country. Political leaders appear to be listening; for example, Treasurer Jim Chalmers states his objective is "growth that puts equality and equal opportunity at the centre. This is not only fair, it's good economic policy."

It is timely for actuaries to explore this topic given its relevance to many fields in which actuaries work, and to distil and analyse the available data to inform long-term policy thinking. This Green Paper explores the drivers and broader implications of inequality, as well as discernible long-term trends. It does this by drawing on the (vast) existing literature and through new analysis of Australian survey data. Importantly, it builds on the established work of the Australian Actuaries Intergenerational Equity Index and the investment valuation work actuaries pioneered for Federal and State governments.

Many external factors also make this a timely contribution. In light of the COVID-19 pandemic, there is renewed appreciation for the role of effective government and a willingness by government to use a wellbeing framework to guide its decision making. But government must do so while also addressing near-term economic challenges, the long-term structural budget deficit and barriers to improving productivity. Many of these challenges point to a likely further widening in inequality. Taking a more holistic view of inequality, as presented in this paper, can help find the path forward to begin difficult conversations and make tough decisions that ultimately improve the long-term sustainability of society.

Some inequality is intrinsic to almost any society. However, the level of inequality and its impacts can be managed.

Defining a 'good' extent to which government policy should intervene to reduce inequality is virtually impossible, but the discussion can be aided by considering different conceptual ideas of equality. While *equality of outcomes*, where people see similar levels of wealth and wellbeing, has an intuitive appeal, this is not the reality for capitalist, liberal countries. Encouraging innovation, competition and individual choice leads to differences in income and wealth, even with a significant amount of redistribution through the tax and transfer system.

Equality of opportunity is a different concept, focusing on giving people similar opportunities to flourish. This is closer to many people's concept of 'a fair go', and the Australian Treasury's Wellbeing Framework, which has a goal that "all Australians have the opportunity to lead a fulfilling life and participate meaningfully in society".

Equality of opportunity is also tricky to define and achieve. Outcomes still matter, and Australia has many public supports and safety nets to protect those less fortunate. For those who seek equality of opportunity, evidence points to significant barriers. As Glyn Davis, Secretary of the Department of

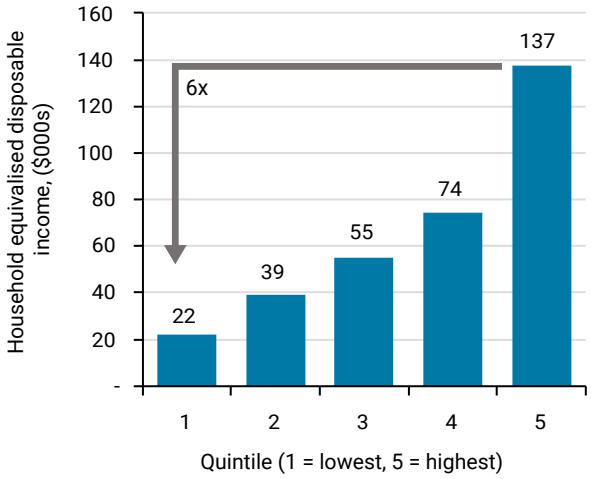
Prime Minister and Cabinet, articulates in his recent essay that circumstances at birth still have a massive impact on a person's life course; it is hard to argue that the 700,000 Australian children living below the poverty line have an equal opportunity to flourish compared to other children. Actuarial modelling finds that cohorts of vulnerable children currently aged 0-5 are four times more likely to have a child who will enter out-of-home care, decades into the future.

Despite some recent stability, inequality is significantly higher now than in the 1980s. There is strong evidence of current upward pressures that will lead to greater future inequality, unless policy action is taken.

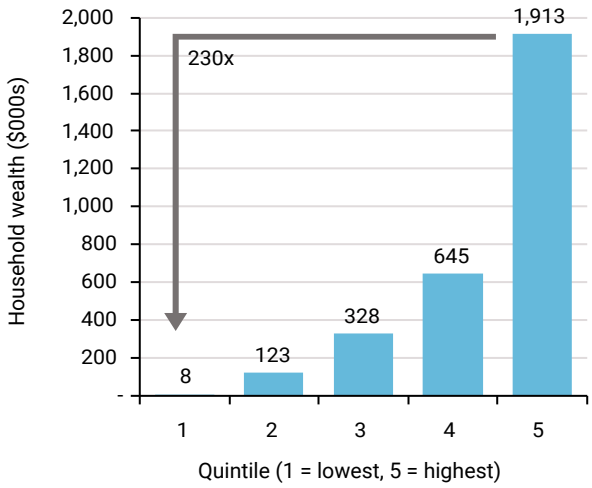
Australia's levels of income inequality (disparities in income to households or individuals) have remained fairly stable over the past decade, while wealth inequality has crept higher. Wealth inequality is also much larger than income inequality; while the top 20%, or quintile, of households by income have six times the income of the lowest quintile, the same ratio is 230 times when examining net assets.

Figure 1 – Household income and wealth distributions, all ages

Equivalised disposable income (2021)



Net wealth (2018)



Source: HILDA

Australia's income inequalities are midrange by international standards – many developed countries have greater inequalities, but others significantly lower.

Rates of inequality have also changed over time – for instance, income inequality now sits much higher than past periods, such as the early 1980s. There are also warning signs of pressures towards higher inequality. A falling share of labour income as a fraction of the total economy means that wages are no longer tightly tied to economic growth. Labour market changes such as increasing casualisation and gig work may contribute to widening of income distributions. Declining home ownership rates across the population will lead to larger differences later in life, including wealth accumulation and retirement outcomes.

A large portion of current inequalities can be tied to systemic factors. While large inequalities can be seen between different age groups, other demographic factors are very significant contributors.

Inequality is a multidimensional concept.

Frequently it is discussed in the context of intergenerational equity – the concept of fairness or justice between generations – and the importance this has for ensuring there is sustainable population of workers to support, financially and in many other ways too, the youngest and oldest non-tax paying generations. While some differences between age groups is proper, it is well established that intergenerational equity has been in decline in recent decades, as is shown by the Australian Actuaries Intergenerational Equity Index, for example, although possibly having stablised with temporary COVID-19 related government supports (Miller, et al., 2021 and 2020).

What is less well established are the trends in intragenerational equity – the concept of fairness within a society putting aside age factors. There are numerous drivers of intragenerational equity, including geographic (where a person lives), gender, First Nations background, ethnicity, disability, education and employment backgrounds.

Both inter and intragenerational equity are important to understand as they have different consequences for society and potential policy solutions.

This Green Paper seeks to establish a comprehensive and systemic approach to unpack inequality and these various drivers.

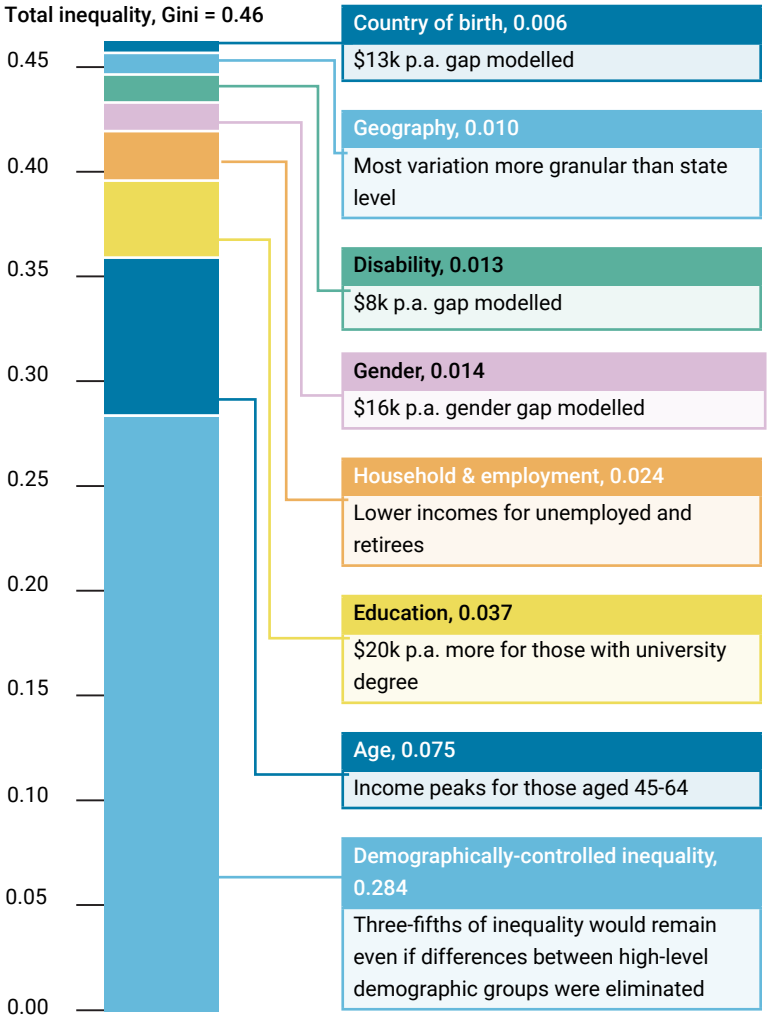
We have estimated individual-level income inequality using the Gini co-efficient (often referred to simply as the Gini), a widely used inequality statistic. We decomposed it using a set of high-level demographic factors. Two-fifths of income inequality can be tied to these factors, with the remainder reflecting income variability that would persist even if differences between demographic groups were eliminated.

Differences attributable to age, and so intergenerational factors, represent about one-sixth of current inequality as measured by the Gini.

Differences attributable to gender, disability, geography and cultural background[1] represent one-tenth of current inequality as measured by the Gini – this is a significant portion, since even small movements in the statistic represent considerable progress.

The decomposition did not include First Nations identification as a factor due to data limitations, but an abundance of evidence, including Closing the Gap monitoring, highlights systemic disadvantage for these communities too. First Nations people are twice as likely to be in the lowest income quintile and more than half of First Nations people are in the lowest wealth quintile. First Nations average household net wealth is less than half the national average.

Figure 2 – Contribution to income inequality of individual demographic factors



[1] For simplicity, the cultural background term in the modelling splits those born in (typically wealthier) English-speaking countries from others.

Existing economic inequalities translate into large differences in wealth and wellbeing in a broad range of areas.

We have selected a range of indicators drawn from a broad framework of wealth and wellbeing. Controlling for age, we see that differences in income correlate strongly with indicators across economic, housing, education, health, social and environmental domains.

Economic

Comparing top and bottom income quintiles, the lowest 20%

7x	Are more likely to be unemployed, or be underemployed
9x	Are more likely to be caring for someone ages, or with a long-term health condition or disability
-77%	Have significantly less net wealth
48%	Have a high fraction of their income from welfare (compared to 1%)
31%	Have a very high poverty rate (compared to 0%)

Housing

Comparing top and bottom income quintiles, the lowest 20%

34pp	Are less likely to own their home
4x	Are more likely to have recently been unable to pay their rent or mortgage costs

Education

Comparing top and bottom income quintiles, the lowest 20%

10pp	Are less likely to finish Year 12
20pp	Are less likely to use childcare
-20%	Have less access to child care places

Health

Comparing top and bottom income quintiles, the lowest 20%

1.3x	Are more likely to be obese
2x	Are more likely to die by suicide, after age-standardisation
2x	Are more likely to suffer psychological distress.
+50%	Have a higher rate of mortality, after age-standardisation

Environment

Comparing top and bottom income quintiles, the lowest 20%

=	Pay similar insurance loadings for natural disasters, **despite** lower sums insured
9x	Require many more weeks of income to afford a home insurance policy for a given sum insured

Social

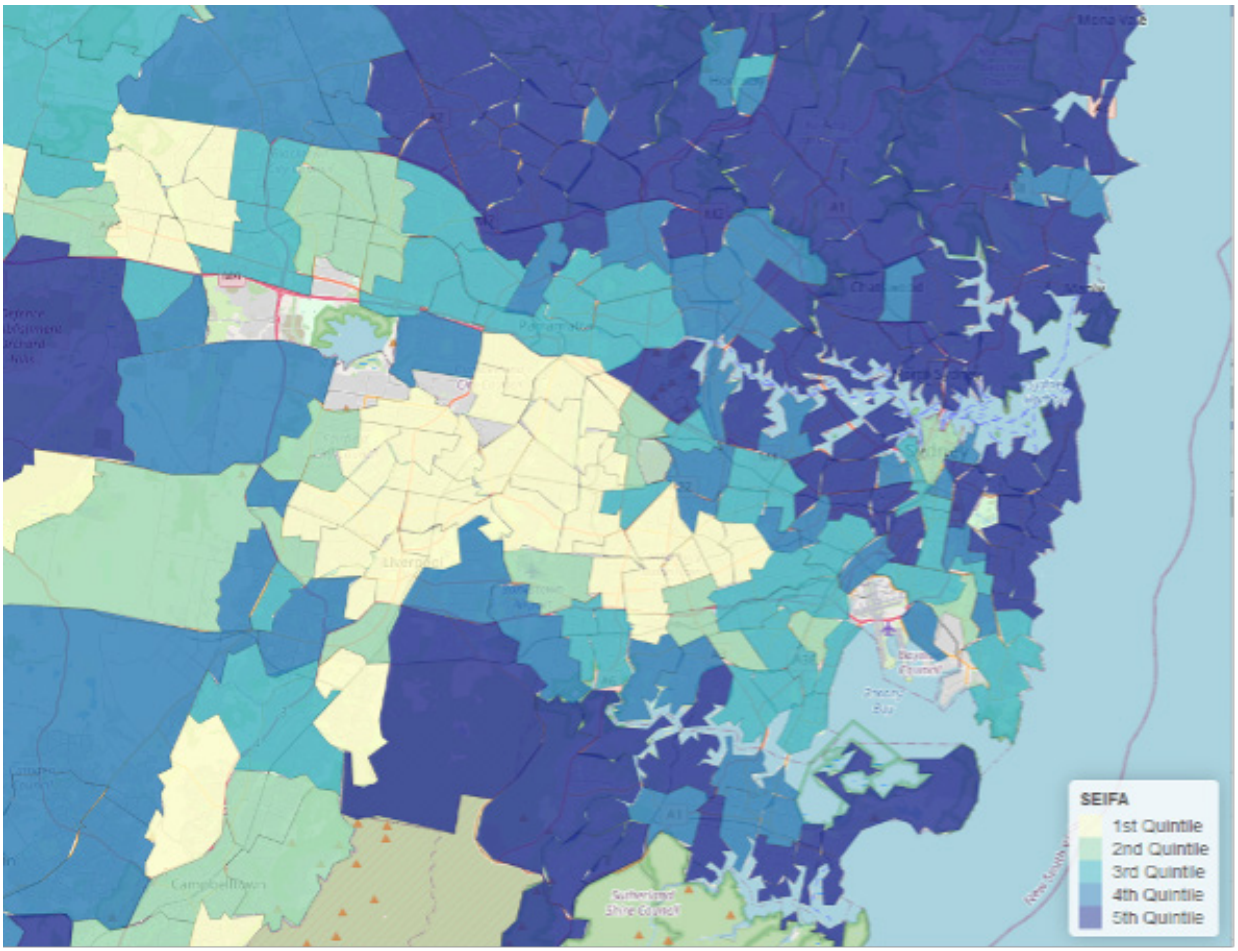
Comparing top and bottom income quintiles, the lowest 20%

3x	Are more likely to be a recent victim of violent crime
7x	Are more likely to experience homelessness
5x	Are more likely to have a child found at risk of harm by child protection services
13x	Are more likely to give birth while a teenager

Existing inequalities already have significant implications for social mobility and intergenerational effects.

Education is a driver of inequality, but we can see significantly poorer educational outcomes in disadvantaged communities. Likewise, child protection interactions and criminal offending and victimisation can be linked to socioeconomic disadvantage earlier in life. Geographic stratification means that lived experiences within the same city can be markedly different. Figure 3 illustrates such socioeconomic clustering for Sydney. Declining home ownership rates across the population will lead to larger differences later in life, including wealth accumulation and retirement outcomes. While identifying clean causal effects is tricky in some of these cases, the direction is clear.

Figure 3 – Geographic clustering of inequality: Sydney, shading by socioeconomic status quintile (SEIFA, 1 = most disadvantaged)



Source: ABS SEIFA 2016

Actuarial analysis of linked longitudinal datasets has also been used to understand intergenerational and intragenerational predictors of poor outcomes. For example, the Priority Investment Approach[2] model forecasts future welfare receipt for the Australian population. The modelling has highlighted the intergenerational transmissions of poor outcomes. Compared to children of parents with no welfare receipt, children of parents with extensive welfare receipt are around 40% less likely to complete Year 12, and around six times more likely to use income support as adults.

[2] Department of Social Services (2022).

Targeted solutions supporting improvements in equality are likely to generate even broader benefits and support significant gains in overall wellbeing.

In some cases, the targeted solutions are obvious – poverty rates can only be addressed by focusing on groups with lower incomes. This is true for other domains, too, although less widely understood. For example, reducing the rate of suicide deaths for the lowest quintile will have twice the impact than for the highest quintile, given the elevated rates.

The large correlations observed between different outcomes means that targeted assistance (financial or otherwise) may also generate benefits across different domains. While much is known, Australia needs to continue building the evidence base around the current state of inequality and disadvantage, plus what works to alleviate it. In this area, data linkage and longitudinal modelling offers vast potential. It is important that large programs and investments are subject to meaningful evaluation and measurement of impact.

Section 7.2 highlights a range of existing policy suggestions for addressing issues of inequality, several focusing on the tax and transfer system. It draws upon areas of actuarial expertise as well as a research paper commissioned by the Actuaries Institute and written by the Tax and Transfer Policy Institute at the Crawford School of Public Policy (Breunig and Sobeck, 2023) specifically exploring this topic and providing a further independent contribution to the debate. Changes across welfare, superannuation, taxation of other forms of wealth and insurance are amongst the many areas which can be used to address inequality issues.

The list is far from exhaustive. Its purpose is to be a stimulus to support the further extensive debate required about this important public policy topic.

More than ever, inequality needs to be a prominent consideration in setting policy direction.

2 Introduction

In this section

- Inequality is a front-of-mind concern for society and government.
- Inequality is multidimensional. We can explore both the trends and drivers of economic inequality, as well as the associated inequalities in a broader range of outcomes.

2.1 Background

An increasing focus on inequality

David Hope admits it was 'not the typical response' to one of his papers – in December 2020, he and fellow researcher Julian Limberg at the London School of Economics (LSE) published their work[3], which raced to 150,000 downloads (three orders of magnitude more than usual), making it the most downloaded paper in the LSE's entire collection. The paper gave empirical evidence on the impact of major tax cuts for the wealthy, taken over 50 years and 18 countries. It shows there was no strong evidence of broader economic benefits (faster GDP growth or reduced unemployment), but it did increase income inequality. The response on social media was swift, and polarising – the value of such tax cuts is a live political debate, including in Australia. But the intersection with inequality and fairness issues means the topic continues to be a sensitive one.

Soon after the paper was published, the UK Government, under short-lived Prime Minister Liz Truss, announced large tax cuts of the type analysed in the paper. Financial markets reacted swiftly and negatively, requiring emergency action by the Bank of England. Some of the reaction was undoubtedly due to inflation risks and the unfunded nature of the announcements, but perhaps market perceptions of the value of tax cuts are not what they once were?

More generally, people are increasingly concerned about the current levels of inequality – 80% of people in the OECD, and 70% within Australia, feel income disparities are too large in their country (OECD, 2021a). A recent Ipsos poll[4] showed **Australians think income inequality is the most serious inequality affecting Australia,** followed by inequalities between racial or ethnic groups, between more and less deprived areas, gender and generational.

Discussions around inequality, particularly economic inequality, have entered the mainstream in the past decade. The 'We are the 99%' movement, born of the 'Occupy' movement of 2011-12, reflected a perception that society was overly geared towards the needs of the super-rich. International bodies such as the OECD, United Nations, World Trade Organisation and the World Bank have all increased the attention paid to issues of equality. Economists such as Thomas Piketty have become household names for their work in the area. Treasurer Jim Chalmers, in his recent essay for The Monthly[5], states his objective for "growth that puts equality and equal opportunity at the centre. This is not only fair, it's good economic policy".

3 See Hope and Limberg (2020).

4 See IPSOS (2021).

5 See Chalmers (2023).

Part of the attention is due to a perception that inequality is worsening, and that a section of the population is being 'left behind'. If economic gains are not shared, then traditional measures of progress such as GDP are no longer effective in tracking collective wealth and wellbeing.

Research increasingly illuminates the issue of entrenched inequality, where higher income and wealth is tightly correlated to that of people's parents.

Another part of the story is the recognition of systemic issues that exacerbate inequalities between different groups. The gender pay gap remains stubbornly stable. People who have moved into cheaper areas on floodplains have seen the costs of natural disasters and spiralling insurance premiums. First Nations communities still see massive disparities across areas of income, justice, health and education. Recent Royal Commissions have explored issues faced by people with disability, in the aged care system, and those with mental health problems.

Research points to the consequences of inequality for populations

Researchers have been drawing attention to the impacts of inequality extending beyond economics, too. It potentially has a divisive impact on society – creating barriers to cohesive action against other societal challenges, such as climate change. We know the impact of bushfires and floods are more likely to be felt by those in lower socioeconomic groups, particularly in light of issues of under and non-insurance[6]. Such social stratification can potentially reduce support for collective action.

It is difficult to measure the direct and indirect impacts of inequality. The infeasibility of controlled experiments mean causal relationships are difficult to establish. But significant innovative work is being done, often using large longitudinal datasets to put numbers on some of these effects.

Inequality has been shown to suppress economic growth in developed countries. The impacts are also broader than just economic. Numerous studies have demonstrated that inequality causes poorer health and wellbeing and social outcomes. This spans physical health, mental health, drug abuse, educational attainment, imprisonment, obesity, social mobility, trust and community life, violence, teenage pregnancies, and child wellbeing. Indices formed from indicators of social wellbeing are negatively correlated to inequality (Wilkinson and Pickett, 2009).

Different studies have shown that economic inequality also affects behaviour (Payne, 2018). When inequality is higher we are less generous and make decisions with a short-term view. We can reasonably relate this to findings such as more unequal societies have higher crime rates.

Understanding inequality is complex and multidimensional

Understanding, articulating and responding to issues of inequality is not easy. Often, we lack data to conclude whether certain issues are getting better or worse. Some degree of inequality seems inevitable in capitalist economies, and it would be foolish to argue that over the past couple of centuries this has not delivered massive gains in wealth and wellbeing for populations as nations have grown richer.

Society also does not stand still; emerging trends will have implications for how we manage equality issues. **Climate change, technology and digitisation, and the evolving labour market mean that the challenges of today are not the same as 50, or even 20, years ago.**

Further, it is difficult to capture inequality on a single dimension. Economic measures are useful, but do not always translate to people's experiences across a range of domains.

Much of our report is exploratory, teasing out some of these issues in understanding the present.

6 See, Liu and Philip (2022), Rolfe, et al. (2020) and Booth, et al., (2022).

7 See Murray (2020).

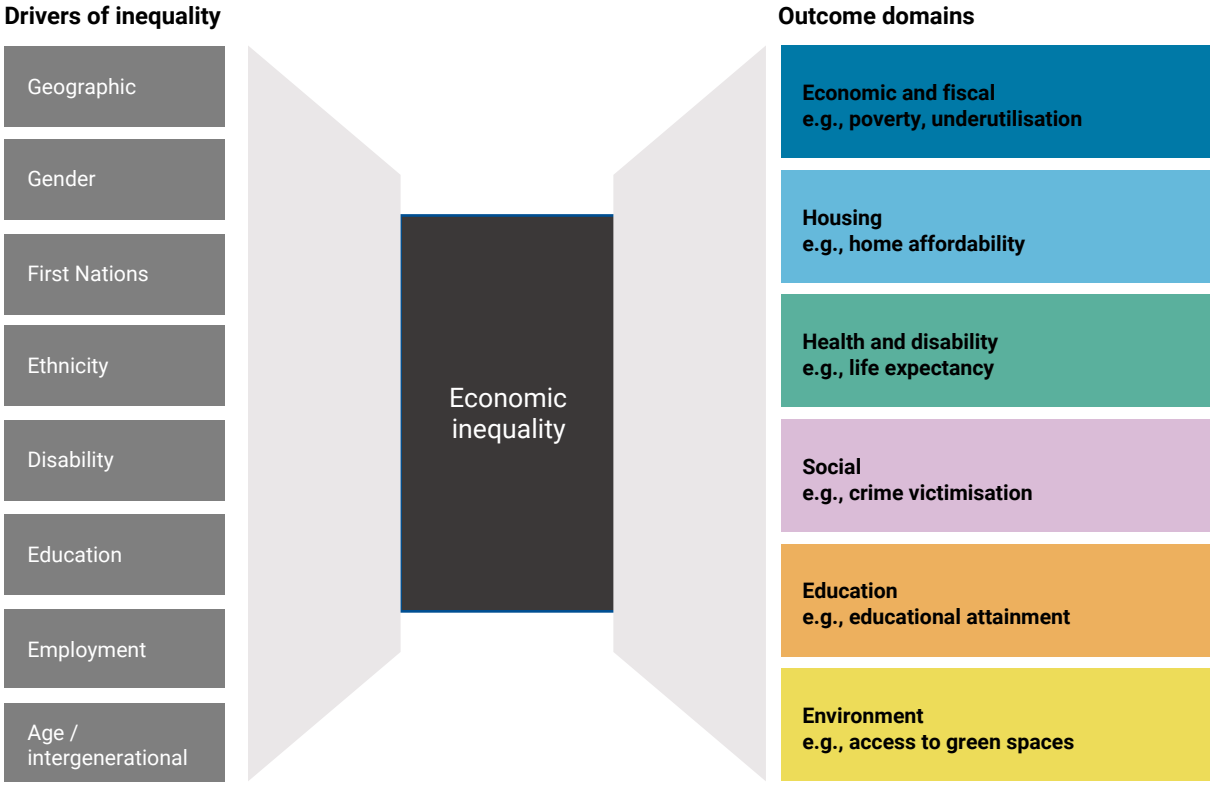
We explore the wide-ranging ways in which economic inequality exists and its effects.

2.2 What this paper achieves

We believe there is an opportunity to take stock and set the direction of thinking about inequality in Australia. This paper has three broad aims.

1. Summarise the **current state of inequality**, with a focus on income inequality. This includes examining recent research, with an Australian focus. It also includes using up-to-date data, where possible – we draw particularly on data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey[7], conducted by the Australian Government Department of Social Services.
   - Section 3 introduces concepts.
   - Section 4 explores economic inequality and main trends.
2. Explore the wide-ranging ways in which economic inequality exists and its effects across different **drivers** (e.g., geographic, gender, disability, First Nations status and age) and across different societal domains (housing, health, social, education and environment). This is important for understanding the distribution and broader impact of inequality.
   - Sections 5 focuses on drivers of income inequality.
   - Section 6 expands the discussion across societal domains.
3. Summarise **policy thinking and recommendations** tied to issues of inequality
   - Section 7. Acknowledging the vastness of this topic, potential policy solutions and stakeholders required to effect change for the nation, this Green Paper provides a limited contribution. Nonetheless, the Institute hopes it will facilitate a richer, well informed and objective discussion.

Figure 4 – Illustration of outcome domains and drivers of inequality explored in this Green Paper



7 See Murray, (2020).

2.3 Our framework for exploring inequality

To explore inequality we have used the framework shown in Figure 4. This consists of examining **outcomes across domains,** and looking at how groups are disproportionately impacted as drivers of inequality.

2.3.1 Outcome domains and indicators

Inequality is most often discussed as economic inequality – differences in income and wealth. These differences are important because of their impact on people's lives. Economic inequality translates to inequity across all the outcome domains, reflecting different aspects of wellbeing. Considering a range of indicators spanning the outcome domains provides a more holistic view. It also recognises that inequality cannot be immediately solved by actions in just one domain.

We identify and report on a range of indicators across six outcome domains (consistent with the Australian Actuaries Intergenerational Equity Index[8]). We have then looked at how the indicators correlate with equivalised household disposable income (a measure of economic inequality). The domains and indicators used are shown in Figure 5. This is by no means an exhaustive list of potential indicators – rather a tractable selection for which data is available and which can highlight the impact of inequality.

We use six outcome domains to assess inequality and how people's lives are impacted.

Figure 5 - Outcome domains and indicators used in this report

Economic	Poverty rate	Equivalised household disposable income below 50% of median
	Household net wealth, $000	Net household wealth
	Weighted underutilisation rate	Based on current labour force status, current hours and desired hours
	Welfare, fraction of total income	Weekly public transfers as a proportion of income
	Unpaid carer rate	Actively cares for household member due to long-term health condition, elderly, disability
Housing	Home ownership rate	Living in own home
	Housing affordability	Could not pay the mortgage or rent on time
Health & disability	Obesity rate	Body Mass Index (BMI) >30
	Rate of psychological distress	Kessler K10 score ≥20, likely to have mild mental disorder
	Suicide deaths	Age standardised rate per 100,000 based on SEIFA quintiles (ISRD)
	Mortality	Age standardised rate per 100,000 based on SEIFA quintiles (ISRD)
Social	Violent crime victimisation	In the past year was a victim of physical violence
	Homelessness rate	Based on IRSD deciles of SA1
	Child protection substantiations	Rate of children aged 0–12 with 1 or more substantiations, per 1,000. Based on IRSAD by postcode
	Teenage birth rate	Rate of live births to females aged 15-19, per 1,000. Based on IRSD
Education	Year 12 attainment rate	Relates to children in the household. Estimate based on potential population and using three groupings of IRSD deciles
	Early childcare use	Uses paid childcare (any of while undertaking paid work, non-work activities or not undertaking paid work)
	Access to childcare	Based on median number of childcare places per child by IRSD decile
Environment	Home insurance natural hazards risk relativity	Annual home insurance risk premium for natural hazards (bushfire, cyclone, earthquake, flood and storm)
	Home insurance affordability	Annual home insurance premium as a ratio of weekly gross household income

Notes: SEIFA = Socio-Economic Indexes for Areas, IRSD = Index of Relative Socio-economic Disadvantage and IRSAD = Index of Relative Socio-economic Advantage and Disadvantage, all relate to ABS region classifications.

8 See Miller, Meyricke and Dixie (2020).

The relationships between both income and the various indicators and within the indicators themselves are complex – not all outcomes are solely due to low income. For some people, low income may lead to poor housing, which in turn may turn lead to poor health outcomes. Conversely, for some people a health condition might mean suitable housing is much more expensive, which may lead to low disposable income.

We are not attempting to disentangle complex causal mechanisms. Rather, we seek to highlight the correlations and their importance.

Choice of indicators

There is a vast universe of potential indicators. In general, we have tried to balance:

- Using indicators that reflect broad, population-wide outcomes in the domain. For example, the rate of home ownership is relevant to most of the population, whereas access to housing suitably modified to accommodate a disability, while important, applies to a smaller portion of the population;
- indicators for which data is available, preferably the HILDA survey where we can carry out unit record analysis of subgroups and report on a consistent basis (e.g., consistent household income quintiles);
- limiting the number of indicators in a domain to a small number for tractability.

There is a degree of subjectivity in the final selection, and we preferred indicators that highlighted the rates of correlated disadvantage. Other potential candidates lacked data or interpretable trends.

We also anaylse how eight sociodemographic factors drive inequality.

Examples of interesting areas we do not have good indicators for include:

- **Technology** – Access to technology is potentially a leveller, providing improved access to information and services. General-purpose universal services such as the National Broadband Network should therefore reduce inequality. Conversely, poorer access can exacerbate inequalities, particularly when they are increasingly necessary. During COVID-19 lockdowns many schools switched to online learning, with varied experiences for lower-income and geographically remote households.
- **Access to transport** – Mobility is a key factor for economic and social integration. Transportation, especially public transport, provides a way for people who do not have access to private transport to access essential services, as well as employment, entertainment, and social activities. Transport systems are often characterised by large historical legacies, which can mean older, more established suburbs benefit from better infrastructure.

2.3.2 Drivers

There are significant differences in incomes and wealth for groups identified by factors such as geography, gender, disability, and cultural background, among others. These differences contribute to overall inequality in Australia. We term them 'drivers', noting again that the interaction between drivers like gender and economic outcomes are complex and often not direct.

Some drivers in inequality are reasonable – age-based differences in income and wealth reflect typical career life-course patterns. However, differences by other drivers such as gender and disability are of more concern and will lead to policy considerations.

The drivers we have included are not an exhaustive list, rather a subset we are able to report on using HILDA data. This is discussed further in Section 5.

Interaction between drivers and outcome domain indicators

The distinction between a driver and an indicator in an outcome domain can be blurred. A person's educational level can be treated as a driver (differences in attainment may increase differences in income) as well as an indicator (wealthier households are more likely to have children attain higher levels of education). The dual nature reflects how the role of indicators can vary with age.

With this (and similar issues) in mind, our analysis largely focuses on people aged 35-54. This helps control for age impacts and allows us to meaningfully discuss drivers and outcomes such as educational attainment. Ultimately, concrete distinction between drivers and outcomes is not too important – our focus is on exploring the correlations across different measures.

2.4 How does this fit with other Actuaries Institute work?

The Actuaries Institute focuses on many public policy issues that touch on inequality.

Most directly, the Australian Actuaries Intergenerational Equity Index (AAIEI)[9] addresses one key dimension on inequity – how it differs across age groups (and an examination of how this changes over time). The AAIEI and associated Green Paper splits the treatment of inequity across six broad domains related to wealth and wellbeing. The existing index means we focus less on age and intergenerational issues here, but we retain the set of domains for consistency.

Equality considerations pervade other parts of actuaries' work. For example:

- **Insurance coverage and affordability** – Unaffordable property insurance can magnify inequality, with higher insurance risks often correlated with lower socioeconomic status. This was recently highlighted in the development of the Australian Actuaries Home Insurance Affordability Index[10]. Health insurance is community rated, but it is still less affordable for those with lower incomes who experience much poorer health.
- **Insurance pricing** – Personalised pricing on numerous ratings factors can create questions of equity if some groups are effectively priced out of the market (because it means they pay more than their 'fair' share for insurance).
- **Asset accumulation and retirement incomes** – An important part of the retirement income discussion is that inequities highlight the need for tailored retirement strategies and the role of the Age Pension as a safety net.
- **Other financial services, including banking** – Disadvantaged people often have poorer access to financial services, compounding inequity in the absence of appropriate and/or accessible products.
- **Climate change** – The impacts of climate change will not be felt equally. Vulnerable groups have increased exposure to impacts and less ability to avoid or recover from damage. The Australian Actuaries Climate Index[11] has been developed to objectively measure how the frequency of extreme weather conditions is changing over time.
- **Social policy research** – The Actuaries Institute's interest in inequality also reflects that actuaries are increasingly contributing to relevant social policy research. For example, high-profile studies using longitudinal microdata include analysis of vulnerable young people[12], homelessness[13] and welfare[14] .

9 Miller, Meyricke and Dixie (2020).

10 Paddam, Liu and Philip (2022).

11 See Australian Actuaries Climate Index

12 Taylor Fry (2018).

13 See Communities and Justice, NSW Government (2023).

14 Department of Social Services, Australian Government (2022).

3 What is economic inequality and how is it measured?

3.1 Defining inequality

In this section

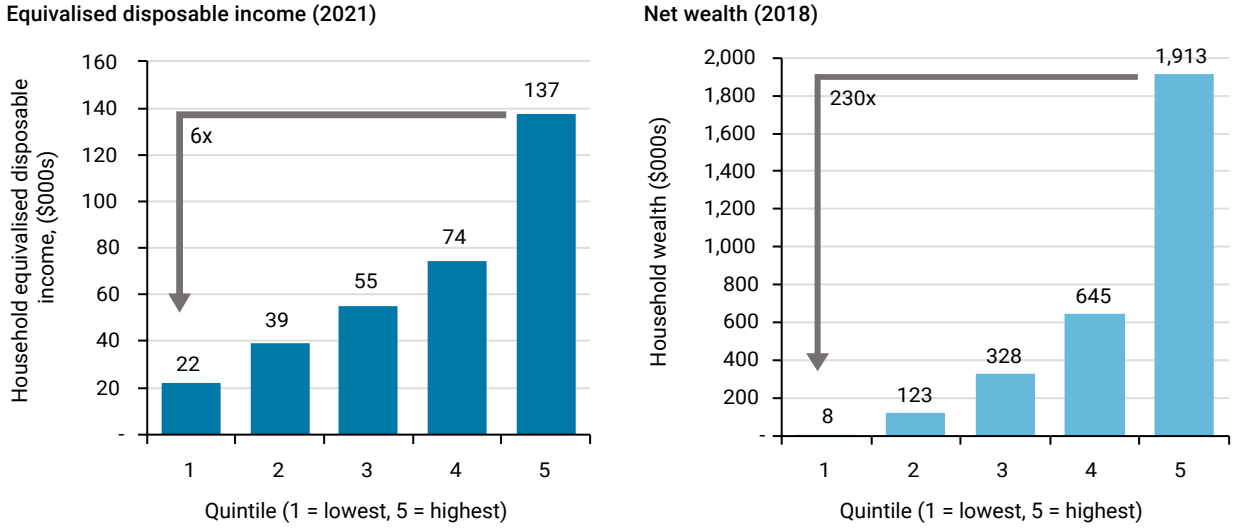
- Economic inequality covers both income inequality and wealth inequality.
- While some inequality is inevitable in capitalist, liberal countries, it is useful to articulate the extent to which we care about equality of outcomes, as well as equality of opportunity.
- While measuring inequality carries complexity, the Gini is a common measure that allows us to track trends over time and unpack drivers of inequality.

Wealth inequality is much greater than income inequality.

Inequality refers to any non-proportionate distribution of goods. The most heavily studied, and probably the most important types of inequality, relate to economic inequality. **Income inequality** refers to the spread of income across the population, whereas **wealth inequality** is the distribution of net assets.

As an example, the HILDA survey reports a variety of income measures every second year, and wealth every fourth year. Figure 6 shows the distribution by quintile (ordered 20% groups). Disposable income is combined household income after government benefits and taxes and adjusted for the size of a household using an equivalence scale.

Figure 6 – Household income and wealth distributions, all ages



Source: HILDA

The figure gives us a reasonable sense of current levels of financial inequality, as well as the general truth that wealth inequality is typically much larger than income inequality.

- The average annual income of a household (after adjusting for tax, benefits and household size) in the highest 20% income group ($137k), is **six times** that of the lowest 20% income group ($22k).
- The average wealth of a household in the highest 20% wealth group, at $1.9 million, is **more than two hundred times** that of the lowest 20% wealth group, at ($8k). On this measure, the top 20% hold 63% of total household wealth.

These two types of economic inequality are obviously related (households with higher incomes will find it easier to accumulate wealth) but distinct (a household can have low income but higher wealth, or vice versa) and both are important in understanding advantage and disadvantage. By accumulating wealth, a household has more flexibility about spreading consumption over a longer period. Retirees typically have relatively low incomes, but the levels of accumulated wealth differentiate the living standard they can fund.

Table 1 shows the interplay between wealth and income for all ages and the 35-54 age group. For example, 20% of people are in the lowest net wealth quintile (first column), and 8% are also in the lowest income quintile. The spread is notable – less than half of the top income quintile is in the top wealth quintile and vice versa. This is even true when looking at a narrower age slice. This demonstrates the challenge of defining inequality along a single dimension.

Table 1 – Proportion of Australian households in combinations of income (household disposable and equivalised) and net wealth quintiles, 2018

All ages

		Net wealth quintile				
		1	2	3	4	5
Income quintile	1	8%	2%	4%	3%	2%
	2	6%	5%	4%	3%	2%
	3	3%	6%	4%	4%	3%
	4	2%	4%	5%	5%	4%
	5	1%	3%	3%	4%	9%

Ages 35-54

		Net wealth quintile				
		1	2	3	4	5
Income quintile	1	10%	4%	3%	2%	1%
	2	5%	6%	4%	2%	2%
	3	3%	5%	5%	5%	3%
	4	2%	3%	5%	6%	5%
	5	1%	2%	3%	5%	9%

Source: HILDA, 1 = lowest and 5 = highest

Exact numbers will vary by data source and definitions, and subtleties of measurement are discussed in Section 3.3.

The wealthiest 20% of households hold 63% of total household wealth.

3.2 Inequality concepts

It is hard to discuss income and wealth distributions without assuming (implicitly or explicitly) what a 'good' level of inequality is. The philosophical discussion on acceptable levels of inequality is vast and deep. Here we highlight key concepts, and some thoughts on where most Western democracies appear to have settled.

Equality of opportunity versus outcome

A fundamental question is that if equality is in some sense 'good', are we suggesting that all people should have similar outcomes across domains such as health, housing or economic agency? That is, are we seeking 'equality of outcomes'? Alternatively, should people experience different outcomes, provided they are all given a fair chance to flourish ('equality of opportunity')?

Equality of outcomes has some clear utopian appeal. Markedly different life expectancies between groups seems unfair. Equality of incomes would see reduced poverty rates. Tools such as universal basic incomes have been proposed as methods to achieve improved fairness.

However, equality of outcomes is not the reality for most capitalist, liberal countries. Equal outcomes reduce the individual reward for talent or industry. Encouraging innovation, competition and individual choice implies differences in income, even with significant levels of redistribution applied. Large differences in income will often lead to significant differences in other areas, too as we explore later in this paper.

More practically, an emphasis on equality of outcomes remains useful as a means of focusing on and reducing disadvantage. For example, Australia's Closing the Gap initiative highlights the poor outcomes for First Nations people across a range of areas and commits governments to improving them.

In contrast, **equality of opportunity** is more focused on giving people similar opportunities to flourish. This permits differing outcomes, as individual skills and life choices translate into differences in wealth and wellbeing. The philosopher Friedrich Hayak argued that market economies cannot operate without some level of inequality, and that it was preferable to ensure fair access to markets rather than adopting political measures to reduce inequality. We believe this is much closer to modern popular opinion – a belief in meritocracy underpinned by a fair go.

The former Australian Treasury Wellbeing Framework espoused similar ideas, stating that "all Australians have the opportunity to lead a fulfilling life and participate meaningfully in society." While the Wellbeing Framework has not been used for a while, wellbeing is a concept back at the public centre of government policy development with discussion and consultation now around 'Measuring what matters'.

The Treasury Wellbeing Framework is centred on five dimensions that are relevant to Treasury and have implications for wellbeing[16]. These include the:

- Set of opportunities available to people;
- distribution of those opportunities across the Australian people;
- sustainability of those opportunities available over time;
- overall level and allocation of risk borne by individuals and the community;
- complexity of the choices facing individuals and the community.

The framework emphasised that the distribution of opportunities matters. Indeed, three of the five dimensions identified in the framework concern distributional issues: distribution within a generation (and over that generation's lifetime); across generations (sustainability); and between contingent states (risk).

The framework also recgonised the role a person's capabilities will have on influencing the opportunities available to them and determining the extent to which they are able to function in society.

> **"Inequality of outcome among today's generation is the source of the unfair advantage received by the next generation. If we are concerned about equality of opportunity tomorrow, we need to be concerned about inequality of outcome today."**
>
> ***Atkinson (2015)***

Even in accepting equality of opportunity as a reasonable goal, there are still immediate challenges:

- There is grey in what constitutes equal opportunity since more support is sometimes needed to provide the same opportunity. For instance, the Disability Royal Commission (ongoing over 2022/23) has been exploring how systemic issues in health, employment, justice, and education undermine our ability to provide fair opportunities for people with disability. Australia's commitments under the Convention on the Rights of Persons with Disabilities recognises that reasonable adjustments and supports are needed to enable such opportunity.
- One by-product of equality of opportunity is that social mobility should be high, particularly on an intergenerational scale. However, evidence points to significant barriers. As Glyn Davis, Secretary of the Department of Prime Minister and Cabinet, articulates in his recent essay (Davis, 2021), circumstances at birth still have a massive impact on a person's life course; it is hard to argue that the 700,000 Australian children living below the poverty line have an equal opportunity to flourish as other children. Actuarial modelling finds that cohorts of vulnerable children aged 0-5 are four times more likely to have a child who will enter out-of-home care, decades into the future.

- It is easier to measure outcomes than opportunity. Indeed, much of our report examines outcomes. Disentangling the relationship between opportunity and outcomes is challenging.
- There remain important questions about the degree to which we level out the resulting inequalities. When comparing equality of outcomes and opportunity, Australia has a distinctively intermediate approach. We offer a universal free public education system, but then also have a large network of private schools, often with higher fees and larger resources. Similarly, healthcare is a mix of public universal and private care, putting it somewhere between the more universal system in the United Kingdom and the insurance-based system of the United States. The Australian approach indicates a general acceptance that a safety net is worthwhile for those genuinely in high need, even if that need does not stem from a failure of opportunity. Our welfare system is heavily targeted through means-testing, which tends to equalise outcomes more than some other countries.

This paper will talk to these issues – the degree to which inequality of outcomes is visible, but also to how some of this can be mapped back to structural issues related to opportunity. Section 4 includes more discussion of inequality in Australia relative to other countries.

Is there an optimal level of inequality?

There is no proven or accepted 'optimal' or 'good' level of inequality. Most philosophers accept some inequality, including the value of incentives to work. The philosopher John Rawls argues that inequality was tolerable as long as you can show it is in the best interest of those all along the income distribution – the necessary price of sustained economic growth in capitalist countries.

However, we can see the impacts of differing levels of inequality. Some of these are geographic (e.g., comparing differences between wealthy countries like the United States who have much higher economic inequality than European countries like Norway or Finland). Others are longitudinal – tracking society over time and observing the impacts of growing or shrinking inequality. See Section 4 for further discussion.

Intergenerational versus intragenerational inequality

Intergenerational equity refers to the concept of fairness or justice **between generations**, often covering economic, psychological and sociological aspects. One intergenerational equity topic which comes up frequently is the relative standard of living experienced by today's youth, versus their parents at the equivalent ages. Similarly, for tomorrow's youth.

Intragenerational equity refers to the concept of fairness or justice **within** a society or population, frequently focused on economic aspects but also covering psychological and sociological aspects. Income inequality is one of the most often discussed inequities. This refers to the uneven way in which income is distributed across society, with a small portion experiencing very high incomes, while at the other end of the distribution, significant portions live in poverty.

When looking across the whole population of Australia, it is hard to completely disentangle the two. In fact, many of the current hot topics of debate, such as climate change and housing affordability, contain elements of both. But given the pre-existing work on the Australian Actuaries Intergenerational Equity Index, we give more weight to intragenerational considerations in our commentary in this paper.

3.3 How do we measure inequality?

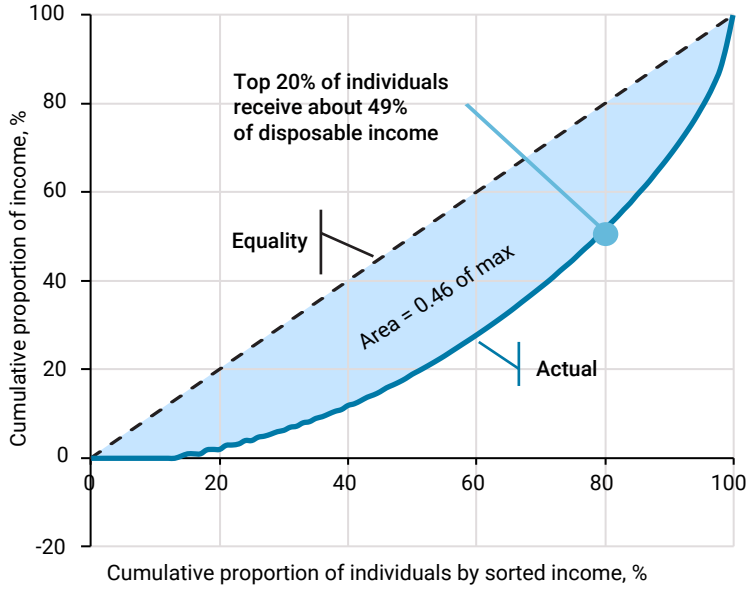
3.3.1 The Gini coefficient - Common measures of inequality

Figure 6 illustrates that income and wealth inequality are distributional issues. While detail around the full distribution of income and wealth is useful, people often reach for shorthand measures to track overall trends in inequality. There are a range of proposed measures (see Costa & Pérez-Duarte, 2019), but we focus on the relatively well-known Gini coefficient in our paper.

Formally, the Gini is a summary statistic derived from the Lorenz curve. An example, using individual disposable income is shown in Figure 7. The curve is constructed by ordering a population from poorest to wealthiest and then calculating their cumulative wealth (or income). In cases with high inequality the cumulative sum initially grows slowly and then accelerates, giving greater concavity. A perfectly equal population will see cumulative wealth grow in a straight line, at 45 degrees. The Gini is calculated by dividing the area between the Lorenz curve and the 45-degree line by the total area under the 45-degree line. The Gini ranges from zero to one, where zero represents perfect equality and one represents complete inequality.

One advantage of the Gini is that it draws signal from the full distribution of incomes or wealth.

Figure 7 – Lorenz curve of Australian individual disposable income



Source: HILDA, average of 2019 to 2021

Another common metric is to pick specific **quantiles** of the distribution and related **quantile ratios**. Quantile measures have tended to correlate closely with the Gini (e.g., see Figure 8). Quantile measures tend to be easier for people to understand than other synthetic indicators.

3.3.2 Considerations and challenges of measurement

Main considerations

Even with a way to measure the size of inequality (e.g., a Gini coefficient) there are still some important considerations:

- **Income inequality versus wealth inequality** – By accumulating wealth (such as housing and superannuation) people can better spread consumption over their lifetimes. So wealth arguably provides a better indication of material living standards. However, wealth is typically more difficult to measure and asset values do not necessary reflect liquid cash availability.

- **Income versus consumption inequality** – Some economists emphasise that consumption (actual household spending) tends to be less skewed than income. Some low-income households can either borrow or use savings to boost consumption, muting the impact of inequality. While an important insight, consumption is harder to measure, and there are other reasons why income might be preferred.
- **Different income sources and costs are recognised** – Household disposable income is commonly used; this is income after tax and transfers (including welfare benefits). The difference in inequality before and after tax and transfers is an indication of how redistributive a country is. After-housing costs is also useful to better understand how housing costs impact wealth and wellbeing, as is the inclusion of 'imputed rent' values for households that own their homes.
- **The role of non-cash benefits** – Equality considerations are affected by the services delivered by government in-kind, rather than paid for by households. Universal education and healthcare services are an equalising force not captured by income measures, since the value of services are typically spread more evenly across the population than income. Similarly, for example, the introduction of the National Disability Insurance Scheme has made a material impact on inequality, but in a way that is invisible to traditional measures of income and wealth. Estimates that do include these goods and services are termed 'household extended income'.
- **Household versus individuals** – A household view provides a better understanding of living standards, since resources are usually (but not always) shared. Additionally, household metrics are often equivalised to compare like for like. This adjusts for the size and composition of the household in a systematic way[18]. For example, a larger household requires a higher disposable income to maintain the same living standard as a single person (while recognising larger households have some economies of scale).

The choice of reported inequality measures is often influenced by what information is available.

Income and wealth data in Australia

Research on inequality is very much driven by the data available. Several sources are used in Australia, each with different characteristics. Broadly, these categories are the census, surveys (HILDA and Australian Bureau of Statistics (ABS)) and administrative datasets such as those of the Australian Tax Office (ATO).

- Census data provides a whole-of-population view, however information is collected infrequently. The data is quickly out of date and time series analysis is limited. Further, recorded income is banded, so specific questions such as the income growth of top percentiles are unanswerable. Wealth information is not collected.
- The ABS Household Income and Wealth survey is conducted every two years by the ABS and provides information on income and housing for a nationally representative sample of households. Those at either extreme of the distribution are likely under-represented due to response biases.
- The HILDA survey provides annual updates on income, at the household level. It also enables a longitudinal view. However, while the sample size is fairly large, it limits some types of analysis (e.g., geographical splits). As above, there is the potential for under-reporting of the extremes due to response bias – HILDA attempts to control for this and related issues in their top-up samples.
- The ATO records can provide a robust view of individual-level incomes across the whole population. Recently a household view has also been developed for research. However, most assets (those other than superannuation) and consumption are not recorded. Also, individuals not paying tax due to low or no income may be missed. Undeclared income is also missed, although this is true of most data collections.

Different data sources give different levels and trends over time, even for the same metric. This makes comparisons more challenging (see Productivity Commission, 2018, or Daley et al., 2017).

Challenges to measuring inequality

The main sources for up-to-date inequality measurement are household surveys and individual tax data. Neither of these sources is perfect.

- The data may force decisions about how measures are constructed. For example, income tax data has a limited view on spending and housing costs.
- Surveys are limited by their size and frequency, which can add noise to income and wealth distributions. Very high net worth households are often poorly represented in such surveys.
- Wealth can be difficult to measure, since assets are not regularly reported, unlike income, and asset values can change significantly over time.
- The impact of capital gains (and associated taxes) can be hard to measure because they can be unrealised and deferred (potentially forever).
- There are measurement artifacts over time as demographics and behaviours change (e.g., young adults are staying in parental homes longer). This inflates the household's income but is not driven by real income growth.
- Household measures implicitly assume the wellbeing within a household is homogenous. In practice, people (e.g., adult children at home) may have very separate finances.
- Home ownership status affects a household's effective income – households who own a home benefit from significant amounts of 'imputed rent'. While some estimates will control for imputed rent, those in this paper do not.

[18] *The OECD-modified equivalence scale allocates 1 point for the first adult, plus 0.5 points per additional person over 14, and 0.3 points for a child under age 15. A household of 2 adults and 2 children has a score of 2.1. To have the same living standard as a single adult this household would need 2.1x the disposable household income.*

4 Economic inequality

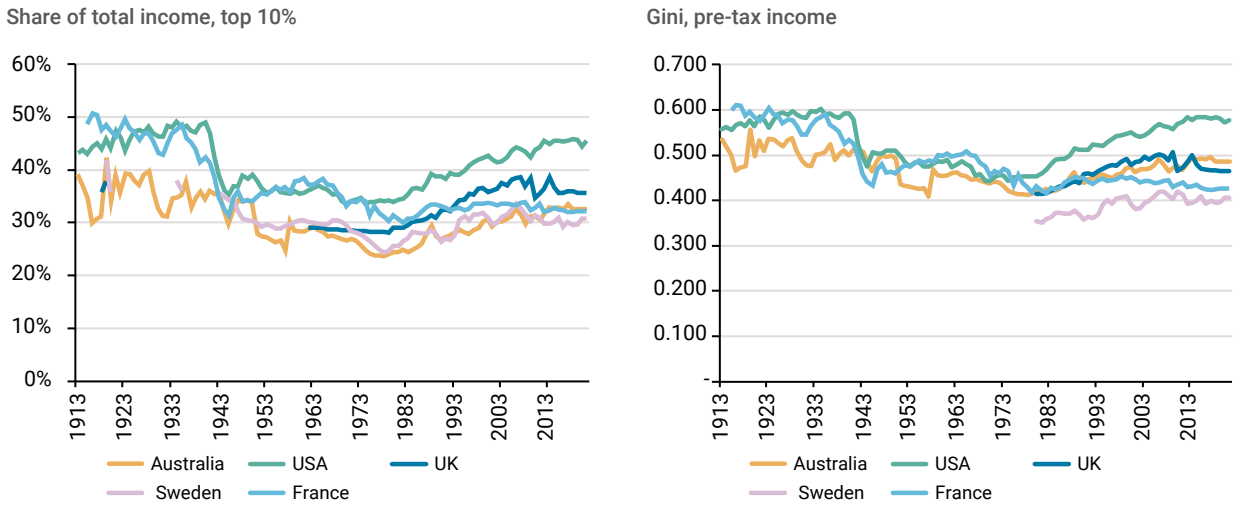
In this section

- Inequality is not static – income inequality has risen in Australia since the early 1980s, albeit being more stable in recent decades. Wealth inequality has continued to grow.
- There are many current upward pressures on inequality, including tepid wage growth.
- There is strong evidence that disadvantage carries through the lifecourse, including intergenerational effects.

4.1 Main trends in income and wealth inequality

Long-term international trends

Figure 8 – Comparison of long-term inequality trends, selected countries



Note: This source does not report post-tax income, which we study elsewhere in the report

Source: The World Inequality Database.

Economic inequality has not been static over time. The World Inequality Database, as the name suggests, has developed and collated long-run estimates for many countries. Australia's trends over the past 100 years are compared to a selection of other wealthier countries in Figure 8. Data is generally drawn from tax data (and ignores the impact of tax and transfers), supplemented by survey information. We observe:

- There are strong correlations between the two measures shown – share of income for the top 10% and the Gini. This gives some confidence that conclusions are not overly dependent on the choice of measure.

- Australia's Gini has increased seven percentage points over the past 40 years. On this measure, inequality levels are as high as they have been since 1950, in the aftermath of World War II. While there is no intrinsic rule for how much movement is meaningful, we ascribe to Atkinson's (2015) analysis that **a change of three percentage points in Gini is highly substantive,** looking at both the history of movements and the impact of typical policy changes. So, the trend in Australia over the past 40 years is highly significant.
- Australia is not unique – most countries show the pattern of decreasing inequality through to 1980, and a reversal since then.
- Australia's position is decidedly midrange – the OECD reports Gini coefficients (household level, after tax and transfers) for 42 (mostly wealthy) countries and places Australia at 18th. Inequality increases in Australia have been small relative to global changes (Breunig and Rose, 2019).
- The markedly higher inequality in the United States is notable – it is widely recognised as an outlier among wealthy countries. President Barrack Obama in 2013 named growing inequality "the defining issue of our time". At the end of 2021, the top 1% owned 32% of the nation's wealth (a record high). This included 54% of individually held shares and 14% of the nation's real estate. The numbers also reflect entrenched inequalities by race, gender and geography.
- Inequality has increased in the United Kingdom, with current levels similar to Australia. Inequalities by ethnic background, disability and geography are also reported (Francis-Devine, 2021). The London-based Institute for Fiscal Studies has been carrying out a wide-ranging review to develop a holistic picture of what is known about inequality including its intersectionalities.[19]
- While income inequality in Australia has been stable in the last decade, it is noteworthy that there has been some increase in wealth inequality (Productivity Commission, 2018). ACOSS found that average wealth of the top 20% has grown ten times faster than the bottom 20% over the past 20 years (Davidson et al., 2020a and 2020b). Housing wealth disparity has contributed to this[20], with half of household wealth then held in real estate.

Other international organisations are also examining inequality. The OECD has taken a careful look at inequality and the related concepts of poverty and social mobility (OECD, 2015). The OECD views reductions in inequality as favourable. It similarly found worsening income inequality over the past 30 years and that social mobility stagnated or worsened. It identified some additional factors driving trends such as wealth inequality restricting human capital investment and growing amounts of casualised work. It suggested that factors to improve inequality were continuing to improve women's participation in economic life, investing in skills and promotion of good-quality jobs.

Australia's level of inequality is mid-range by international standards.

19 See Institute for Fiscal Studies Deaton Review.

20 See Coates and Chivers (2019).

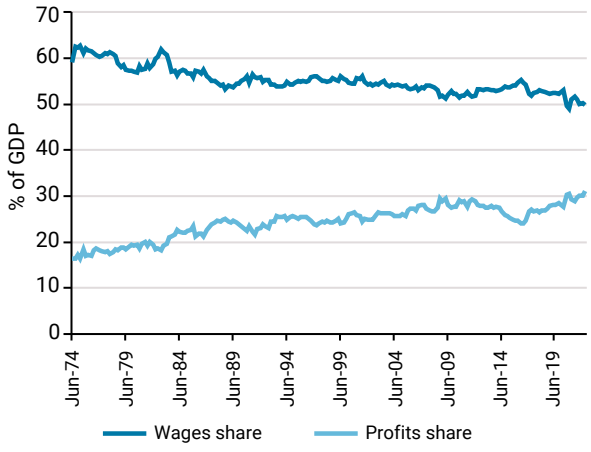
Causes of long-term trends

Reducing inequality after World War II is often attributed to redistributive polices and a burgeoning middle class. Researchers suggest a range of explanations for the reversal in inequality trends since the 1980s. This includes:

- A partial unwinding of redistributive policies in the 1980s and 1990s.
- The role of globalisation and network effects that increase the earnings potential of high performers (e.g., highly skilled programmers in the tech industry), coupled with an evolving labour market with fewer stable middle-income roles such as domestic manufacturing (Acemoglu and Autor, 2011). The growth of casualised employment also contributes (OECD, 2015).
- Tepid wage growth, despite broader economic growth. In Australia, there has been a steady deterioration in wages as a share of overall GDP, while the share going to profits has increased markedly – Figure 9 shows this growing from 16% in 1974 to 31% in early 2022. This trend, particularly pronounced in Australia, has coincided with a period of growing income inequality. Uneven gains from growth can be problematic, with real wage growth now sitting well below 1% p.a. for the past decade (La Cava, 2019, provides further discussion). While bumper mining profits represent a material fraction of the change, profits have been outpacing wage growth in most industries over the past few years.
- Relatedly, the rise and fall of labour-market institutions, such as unions.
- The OECD (2015) also pointed to structural factors, including wealth inequality that restricts human capital investment.

Figure 9 – Changing shares of wages and profits as a fraction of GDP over time

Shares of GDP



Source: ABS National Accounts

The impact of the tax and transfer system

The progressive nature of the tax and transfer system reduces inequality. Income taxes are the largest source of government revenue and a sliding scale of increasing marginal rates is used. These funds are then (in part) redistributed in the form of direct payments (e.g., welfare benefits) or service subsidisation (e.g., education and health services). Direct payments increase incomes at the low end of the income spectrum and therefore reduce gross income inequality (and flow-on measures). Similarly, service subsidisation typically increases disposable income (and flow-on measures) at the low end of the income spectrum. Most estimates put the impact of tax and transfers as reducing the household-level Gini by 30%. This impact is slightly higher than the OECD average, in part reflecting our tightly means-tested welfare system. As noted earlier, a change in the Gini of 0.03 is considered significant.

This shows that governments and particularly welfare and tax policy settings will continue to have an important influence on inequality for households.

Implications of long-term trends

Overall, these trends demonstrate that we cannot take existing levels of inequality for granted. While there have been periods of steady decline, the past few decades have seen the reverse. Indeed, influential economists such as Piketty (2017) argue that increases are the norm–returns on capital have historically outpaced wage growth, and concentration of capital then skews these returns to the wealthy.

There is no consensus on an optimal level of inequality in outcomes to target. However, there appears to be general consensus that more inequality is undesirable, and there is also common political ground that understanding and reducing inequality of opportunity is desirable. As noted earlier, while equality of outcomes is not equivalent to equality of opportunity they are related. Outcomes are typically more measurable and provide a means of monitoring disadvantage which may stem from inequality of opportunity.

Trends in inequality can have macroeconomic implications too. Growing inequality (particularly lower incomes at the bottom of the distribution) dampens consumption, human capital development and growth (e.g., Cingano, 2014). People on lower incomes are more likely to spend (rather than save) additional income, so the distribution of additional income can have implications for how much it drives consumption growth. Lower consumption growth in turn can lead to lower business investment. Inequality can also reduce the effectiveness of monetary policy (Da Silva et al., 2022).

4.2 Individual-level implications

There is mounting evidence that inequality can reduce social mobility and perpetuate far into the future, including through to successive generations.

Lifecourse mobility

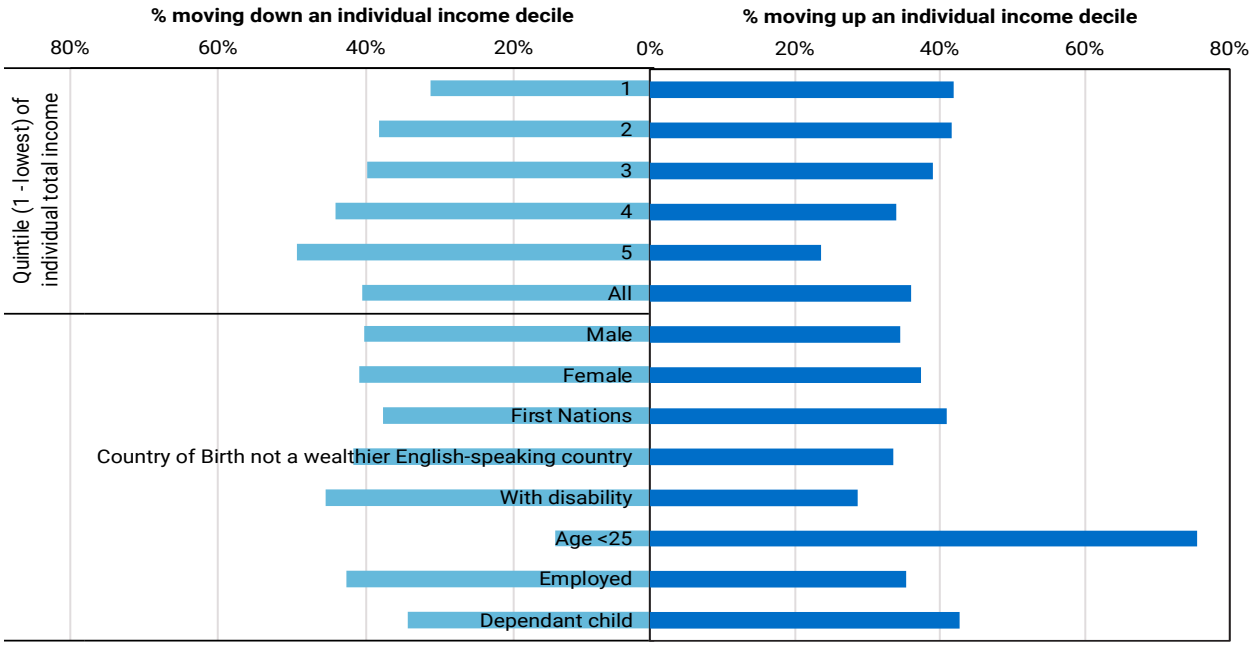
Researchers have studied Australian tax data to examine economic mobility. Those in top earning percentiles are more likely to stay there over time compared to a generation ago, even if overall inequality has been stable for much of that period (Hérault et al., 2021).

HILDA data can also be used to assess how incomes change for different demographic groups over time. Figure 10 shows the fraction of people moving income deciles 10 years later (averaged over 2001-2011 starting years). The figure shows both increases (in darker blue) and decreases (in light blue) over time, for different characteristics at the start of the 10-year period. We see:

- The rate is higher for people in lower-income quintiles – while expected (those on lower income have greater room to grow their incomes), it indicates a fair degree of economic mobility.
- Females have slightly higher rates of income improvement, likely reflecting a return to work as children age. This is consistent with the higher rate for those with a dependent child in the household.
- People with disability have a very low rate of improving their income decile.
- The youngest age group (15-24) have by far the highest rates of improving income decile due to their life stage. Both the rates of employment, and average incomes are expected to show substantial increases from ages 15-24 (at the start point). This group is likely undergoing significant household composition change – many will be becoming a primary household earner.

We can also see that higher rates of upward movements correlate closely with lower rates of downward movements, as could be expected.

Figure 10 – Proportion changing individual income decile over ten-year period, average over 2001-2011 to 2011-2021, based on characteristics at start of period



Source: HILDA data, authors calculation

Intergenerational effects

Past research has found mixed conclusions as to whether mobility is relatively high or not in Australia, but noted clear evidence that Australian parents pass some part of their social and economic position on to their children. Glyn Davis argues strongly that entrenched poverty is significant and intergenerational (Davis, 2021). Some authors suggest attention should be focused on gaining a better understanding of the processes underlying Australian social mobility and contributors, such as family structure, parental disability and labour supply decisions (Cobb-Clark, 2019).

More recently, Australian tax data has been used to provide national and regional estimates of intergenerational income mobility. This enabled international comparisons, with Australia appearing to be one of the more mobile of the advanced economies (Deutscher 2020; Deutscher and Mazumder, 2020). This study found an Australian child born into the bottom quintile is greater than 60% more likely to reach the top quintile than a child born in the United States. Regional factors are evident – a child moving between two Australian regions can expect to close around 70% of the income gap between permanent residents of those regions.

Longitudinal actuarial models

Actuarial analysis of linked longitudinal datasets has also been used to understand long-term impacts of disadvantage. For example:

- The Priority Investment Approach model forecasts future welfare receipt for the Australian population. The modelling has highlighted the intergenerational transmissions of poor outcomes. Compared to children of parents with no welfare receipt, children of parents with extensive welfare receipt are (DSS, 2017):
  - Around 40% less likely to complete Year 12;
  - around six times more likely to be dependent on income support as adults;
  - likely to be dependent on working-age benefits for twice as long.
- The New Zealand investment approach actuarial model forecasts lifetime welfare receipt for the beneficiary population to monitor long-term welfare costs and policy impacts and to provide insight into client pathways. The modelling highlights (Greenfield et al., 2015):
  - The long-term impacts of unemployment – A high proportion of long-term welfare cost is attributable to young entrants to the welfare system (75% of future cost for the current welfare cohort is attributable to people who enter welfare before age 20).
  - The intergenerational transmission of unemployment.
  - Nearly three quarters (74%) of all beneficiaries under age 25 had a parent on benefit while they were a child, and just over one-third (35%) had a parent on benefit for almost all their teenage years. Years of parental benefit receipt was associated with higher likelihood of entry and longer benefit receipt.
- In NSW, 'Their Futures Matter' modelling forecast lifetime NSW Government service use for all people under age 25 in NSW. Parental risk factors based on Government service use were allowed for in the modelling. Services are typically provided to support people experiencing poor outcomes so higher lifetime government service use reflects poorer outcomes. The average lifetime cost was Taylor Fry, 2018:
  - 5.5 times higher for children of parents with recent alcohol and other drug service use;
  - 4.9 times higher for children of parents with recent mental health service use;
  - 6.9 times higher for children of parents with recent interactions with the justice system;
  - 5.1 times higher for children of young mothers (giving birth aged 16-18 versus aged 30).

While much of this work is not causative, it highlights that we can identify vulnerable cohorts of young people who are likely to experience poor outcomes in the absence of effective intervention.

Drivers of inequality

5

In this section

- About two-fifths of income inequality can be attributed to demographic factors. While some elements, like age, are natural, others reflect systemic issues such as gender, disability and cultural background inequalities.
- Two fifths of First Nations peoples are in the lowest household income quintile, and half are in the lowest wealth quintile.
- We also see tremendous geographic stratification in our cities by socioeconomic status.

5.1 Decomposing the Gini coefficient

Measures such as the Gini gauge inequality across the whole population, but it is also important to recognise that the issue disproportionately impacts subgroups of the population. This is not necessarily always a problem but should be a consideration in policy setting.

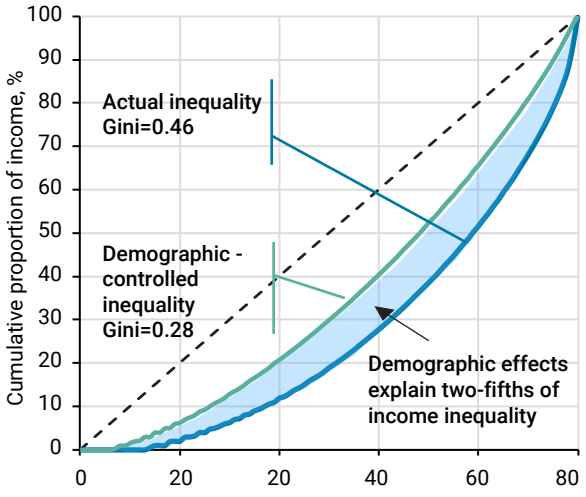
To explore how drivers of inequality contribute to the overall picture, we have used HILDA data (2019 to 2021) to model income, using the drivers introduced in Figure 4:

- Geography (high-level – breaking Australia into 13 regions);
- Gender;
- Disability;
- Country of birth (as a proxy for non-English cultural backgrounds);
- Age;
- Household and employment structure – a broad categorisation based on presence of dependent children, employment status of working age adults and whether people are over age 65;
- Education level[21].

Section 2.3 discussed limitations to the 'drivers' interpretation, but they are chosen to be characteristics over which individuals have minimal control, and are suitable for modelling in the data available. We focus on **individual-level** income to better understand gender effects, masked at a household level.

We first calculate the total Gini coefficient for individual disposable income – 0.46, as seen in Figure 7. The figure shows substantial inequality, with 20% of individuals earning about half of all disposable income. We then fit a machine learning model (see Appendix A) to our data, using the first seven predictors above. This allows us to control for the impact of these factors on inequality, and gauge their relative contribution. We refer to the remaining inequality, after controlling for the factors above, as 'demographic-controlled inequality'.

Figure 11 – Gini coefficient of actual individual disposable income, and demographic-controlled variation that is unexplained by the demographic factors includedShares of GDP



Source: Analysis of HILDA data

We estimate demographically-controlled inequality to be 0.28. This means that three-fifths of income inequality cannot be explained by our demographic factors.

[21] First Nations identification and sexuality were of interest but omitted from the quantitative analysis. Our selected dataset, HILDA, did not have sufficient coverage of these two aspects to properly incorporate them. First Nations data is sufficient for inclusion elsewhere in the paper, such as Section 5.2.

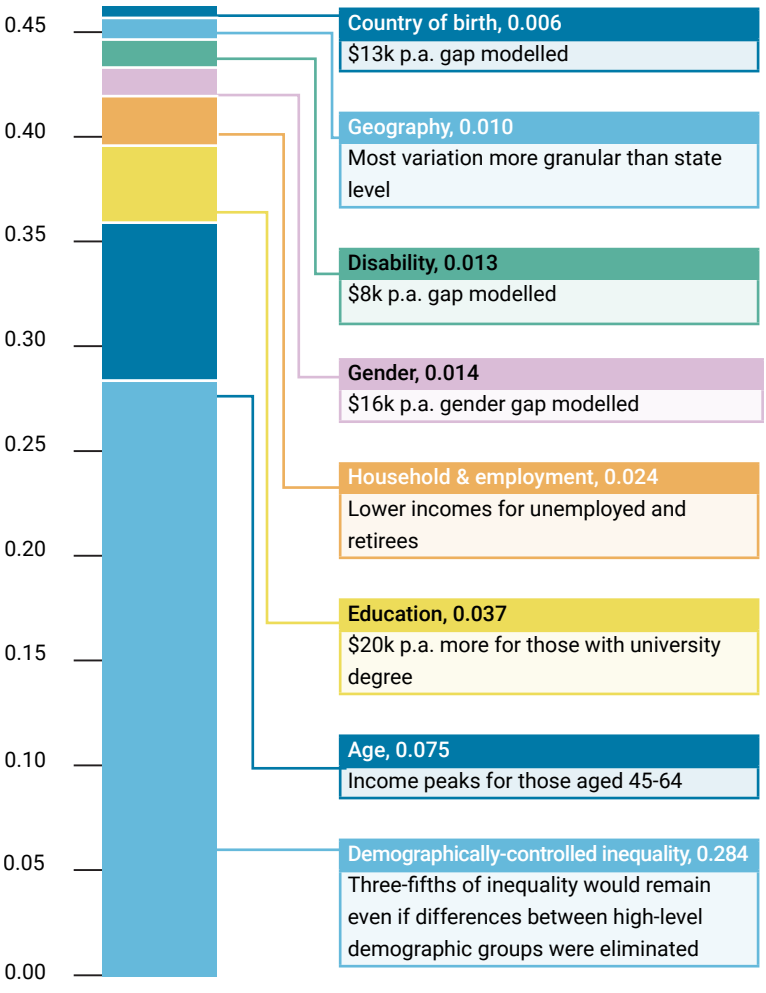
This residual component corresponds to the current level of natural variation in income, reflecting different patterns of earning (different occupations, or hours worked) and current policy settings (level of income support payments relative to other wages).

The remaining two-fifths of inequality arises from modelled demographic factors. These are summarised in Figure 12. Age, perhaps unsurprisingly, forms the largest individual contributor, with higher incomes seen in the 45-64 age group. Education is second-largest, with a substantial difference in earnings observed for those with some form of university qualification. Household structure includes allowance for employment status and comes through strongly too.

The remaining four factors – gender, disability, region, and country of birth – collectively contribute four percentage points to the Gini. Given that movements on the order of three percentage points are highly substantive, the types of inequalities these estimates may reflect is still striking.

In terms of 'target' levels of Gini-based inequality, this is hard to define and sensitive to exact definitions. However, the international variation plus the level of demographic variation observed in our modelling suggests that around 0.30 is a realistic floor for individual-level variation. This would represent a significant reduction in demographic variation as well as some levelling between very high and lower incomes in the residual inequality.

Figure 12 – Contribution to income inequality of individual demographic factors



Source: HILDA, authors' calculation

In terms of broad implications:

- Demographic-controlled variation is the largest observable component. Solving structural issues such as the gender wage gap, or low labour force participation for people with disability, will not completely remove income inequality.
- There are likely further demographic and systemic factors not captured in our analysis, which we have kept deliberately simple. For example, lower opportunities for people in city fringes is not accounted for (since our regions used are relatively coarse), so geography effects may be understated. Similarly further information around intergenerational characteristics, health conditions, use of government services, and other factors could be material in understanding some of the demographic-controlled variation.

5.2 Deeper exploration of drivers of inequality

Distribution across income and wealth quintiles

Descriptive statistics give further insight into how demographic factors relate to income and wealth distributions. Table 2 shows how demographic groups are spread across individual income quintiles for the 35-54 age band (to control for age variation). If income was uncorrelated with the demographics, we would see 20% of the cohort in each quintile. In reality, we observe the skew – 26% of females are in the lowest quintile and 12% are in the top, so twice as many females are in the bottom compared to top quintile. Similarly, a person with disability is three times more likely to be in the bottom quintile than top, and someone identifying as First Nations is four-and-a-half times more likely. These are large differences reflecting enduring disadvantage.

Table 2 – Summary of rates of characteristics by individual disposable income quintile, and corresponding proportion of subgroup within each quintile (Ages 35-54)

	% of HILDA population	"Distribution across income quintiles (1 = lowest)"				
		1	2	3	4	5
Geography - non-metro region	28%	24%	26%	18%	18%	14%
Female	48%	26%	25%	19%	18%	12%
Country of birth outside of AUS, UK, USA, NZ, CAN	23%	17%	16%	23%	23%	21%
Has a disability	23%	39%	22%	17%	11%	12%
Less than Year 12 education level	10%	38%	30%	17%	9%	6%
No Bachelor's degree	60%	26%	25%	20%	15%	14%
First Nations	4%	40%	25%	11%	16%	9%
Working age, dependant children, no employment	2%	39%	51%	6%	2%	2%
Working age, no dependant children, no employment	4%	92%	7%	0%	1%	0%

Source: Analysis of HILDA data, 2021 wave

Table 3 shows similar information, except grouping into quintiles based on household wealth. Outcomes for females are more even, due to household effects. The skew for First Nations people is even more extreme; more than half of First Nations people are in the lowest wealth quintile. First Nations average household net wealth is less than half the national average.

Table 3 – Summary of rates of characteristics among primary householders by net household wealth quintile, and corresponding proportion of subgroup within each quintile (Ages 35-54)

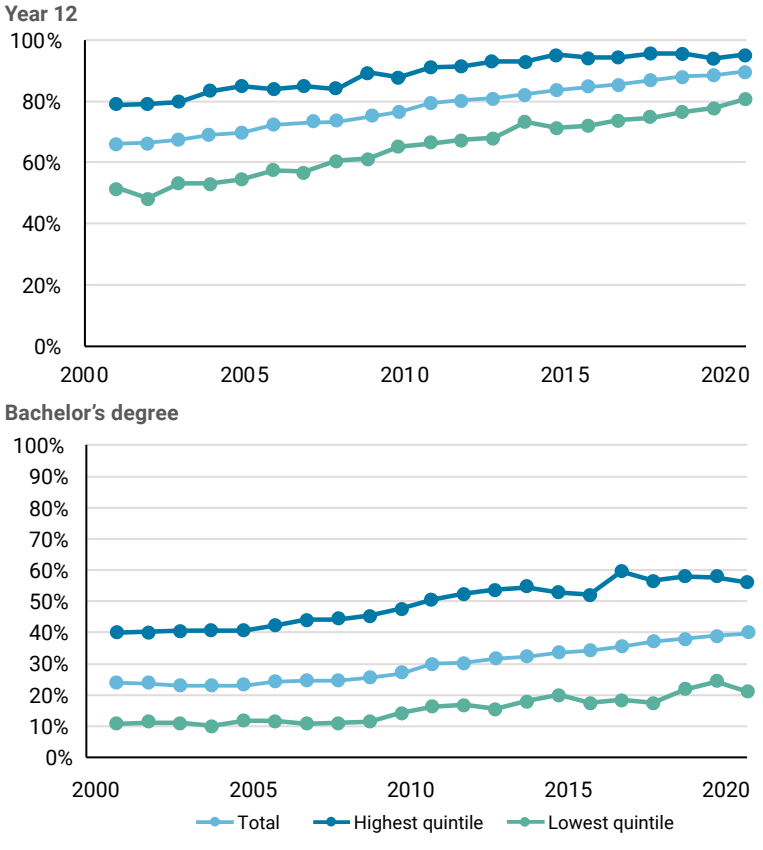
	% of HILDA population	"Distribution across wealth quintiles (1 = lowest)"				
		1	2	3	4	5
Geography - non-metro region	29%	25%	21%	20%	19%	15%
Female	48%	23%	18%	18%	19%	22%
Country of birth outside of Aust, UK, USA, NZ, Can	23%	24%	25%	21%	16%	15%
Has a disability	24%	31%	21%	20%	17%	11%
Less than Year 12 education level	13%	32%	23%	21%	12%	11%
No Bachelor's degree	63%	25%	22%	19%	19%	15%
First Nations	4%	53%	22%	6%	8%	10%
Working age, dependant children, no employment	2%	72%	7%	10%	7%	3%
Working age, no dependant children, no employment	4%	52%	18%	12%	14%	3%

Source: Analysis of HILDA data, 2018 wave. Wealth data is not available for more recent waves.

We've allocated one person per household as the 'primary householder' to allow exploration of household metric by individual characteristics (like age).

Education demographics also see large differences; just 3% of people in the top income quintile did not finish Year 12, compared to 20% of the lowest income quintile. Differences by university education are similarly large. This is complemented by a strong trend of increasing attainment across time, as Figure 13 shows.

Figure 13 – Rates of educational attainment over time in total, and for lowest and highest income quintiles (Primary householders aged 35-54)



Source: HILDA

These results accord with research of others:

- **Gender** – Lower wages and higher likelihood of career breaks continue to contribute to lower income and wealth for women. This is despite women's educational attainment now being higher than men's. The gap based on ABS weekly earnings for full-time employees is 13.3% as at February 2023[22], as reported by the Australian Government's Workplace Gender Equality Agency (WGEA, 2022). This has reduced from 18.6% in late 2014. Occupational segregation and hours contribute, but there remains evidence of gender discrimination in hourly wages (KPMG, 2022).
- **Disability** – Working-age people with disability are twice as likely to be unemployed as people without disability. Between 2003 and 2018, the unemployment rate for people with disability increased from 8% to 10%, while the unemployment rate for people without disability was steady (AIHW, 2022a). This in turn leads to markedly higher poverty rates (ACOSS, 2022). Concerningly, income inequality for people with disability compared to people without disability is worse than in other OECD countries (Kavanagh et al., 2012). The Disability Royal Commission has highlighted large systemic barriers for people with disability, and large associated societal costs.
- **First Nations** – The inequality of outcomes for First Nations people is particularly stark. Reporting by the Australian Institute of Health and Welfare (AIHW) points to both lower wages and higher rates of income support – approximately 50% of First Nations adults are reliant on some form of welfare payment (AIHW, 2021a).

  Western notions of wellbeing also have limitations when applied to First Nations people. Paul Callaghan cites a broader wellbeing where no one person can be well if everyone isn't well, and if the land isn't well. This is built on the premise that we are all connected (Callaghan, 2022). This does suggest that distributional issues such as inequality will have some relevance, when tracking progress over time.

Lower incomes and wealth for the groups identified translate into lower outcomes across other domains too. A detailed table is provided in Appendix B. We can see:

- Underutilisation rates (combined unemployment and underemployment) is double the national average for First Nations people and people with disability. The groups see significantly lower home ownership rates, higher psychological distress and higher rates of obesity.
- Poverty rates are high for households without employment income – 71% for those with dependent children, making it a significant and clearly identifiable cohort to address poverty.

22 See Australia Government and Workplace Gender Equality Agency.

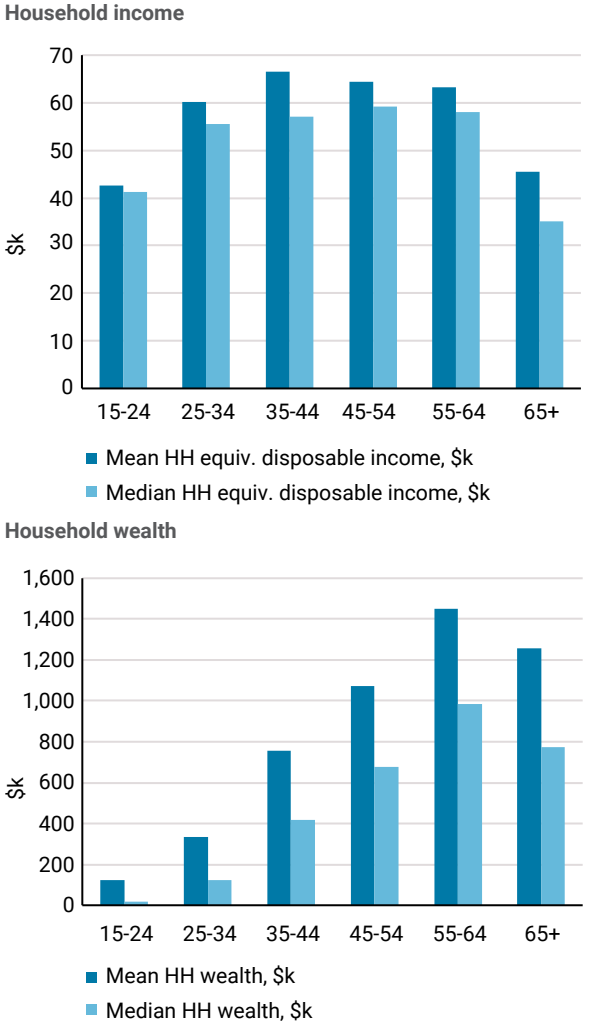
Age

As noted above income and wealth levels show large shifts by age – naturally reflecting different life stages. Inequalities by age are therefore not inherently problematic. But differences in income over the lifecourse can lead to larger wealth differentials later in life. One cushion against this has historically been home ownership – high ownership rates reduce wealth inequality. However, home ownership rates are expected to reduce for future older generations – removing this dampening effect (Davidson and Bradbury, 2022).

Figure 4 shows how average income and net wealth vary by age for primary householders:

- Income shows a large increase from ages 15-24 to 25-34. It remains fairly constant until retirement where it decreases for ages 65 and over.
- This contributes to a steady accumulation of wealth with ages up to retirement. For ages 65 and over the averages decrease as retirees stop accumulating and begin to draw down their assets.

Figure 14 – Mean and median equivalised disposable household incomes (2021) and net household wealth (2018) by age group for primary householders



Source: Analysis of HILDA data

The Australian Actuaries Intergenerational Equity Index (Miller et al., 2020) looked at changes in wealth and wellbeing measures by age band over time. It found that, in 2018, the gap between older and younger age bands had never been wider, driven by factors such as home ownership trends, environmental deterioration and uneven wealth accumulation. The current wealth tax settings have exacerbated this via different marginal effective tax rates being applied to different forms of assets. This has particularly encouraged investment in home ownership and superannuation. However, some assets, particularly housing, are out of reach for many – and the inequity grows (Breunig and Sobeck, 2023).

5.3 Geographic stratification

Income inequality across geographical regions exists with higher average incomes near the city and in mining areas. The shift to a service-based economy has led to clustering of high-skilled service jobs in capital cities and this results in inner suburbs having higher average incomes.

Because our regional grouping in the Gini decomposition is high-level, we have used the Socio-Economic Indexes for Areas (SEIFA)[23] to gauge the degree of inequality within capital cities. It shows a high degree of inequality exists and the inequality is not randomly distributed (see further discussion on this in Appendix A.2).

Figure 15 – Geographic clustering of inequality: Sydney, shading SEIFA quintile by Statistical Area 2

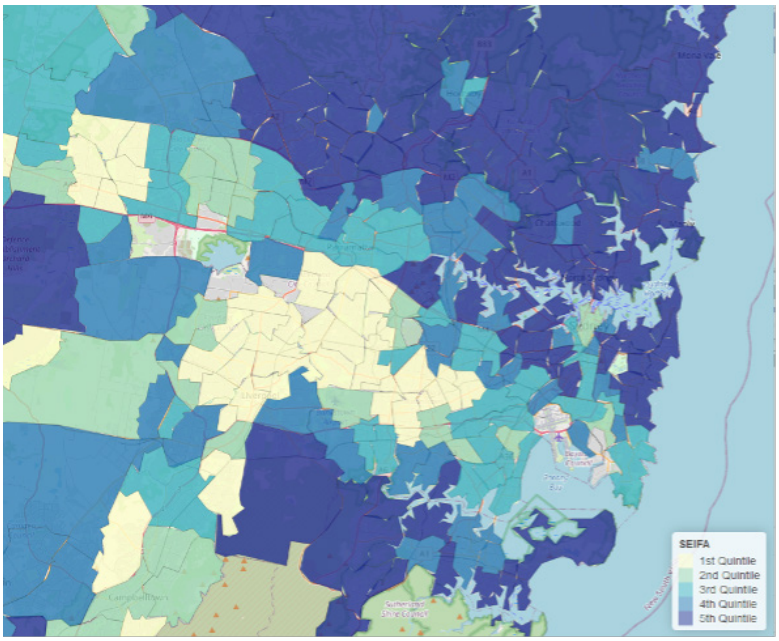


Figure 15 shows Sydney as an example. Low SEIFA suburbs are clustered together in the west and south-west, while large tranches of the highest quintile surround the CBD, in the east and in the north. Geographic stratification of this type has significant implications for social mobility and equitable service delivery. Other state capital cities are provided in Appendix C.

There are also substantial income gaps between cities and regional areas. Regional areas tend to have lower incomes, but also much lower within-region income inequality. Increases in inequality have been greater in major cities, where there are more people on high incomes (Daley et al., 2017). The strength of the mining industry in Australia has partly offset this trend in recent decades.

Part of this story is tied to the size of the city – large cities provide more opportunity for specialisation and entrepreneurial success. Sarker et al. (2016) found evidence of above-average growth of higher incomes in larger population centres. Biddle and Montaigne (2017) observed greater change in within-region inequality in places experiencing higher rates of population growth (in their study these areas were Perth, Brisbane and Darwin).

Research in the United States has started also to point to the longer-term consequences of such fine-grained stratification.

Ultimately, geographic stratification increases risks associated with inequality. It is harder to ensure equal opportunities over the life course and high social mobility in fractured cities, and this in turn can drive intergenerational inequities.

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23 The ABS-developed system that ranks areas in Australia by advantage and disadvantage, to gauge socioeconomic status. There are four different SEIFA indexes. Throughout we use the Index of Relative Socio Advantage and Disadvantage (IRSAD)

24 See the Opportunity Atlas, or the Atlas of Inequality

How economic inequality affects society more broadly

6

In this section

- Lower income correlates with poorer outcomes across a wide range of domains and indicators.
- For example, comparing the lowest household income quintile to the highest we see twice the rate of psychological distress, a 34 percentage point gap in home ownership and five times the rate of children being found at risk of harm by child protection services.

6.1 Overview

Section 2 noted that while inequality is most often discussed in terms of income and wealth, this underplays the multidimensional nature of disadvantage and strong correlations with broader outcomes. This section examines these relationships across six domains:

- Economic;
- Housing;
- Health and disability;
- Social;
- Education;
- Environment.

Table 4 gives our main summary across selected indicators. Most (but not all) indicators are drawn from 2021 HILDA data. Formal indicator definitions, full details on sources and additional indicator data, are included in Appendices A and B.

Quintiles are defined using equivalised disposable household income[25], and limited to households where the primary householder is aged 35-54 (improving comparability). As an example, home ownership rates sit in the Housing domain. Overall ownership rates are 65% in 2021 and are strongly correlated with income – rates are 1.8 times higher in the top quintile compared to the lowest, where the ownership rate is 42%.

25 Disposable income is as reported in the HILDA survey. This is total income after receipt of government benefits and deduction of income tax. It includes wages and salary, business income, investment income, private pensions but excludes realised capital gains.

Table 4 – Indicators across wellbeing domains for highest and lowest equivalised household income quintile. Reported for primary householders aged 35-54[(e)]

Domain	Outcome	All	Lowest quintile	Highest quintile	Ratio (higher value ÷ lower value)
	Average equivalised income p.a.	**$73k**	**$30k**	**$144k**	**4.9x**
Economic	Poverty rate	6%	31%	0%	n/a
	Household net wealth, $000	499	231	1,004	4.3x
	Weighted underutilisation rate	5%	13%	2%	6.5x
	Welfare, fraction of total income	13%	48%	0.5%	101.3x
	Unpaid carer rate	7%	16%	2%	9.4x
Housing	Home ownership rate	66%	45%	79%	1.8x
	Struggled to pay housing costs on time	9%	15%	4%	3.9x
Health & disability	Obesity rate	29%	32%	24%	1.3x
	Rate of psychological distress	31%	49%	24%	2.0x
	Suicide deaths per 100,000(a)(b)	12	18	9	2.1x
	Total deaths per 100,000(a)(b)	485	589	390	1.5x
Social	Violent crime victim, past 12 months	1%	3%	1%	3.2x
	Homelessness rate(a)	0.9%	2.1%	0.3%	7.3x
	Child protection substantiations, per 1000(a)	9.5	16.5	3.4	4.9x
	Teenage births, per 1000(a) (c)	7.7	17.8	1.4	12.7x
Education	Year 12 attainment rate(a) (c)	76%	72%	82%	1.1x
	Early childcare use	52%	41%	61%	1.5x
	Access to childcare - places per child(a)	0.39	0.36	0.45	1.2x
Environment	Natural hazard insurance risk relativity(d)	1.0	1.0	1.1	1.1x
	Home insurance affordability(d) (premium ÷ weekly income)	1.4	3.5	0.4	9.3x

(a) Based on small-area SEIFA quintiles rather than household-level incomes

(b) Standardised rates across all ages, rather than 35-54 age band only

(c) For children in the household, based on indicator-appropriate age range, rather than 35-54 age band

(d) No age restriction

(e) Sources: HILDA, ABS, AIHW, Australian Curriculum, Assessment and Reporting Authority (ACARA), Mitchell Institute, Finity Defin'd.

The table shows, almost without exception, poorer outcomes for those with lower incomes. While some are natural, such as lower home ownership or higher reliance on welfare, some are less intuitive and perhaps surprising – significantly higher rates of death by suicide, crime victimisation and childcare access. Intermediate quintiles bridge the gap between the extremes seen at either end.

We discuss these results by domain in the subsequent sections.

6.2 Economic

Economic

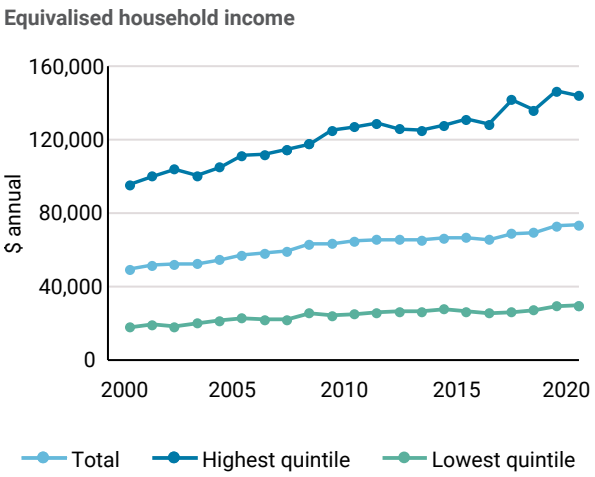
Comparing top and bottom income quintiles, the lowest 20%

7x	Are more likely to be unemployed, or be underemployed
9x	Are more likely to be caring for someone ages, or with a long-term health condition or disability
-77%	Have significantly less net wealth
48%	Have a high fraction of their income from welfare (compared to 1%)
31%	Have a very high poverty rate (compared to 0%)

Our economic indicators show how our selected approach to defining inequality (equivalised household disposable income) intersects with other common measures of economic wellbeing.

Figure 16 shows the average annual equivalised household disposable income over the past two decades for the top and bottom quintiles. While the relativity between the top and bottom groups have remained fairly stable, it is worth acknowledging that the real gap in income has grown strongly in absolute terms (as income growth has outpaced inflation). Compared to 2021, the real annual income gap has grown by $36,500.

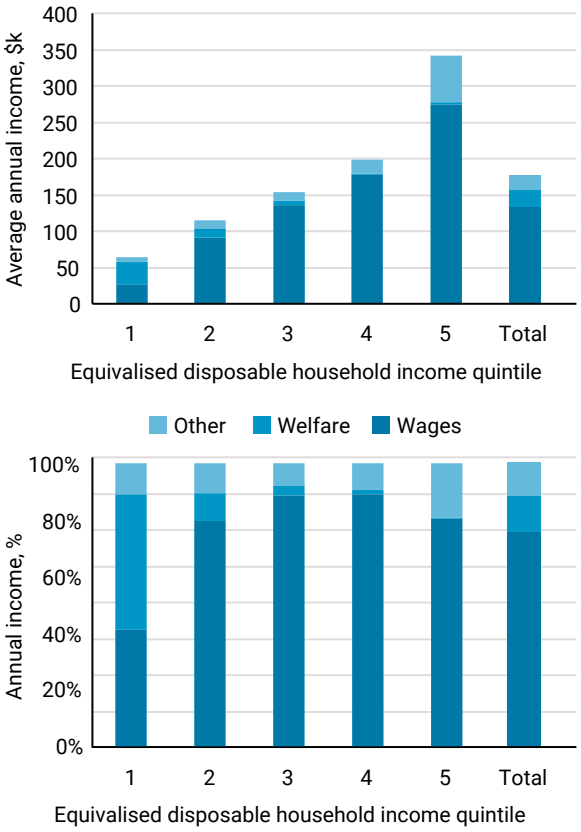
Figure 16 – Average annual equivalised household disposable income over time, selected household income quintiles



Source: Analysis of HILDA data, 35-54 age band. Values are 2021 real values, adjusted using CPI.

HILDA also allows us to see the source of income, summarised for each quintile in Figure 17. It shows the role of Australia's targeted welfare system in reducing inequality (48% of the income in the lowest quintile relates to government benefits) as well as how investment income (the largest component of 'other') disproportionately boosts the income of the highest earners.

Figure 17 – Average annual income split by source for each disposable household income quintile, 2021



Note: 'Other' is primarily investment income for this age band but also includes other income such as superannuation payments or other business income.

Source: Analysis of HILDA data, 35-54 age band

Income patterns, plus the ability to get into the housing market, directly ties into lower wealth accumulation too. Net assets for the poorest quintile are less than one-quarter of the top quintile, with implications for retirement planning and intergenerational assistance. The latest wealth data in HILDA is from 2018 – since then, trends may have continued, with large increases in house prices increasing overall wealth, but with relative disadvantage for those who do not own their home.

Poverty rates

There is a direct relationship between income and our adopted measure of **poverty** (households whose income is half of the median equivalised disposable household income). All poverty is therefore concentrated in our lowest income quintile. Davidson et al. (2022) recently released their 2022 snapshot on poverty, including longer-term trends. Poverty rates grew in the decade leading up to the Global Financial Crisis (GFC), in part due to strong growth in median household incomes, rising rents, and lower growth in welfare benefits levels. Rates have been stable since then, apart from a large dip during calendar year 2020, when COVID-19-related benefit supplements temporarily moved people out of poverty. Across OECD countries, Australia's poverty rate is in the upper half – well below the United States, similar to New Zealand and the United Kingdom, but well above many other developed countries (Payne and Samarage, 2020).

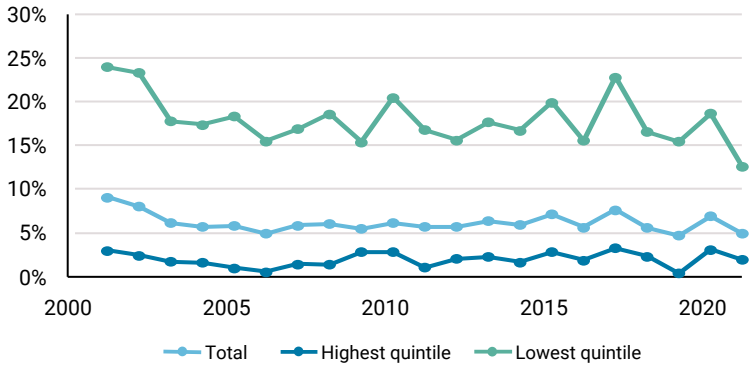
Poverty rates are particularly high for specific cohorts, such as working-age people on income support benefits, sole parents and age pensioners who rent.

Finally, it is important to recognise the imperfect relationship between a household's income and their material living standards – savings, debts and spending patterns will all factor into this too. Studies into material deprivation (e.g., Saunders et al., 2018; Saunders and Naidoo, 2020) ask whether households can afford the necessities of life, and what poorer households have to forgo. Such work shows the multidimensional nature of poverty.

Unemployment, underemployment and participation

When examining the underutilisation rate (the combination of unemployment and underemployment, where underemployment is weighted down by the fraction of additional hours sought), the difference is very large, and has been over the past 20 years. The fall in underutilisation in 2021 has likely continued – ABS data shows strong falls in underutilisation in the past few years, which will particularly benefit lower-income households, who are more likely to be gaining this additional employment.

Figure 18 – Underutilisation over time, selected household income quintiles



Source: Analysis of HILDA data, 35-54 age band

Workforce participation is lower for the lower-income groups too. One striking figure is the higher rate of informal care provided by people in the lowest quintile – 16% provide care, compared to 2% of the highest quintile. This, in combination with other factors may explain lower participation and in turn lower incomes. Change is possible – the National Disability Insurance Scheme is one example where government supports appears to be improving employment outcomes for carers[26].

[26] See for example, NDIS (n.d.)

6.3 Housing

Housing

Comparing top and bottom income quintiles, the lowest 20%

34pp Are less likely to own their home

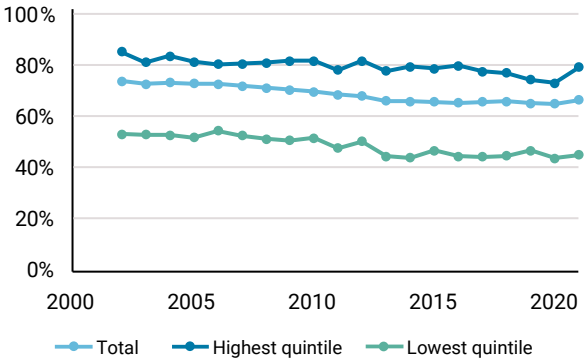
4x Are more likely to have recently been unable to pay their rent or mortgage costs

Home ownership

Home ownership rates are falling across all ages and income quintiles – however falls appear faster for younger and poorer Australians. For people aged 25-34 and in the lowest income quintile the ownership rate has more than halved since the 1980s. Conversely, for the top income quintile for people aged 55-64 the rate has held steady (Coates and Crowley, 2021).

HILDA shows the total rate of adults living in a home owned by them (or family members) has fallen about 8 percentage points. The fall is not dramatically larger for lower-income groups within age bands – Figure 16 shows the decreasing trend for both the highest and lowest income quintiles. The 34 percentage-point difference remains very large.

Figure 19 – Home ownership by equivalised disposable household income quintile over time, age 35-54 band



Source: Analysis of HILDA data

Not owning a home has large implications – particularly as a driver of income poverty in older age and on stability of housing and associated social outcomes. Home ownership has been described by Yates and Bradbury (2010) as the fourth pillar of social insurance in Australia (after the Age Pension, mandatory private superannuation saving and voluntary saving). Older households who do not own their own home are disadvantaged with lower non-housing wealth, lower disposable incomes and higher housing costs in retirement than homeowners. NSW analysis shows that among households over age 65 (NSW Treasury, 2022):

- The disposable income is typically 2.5 times higher for homeowners than non-homeowners;
- more than one-third (37%) of households over age 65 who are not homeowners live in social or community housing.

Renting in the private sector is inherently less stable in Australia. In NSW, the proportion of households who moved in the past two years was 56% for renters compared to 14% for homeowners and the Australia-wide mobility gap is the highest in the OECD (NSW Treasury, 2022). One consequence of stamp duty on housing is that it discourages mobility for those who do own homes – this also contributes to the mobility gap, while also being less economically efficient compared to land taxes (Breunig and Sobeck, 2023).

More people renting means greater reliance on the rental market. In times of low vacancies and rising rents, lower income households can struggle to gain access to affordable rental properties in areas with greater employment opportunities.

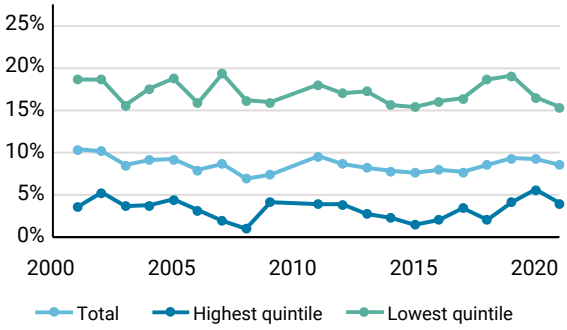
This dynamic also creates further downstream pressures on social housing (the combined stock of public and community housing). Analysis of Australia's four main social housing programs at June 2021 showed 417,000 households in assistance and a waitlist of 160,000 – 15% higher than 2017 and typically implying a multi-year wait (AIHW 2021c). Demographic overrepresentation is highly visible in social housing:

- About 1 in 7 (15%) included a First Nations member;
- more than one-third (36%) reported having an occupant with a disability;
- around 3 in 5 (57%) consisted of single adults.

Housing stress

HILDA asks people whether they have recently been unable to pay their rent or mortgage costs – a direct measure of housing stress. Time trends, in Figure 20, show that overall housing stress has decreased slightly over the past 20 years, but has increased between 2015 to 2020 especially for households on the lowest income. The 2021 decrease for the lowest income group is likely related to increases in welfare payments during the peak of the COVID-19 pandemic.

Figure 20 – Proportion unable to pay rent or mortgage costs on time by equivalised disposable household income quintile over time



Source: Analysis of HILDA data

Importantly, housing costs have been steadily increasing as a proportion of disposable income for owning as well as renting households. As housing costs represent a larger fraction of the household budget for those on lower incomes, this trend increases inequality when considering income after housing costs.

Rising interest rates in 2022/23 may lead to higher rates of mortgage stress, which is not yet reflected in HILDA. There is little evidence to date of significant increase in arrears, but commentators have noted concerns as people's low interest fixed-rate loans expire and are subject to significantly higher interest rate loans.

The RBA sees households as generally well-prepared for higher rates, althought the resilience to higher interest rates is unevenly spread. It observes some households are already experiencing financial stress and pressure on household budgets is expected to continue for some time. The RBA's scenarios indicate most indebted households will still have spare cash flows by the end of 2023[27].

27 See Reserve Bank of Australia (2022)

6.4 Health

Health

Comparing top and bottom income quintiles, the lowest 20%

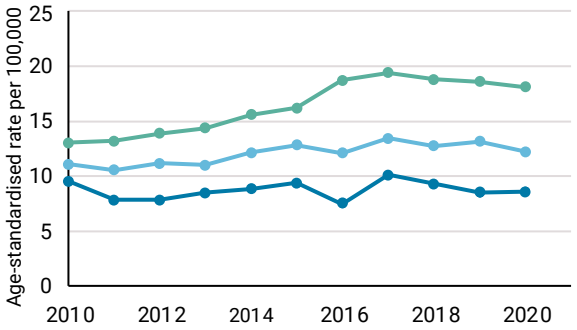
1.3x	Are more likely to be obese
2x	Are more likely to die by suicide, after age-standardisation
2x	Are more likely to suffer psychological distress.
+50%	Have a higher rate of mortality, after age-standardisation

Australia as a nation reports relatively good health outcomes compared to other countries. There are large health inequalities, however, in Australia which can be linked to socioeconomic status based on paid work, employment income and living costs (de Leeuw et al., 2021). Self-reported health status, including mental health, strongly improves with increased household income.

Time trends from HILDA data show that some of our selected indicators have not been improving. Both obesity rates and psychological distress have been increasing across the population, with some evidence that those with lower incomes have seen slightly larger increases.

Our mortality and suicide indicators are tracked at a regional level. While overall mortality is down, deaths by suicide are up, driven by significant growth in lower socioeconomic areas; see Figure 22.

Figure 22 – Age-standardised suicide rates in total, and for lowest and highest income quintiles



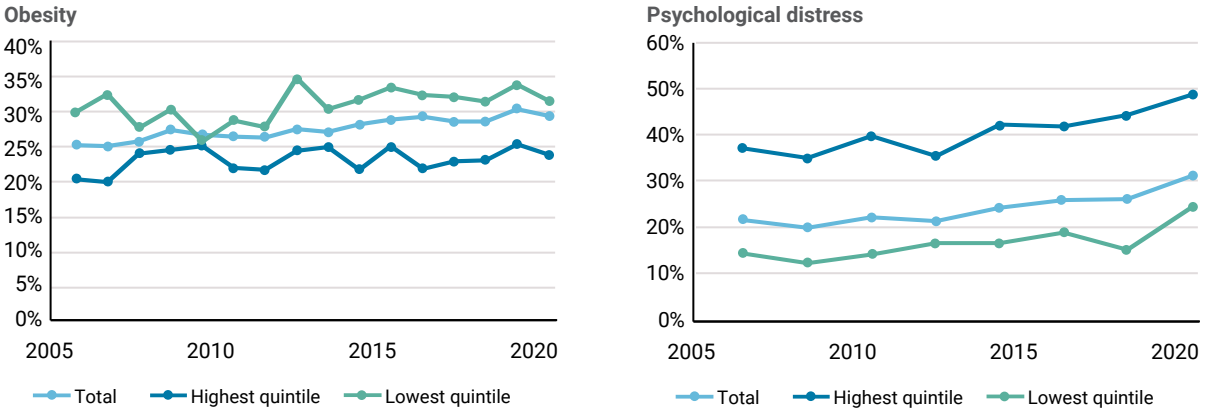
Sources: Suicide from AIHW 2020 National Mortality Database—Suicide (ICD-10 X60–X84, Y87.0)

The AIHW has calculated that if all Australians had experienced the same disease burden as people living in the highest socioeconomic areas in 2018, the total burden could have been reduced by one-fifth (AIHW, 2022b). It highlighted particular outcome gaps for people with disability, people in remote and very remote regions, and First Nations people.

Most recently, the response to the COVID-19 pandemic has been reported to have exacerbated inequalities (Shergold et al., 2022). The Fault Lines report found:

- COVID-19 death rates were higher for people born overseas and in culturally and linguistically diverse communities;
- Australians in the lowest socio-economic status quintile were three times as likely to die of COVID-19 than those in the top quintile;
- the rate of severe illness was 40% higher for First Nations people in Australia during the Omicron wave.

Figure 21 – Rates of obesity and psychological distress in total, and for lowest and highest income quintiles over time



Source: Analysis of HILDA data

6.5 Social

Social

Comparing top and bottom income quintiles, the lowest 20%

3x	Are more likely to be a recent victim of violent crime
7x	Are more likely to experience homelessness
5x	Are more likely to have a child found at risk of harm by child protection services.
13x	Are more likely to give birth while a teenager

Inequality is experienced in a raft of social outcomes including crime victimisation, time in jail, homelessness and childhood violence and abuse. The overlap between these experiences and economic inequality are relatively strong. These inequalities are highlighted for similar groups that experience economic inequalities.

Crime & victimisation

In general Australians enjoy relatively high feelings of personal safety. However, this masks inequities – for example, women were four times more likely than men to say they feel very unsafe walking alone in the local area after dark (Johnson, 2004).

According to the HILDA Survey, at 2021, households in the lowest income quintile were greater than three times more likely to have experienced physical violence in the past year compared to the highest income quintile (3.5% vs 1.1%). These rates and differentials have remained steady over time.

There is much evidence that trauma, lower socioeconomic circumstances and educational attainment, marginalisation, drug and/or alcohol misuse, homelessness, family violence and racism are consistent factors associated with the pathways to offending and prison. Housing is critical to bail being granted and participants' ability to remain on bail successfully. This shows that housing status leads to different justice system outcomes too.

In Australia, the incarceration rate of First Nations people has continued to climb, despite awareness campaigns and attempts at criminal justice reform. In 2021, the age-standardised imprisonment rate for First Nations people was 13.5 times higher than for the non-indigenous population (2,220 per 100,000 compared to 164 per 100,000 – ABS, 2021).

The AIHW does not report incarceration rates by pre-incarceration socioeconomic status, but we can infer the rates are much higher for people with lower incomes. More than half (54%) of 2018 prison entrants reported they were unemployed during the 30 days before prison (AIHW, 2018), and some research has pointed to 50% of prisoners coming from just 6% of postcodes (Victorian Ombudsman, 2015).

Homelessness

People experiencing homelessness and at risk of homelessness are among Australia's most socially and economically disadvantaged. According to the 2016 ABS work estimating homelessness, lower socio-economic groups experience a higher percentage of homelessness (2.1%) compared to the highest socioeconomic group (0.3%). Research in NSW (Miller and Dixie, 2022) shows increased homelessness risk among those:

- Receiving welfare for extended periods of time;
- who identify as First Nations;
- who are female;
- who are younger, with a particularly high rates for those aged 15-18.

Australia also has the issue of 'hidden homelessness', where those experiencing homelessness are hidden from sight. The visible 'rough sleepers' make up only 7% of the homeless population.

Teenage birth rate

Mothers who give birth under the age of 20 are often regarded as a vulnerable population group, who may experience lower education and employment in the future. This may lead to socioeconomic disadvantage for the child and mother, and children of young parents are more likely to become teenage parents themselves.

The teenage birth rate is:

- Higher for remote and very remote areas (21 births per 1,000) compared to major cities (3.2 births per 1,000);
- higher for lower socioeconomic groups (21 births per 1,000 compared with 1.7 births per 1,000 in areas of least disadvantage);
- more than seven times higher for First Nations teenage mothers (46.4 births per 1,000) compared to non-Indigenous women (7.1 per 1,000).

6.5 Education

Education

Comparing top and bottom income quintiles, the lowest 20%

10pp	Are less likely to finish Year 12
20pp	Are less likely to use childcare
-20%	Have less access to child care places

While in Section 5 we discussed educational attainment as a driver of inequality, here we consider educational attainment of children by their parents' socioeconomic status – an outcome of inequality.

High school completion

Year 12 completion varies from 72% among children living in the lowest three socioeconomic deciles to 82% among children living in the highest three socio-economic deciles. While 72% attainment may be considered reasonable, there is also a strong skew in performance, which affects university admissions and early career opportunities. For example, NSW research suggests that those in the top socioeconomic quartile are seven times more likely to achieve an ATAR (university entrance rank) than the bottom quartile (Manny, 2020).

Disadvantaged students are up to three years behind the most-advantaged students[28]. Inequality is found in access to teachers, resources and curriculum and test performance (Hetherington, 2018). The level of inequity has been increasing:

- Those at the bottom include a disproportionate number of students from disadvantaged groups, such as First Nations children and newly arrived migrants.
- Socioeconomic status and parental education are the main drivers for educational inequality. While Australia performs relatively well on gender (middle-of-the-road performer) and migrant status, both are problematic in other countries.

The gaps persist and even increase as children age. For example, Indigenous students are less likely than non-Indigenous students to attend pre-school (6.1% gap), they are less likely to have a Year 12 or equivalent attainment at age 19 (24.9% gap), and to finish studying a post-school qualification (30.5% gap) (Lamb et al., 2020).

There are real, life-long consequences of gaps in educational achievement. Low achievement at school can limit options for further study and work. People with poorer educational results are more likely to be unemployed and to have lower lifetime earnings.

Childcare access and use

Among people with children, rates of using paid childcare are higher for higher-income households. Among the highest income quintile, around 61% use paid childcare compared to around 41% in the lowest income quintile. This likely reflects higher rates of employment in the higher-income households. There may be a stronger economic incentive for higher earners to return to work, with childcare representing a relatively smaller opportunity cost. This has been an area of rapid policy change, with new, more extensive subsidies starting in the middle of 2023. To the extent that all paid childcare is of equally high quality and develops useful skills, this may help address inequality and is so another bright spot on the horizon.

However, access to childcare is also a factor. Hurley et al. (2022) shows that where you live matters. They found:

- About nine million Australians, or 35% of the population, live in neighbourhoods classified as a 'childcare desert' where childcare is most scarce (more than three children per one childcare place).
- Families in regional areas are the most at risk of suffering from poor access and there are correlations between reduced access to childcare and lower socioeconomic status.

While the interplay between supply and demand of services can be tricky, it provides another example of geographic stratification.

[28] See Riddle (2021).

6.7 Environmental

Low-income earners are more likely to live in areas affected by 'urban heat islands' and flood risk.

Environment

Comparing top and bottom income quintiles, the lowest 20%

=	Pay similar insurance loadings for natural disasters, **despite** lower sums insured
9x	Require many more weeks of income to afford a home insurance policy for a given sum insured

Many environmental issues can be considered society-wide intergenerational issues, rather than outcomes of inequality. Climate change, air quality and biodiversity loss have broad multi-decade impacts and fit this description.

However, there is still an interplay between inequality and environmental impacts and experiences too.

- Access to green space is substantially lower in areas with more low-income residents (Astell-Burt et al., 2014). This was particularly highlighted during COVID-19 pandemic-related lockdowns.[29]
- Low-income earners tend to live in areas more likely to be adversely affected by aspects of climate change, such as greater exposure to 'urban heat islands' and flood risks. They also have less ability to move or make other necessary adjustments to their living circumstances, such as air conditioner installation and implementing energy-efficient measures.

The issues above have proven hard to quantify as indicators. Our selected environmental domain indicators are based on home insurance premiums which reflect additional exposure to environmental risk via perils such as bushfire, cyclone, flood and storm. These have been taken from the Australian Actuaries Home Insurance Affordability (AAHIA) Index (Paddam et al., 2022).[30] Home insurance is a convenient way of assessing combined exposure across perils, so is a useful way of comparing exposure to risk.

The research shows that income quintiles tend to have similar natural disaster 'risk premiums' – the portion of their home insurance payment that covers natural disaster risk. However, this hides some underlying effects. Higher-income households have higher replacement values and sum-insured values than lower-income households so we would, all else equal, expect to see lower-risk premiums for lower-income households. The fact they are similar reflects the higher environment risk.

When considered relative to income, home insurance affordability is much lower for low-income households. The lowest income quintile of households spend an average of 3.5 weeks of gross income on annual home insurance premiums, compared to just 0.4 for the highest income quintile. This gap is likely to grow over time too; the 'high emissions' scenario has home insurance costs growing to 4.0 weeks of gross income by 2050.

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29 See Gibson (2021).

30 The mean risk premium does not reconcile to that reported in the AAHIA Green Paper due to different treatment of tax (GST, stamp duty, Emergency Services Levies) and market adjustments. This does not impact the trend by household income.

Conclusions and policy implications

7

In this section

- Even if there is no optimal level of inequality, there is a strong argument for avoiding further increases in inequality.
- There is still work to be done on longitudinal modelling, evaluation of programs and aspects of data collection to better track progress and design solutions.
- Many practical policy proposals already exist that would have a fairly direct impact on inequality.

Inequality needs to be a prominent consideration in policy setting. This means disaggregating the impact of policies and programs on different income or socioeconomic groups.

7.1 Inequality in Australia

Sections 4 to 6 have provided an overview of trends, drivers and outcomes, as seen through the lens of economic inequality. Our key conclusions are:

- **Some inequality is intrinsic to almost any society. However, the level of inequality and its impacts can be managed.** Our tax and transfer system already does much to reduce economic inequality. Distinctions between equality of opportunity versus equality of outcomes are also useful, but the two are ultimately intertwined.
- **Despite some recent stability, inequality is significantly higher now than in the 1980s. There is strong evidence of current upward pressures that will lead to greater future inequality, unless policy action is taken.** Gross income inequality has risen significantly since the 1980s, reversing the previous post-war trend. While the past decade has seen relative stability, there are warning signs. A falling share of labour income as a fraction of the total economy means that wages are no longer tightly tied to economic growth. Labour market changes such as increasing casualisation and gig work may contribute to widening of income distributions. Declining home ownership rates across the population will lead to larger differences later in life, including wealth accumulation and retirement outcomes.
- **A large portion of current inequalities can be tied to systemic factors. While large inequalities can be seen between different age groups, other demographic factors are very significant contributors.** Differences in incomes attributable to age, and so intergenerational factors, represent about one-sixth of current inequality as measured by the Gini. This makes age the largest individual demographic factor, but importantly the other modelled demographic factors collectively make a greater contribution. Gender, disability, regions and ethnic background represent one-tenth of current inequality – this is a very significant portion that reflects systemic issues.
- **Existing economic inequalities translate into large differences in wealth and wellbeing in a broad range of areas.** Outcomes across housing, health, crime, education and the environment are all markedly different when stratified on

income.

- **Existing inequalities already have significant implications for social mobility and intergenerational effects.** Education is a driver of inequality, but we can see significantly poorer educational outcomes from disadvantaged communities. Likewise child protection interactions and criminal offending and victimisation can be linked to socioeconomic disadvantage earlier in life. Geographic stratification means that experiences within the same city can be markedly different. The ability to buy a home affects security and wealth accumulation. While clean causality is tricky to identify in some of these effects, the direction of effects is generally clear.
- **Targeted solutions supporting improvements in equality are likely to generate even broader benefits and support significant gains in overall wellbeing**. In some cases, the need to focus on inequality is obvious – poverty rates can be addressed only by supporting groups with lower incomes. This is true for other domains too, even if less widely understood. For example, reducing the rate of suicide deaths for the lowest quintile will have twice the impact than the highest quintile, given the elevated rates.

  Just as we see large differences in outcomes by existing gaps, it is reasonable to believe that assistance to disadvantaged groups (financial or otherwise) will see a wide range of improvements across domains.

7.2 Policy implications

Throughout we have noted inequality is a broad and complex topic. Economic inequalities can be seen in various metrics of income and wealth. But there are challenges to measuring levels of inequality and, more importantly, there is no clearly optimal level to target. This is in part because there are varied drivers of inequality. In general terms there is:

- More appetite for inequalities in outcomes due to personal preferences, actions or work;
- less appetite for inequalities of opportunities due to luck (including birth right) or discrimination (such that the latter is generally illegal).

It is fairly common to view increases in inequality as undesirable, particularly if they relate to systemic issues, luck or the impact of policy settings upon either. There is also growing acceptance that increasing levels of inequality in the future would be undesirable.

In the following we highlight several policy settings previously suggested by the Actuaries Institute or other experts, which focus on reducing these inequalities.

How policy settings already impact inequality

Government policy settings can reduce or exacerbate inequality. Support provided to those experiencing disadvantage, at the lower end of the economic spectrum, can help improve both their economic situation and broader wellbeing outcomes. Government support is typically funded from taxes imposed on those at the higher end of the economic spectrum. This redistribution of funds tends to reduce inequality. More specifically, four common approaches recently summarised by Breunig and Rose (2019) are:

- **Tax policy** – A more progressive tax system, where higher-income individuals pay a higher proportion of their income than lower-income individuals, should reduce income inequality. Although there are limits – a tax system that is too progressive reduces incentives to earn more and increases incentives to strategically evade tax.
- **Social security policy** – Welfare payments or cash transfers act as a safety net and are usually more important than taxes in reducing inequality across the OECD. A more targeted system (such as Australia's) does more to reduce inequality but is more difficult to administer and can create incentives for undesired financial behaviour to meet eligibility criteria.
- **Investment in public services** – Expenditure in services such as healthcare and education can significantly reduce inequality. Some of this will be invisible to household inequality measures (publicly funded services do not register as household income), but nonetheless important to levelling outcomes.
- **Income tax credits** – Supplementary income for individuals under certain income threshold. These can function as a higher-efficiency alternative to a minimum wage. The additional income provides similar protection against poverty. However, the people can more easily enter the labour market as employers need not pay a minimum wage.

Australia already adopts these principles in many areas. Income tax is progressive (albeit not to the extent of the 1950s, where marginal rates exceeded 65%). In recent years this has extended to the use of income tax credits for lower and middle earners. Extensive use of income and means testing in the welfare system means that support is tightly targeted to more disadvantaged households. Many services are publicly funded, including new funding for the National Disability Insurance Scheme.

The optimal level of inequality is fundamentally a matter of opinion, and in practice the decision to target changes in the level of inequality is for the government of the day to make.

Further work to better understand inequality and its impacts

While much is known, there is a need to continue building the evidence base around the current state of inequality and disadvantage, plus what works to alleviate it.

- **Data linkage and longitudinal modelling offers vast potential** – Understanding how disadvantage in one domain translates into others often requires bringing different datasets together, often at the unit record level. The past decade has seen growth in this type of work, with many projects across different jurisdictions and domains.

  Similarly, longer-term modelling enables visibility of intergenerational disadvantage and the long-term value of earlier intervention. For example, the Priority Investment Approach to welfare tracks long-term welfare and employment outcomes down to an individual level.

  Some of the most important work combines the long-term view and linkage. For example, Investment Approach work by the NSW Government and Taylor Fry (2018) and NSW Government (2023) tracks long-term outcomes for vulnerable young people across justice, child protection, health, education and welfare.

  However, barriers remain – linkage projects are time consuming, and many projects remain bespoke rather than leveraging regular universal linkage arrangements[31]. Barriers between Commonwealth and State linkages are particularly difficult with implications for areas of shared accountability such as health, disability and education.

- **Evaluation and measurement of interventions** –There are a large set of programs to support disadvantaged people run by both government and non-government organisations. Much of this work is valuable, but often unevaluated. Sometimes spending increases occur without visible impact on outcomes. Larger programs should be subject to meaningful evaluation – this may include work early on to ensure the rollout and data collections facilitate such measurement. The Commonwealth Government's proposed Evaluator General may improve the speed and scale of such evaluation.

- **Filling gaps in data collection** – There remain gaps that would benefit from greater attention.

  - The relationship between income inequality, living standards and deprivation. While income inequality (and income poverty) can be measured, this only loosely translates into measures of living standards and deprivation, as discussed in Section 7.2. While some research continues (e.g., Saunders et al., 2022), the issue seems important enough to warrant more consistent attention, and similar work has been endorsed internationally[32]. It can answer questions such as how rapid inflation causes changes in deprivation, even if income poverty rates only change slightly.
  - Wealth accumulation and inequality — Discussions around wealth inequality are hampered by relevant statistical collections being conducted infrequently. Tracking wealth is far harder than income, but at the very least more regular surveys would provide better information to researchers and policymakers.
  - Consistent identification of demographic factors — Some demographic characteristics such as gender and First Nations identification are now routine. Others remain inconsistent, such as disability and household structure. While it is not appropriate to collect all data for every service, this creates significant gaps – for example, the Disability Royal Commission (Vincent et al., 2022) has found significant data gaps in trying to understand outcomes for people with disability experiencing violence, abuse, neglect and exploitation. Better collection, plus better ability to attach information from central sources (with user permission and privacy safeguards) would significantly improve current practice.

Specific potential options for policy reform

There are many policy solutions to address and track inequality. One central idea, already implicit in many policymaking discussions, is to ensure that inequality considerations are taken into account when designing policies and programs. In some cases this will also require better data collection, but often not – much is already known about economic inequality and outcomes.

More specifically, we have reviewed and collated policy ideas suggested by advocates and experts. The table below highlights a selection of these. In these suggested changes, we have focused on:

- Policy settings relevant to existing Actuaries Institute work, and which are prominent in debate around reducing inequality. This includes a focus on areas of taxation, superannuation, social welfare and climate.
- Those that might be expected to have broad appeal as they attempt to reduce inequality of opportunity, or inequalities due to systemic issues, including due to luck.
- Population-wide policies. There are subpopulations whose systematic disadvantage contributes to overall inequality, such as First Nations people and people with disability. Further targeted actions are likely required to reduce these inequalities (e.g., actions under Closing the Gap and scrutiny of the gender pay gap). Such initiatives are tremendously important, but are generally not reflected in our summary table.

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31 This can be compared to New Zealand, where regular linkage occurs across most government administrative datasets in the Integrated Data Infrastructure.

32 See UNCE (2018).

We also see the present time as a period of great opportunity. Following the worst of the COVID-19 pandemic, there is renewed appreciation for the role of effective government. There is also renewed energy by government to use a wellbeing framework. The need to address long-term fiscal challenges and barriers to improving productivity mean there is also appetite to begin difficult conversations and make tough decisions. The positions stated in this paper are put forward in the spirit of further supporting an objective, well informed and vigorous debate on how Australia can address systemic inequality. We also refer interested readers to an independent research paper commissioned by the Actuaries Institute and written by the Tax and Transfer Policy Institute (TTPI) at the Crawford School of Public Policy (Breunig & Sobeck, 2023). This takes a shrewd economic lens to the current design of taxation, and how it can contribute to inequality. Its findings also feature in our summary below.

In developing the summary, we further acknowledge the enduring value of the Henry Tax review (Henry et al., 2010), which takes a comprehensive look at the tax and transfer system and offers many useful and unimplemented recommendations. We also note the recent contribution by The Conversation and Economic Society of Australia through its survey of economists about tax reforms to improve (efficiency and) equity if there were no political constraints (Martin, 2023).

Many of the proposals carry difficulties as well as strengths, and not all are Actuaries Institute endorsed but they contribute meaningfully to the debate on inequality.

Table 5 - Selection of policy changes that could reduce inequality in Australia

Area	Policy change and commentary	Selected references
Tax policy – Wealth derived from savings	Reform the taxation of income from savings to improve consistency, potentially via a dual income tax system. Current inconsistent taxation of savings is a driver of wealth inequality. While labour would still be subject to a progressive schedule, a flat tax on capital returns would be more equitable. Due to the large base, only a low rate (around 6-10%, dependent on design) is estimated to be required to be revenue neutral.	Henry et al., 2010 Breunig & Sobeck, 2023
Tax policy – Wealth derived from real estate	Introducing a federal and broad-based land tax. This would be a simpler way to tax capital gains on housing and would reduce disposable incomes among homeowners, acting to reduce inequity.	Breunig & Sobeck, 2023 Henry et al., 2010 Productivity Commission, 2017
Tax policy – Wealth derived from superannuation	Improve superannuation taxation to be more equitable and reduce wealth inequity. Options include: • Using a discounted marginal income tax rate, rather than a flat rate of tax on super contributions (noting this is partially in place with Division 293 tax and Low Income Tax Super Offset (LISTO) rules). • Taxing earnings received within superannuation during the retirement phase at the same rate as earnings received during the accumulation phase.	Breunig & Sobeck, 2023 Henry et al., 2010
Tax policy – Wealth derived from inheritances and gifts	Introduce an inheritance tax to reduce the intergenerational accumulation of wealth and reduce wealth inequality between those in receipt of an inheritance and those who are not. Significant barriers exist around data collection and tax minimisation strategies. The Productivity Commission recently found inheritance growing significantly larger, but not as large a driver of inequality as some might think. The OECD notes taxing inheritances and gifts can play an important role in improving equality of opportunity and there is a good case for well-designed taxes in this area. It notes a majority of OCED countries include gift and inheritance taxes, although these taxes typically raise little revenue.	Martin, 2023 OECD, 2021b Productivity Commission, 2021 Sonnemann & Goss, 2020

Area	Policy change and commentary	Selected references
Social security policy – Welfare payment rates	Increase the payments for JobSeeker and Youth Allowance. These are currently indexed to CPI and have not matched the general growth in wages and the poverty line. Evaluation is needed to ensure rules do not create welfare traps. Relatedly, indexing by the higher of CPI or wage growth would align growth rates with other government benefits such as the Age Pension.	ACOSS, 2022
Social security policy – Rental payment rates	Significantly increase the rate of Commonwealth Rent Assistance or any alternative approaches that aim to improve the retirement outcomes of retiree renters. Commonwealth Rent Assistance rates are indexed to CPI and have fallen behind rents.	ACOSS, 2022 Actuaries Institute, 2021 Henry et al., 2010
Social security – Age Pension	Subject to resolution of the issues posed by the significant variations in home values across Australia, part of the value of the home above a threshold (which might be indexed) should be included in the Age Pension means test to address equity issues in retirement income between home owners and non-home owners.	Actuaries Institute, 2021
Superannuation - address equity issues in retirement income	Include 'gig' workers and other self-employed workers in the super guarantee (SG) system. Pay the SG on the Government's Parental Leave Pay. Ensure that superannuation balances are considered appropriately in property settlements in a divorce. Extend the SG earnings base to include overtime. Ensure people receive the SG they are entitled to, such as by paying the SG at the same time as wages and better enforcing sham contracting laws.	Actuaries Institute, 2021
(State) Tax policy – Insurance	Replace remaining state-based taxes on insurance with alternative revenue sources that are more equitable and efficient. State government taxes and levies add 10-30% to insurance premiums. These are applied as a multiplicative loading to the insurance premium. Policyholders who face the highest natural hazards risks and pay the highest insurance premiums also pay the most tax. This exacerbates home insurance affordability pressures.	Paddam et al., 2022

* This table contains a mix of policy suggestions that are Actuaries Institute public policy positions and ideas that would significantly reduce inequality but are not currently official Institute public policy positions.

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Appendix A
Methodology notes

We have explored how much of the inequality in individual disposable income can be attributed to the following demographics:

- **Geography** – Categorical variable with 13 levels – one for each capital and non-capital region in each state or territory, except for single indicators for Tasmania, ACT and NT).
- **Gender** – A flag for distinguishing male and female. Non-binary gender was not recorded on the data.
- **Disability** – A flag for health conditions that affects their daily activity.
- **First Nations identification**
- **Country of birth** (as a proxy for non-English cultural backgrounds). We model four groups: those born in Australia, those born in one of New Zealand, United States, Canada and the United Kingdom, those born in other countries, and those with missing country of birth.
- **Age**
- **Household structure** – A combination of working-age indicator, family structure indicators and employment status

While there are inequities by First Nations identification, we have not included this characteristic in the analysis. This is because the results would potentially underestimate the effect due to the modest sample size and because the HILDA sampling frame does not include households in remote First Nations communities. Similarly for sexuality – it is not included every year, and available only for 2020.

The analysis was carried out using HILDA waves 19 to 21 (2019 to 2021).

We report and model disposable income, as reported in the HILDA survey. This is total income after receipt of government benefits and deduction of income tax. It includes wages and salary, business income, investment income and private pensions, but excludes realised capital gains, as HILDA does not collect this information.

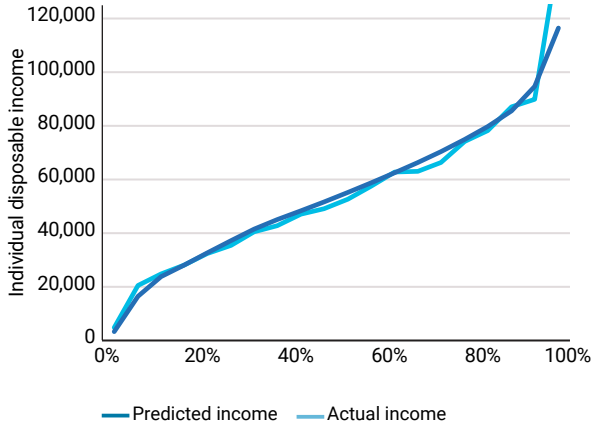
We used a gradient boosted machine (GBM) with decision tree learners fit to individual disposable income. All HILDA responses from waves 19 to 21 for people aged 15 and up were included, and responses are weighted to reflect the population. The model was fit in R using the XGBoost package. We used:

- A 70:30 Train:Test split, with cross-fold validation;
- a maximum tree depth of 3 (i.e. up to 3-way interactions are included);
- 5,000 trees and a learn rate of 0.01.

The variables included were limited to the eight listed above. Of these, age and education level were numeric. All others were categorical. Our geographical variable was region, which splits Australia into 13 regions – generally greater metro areas and the rest of the state or territory.

Figure A.1 shows the actual and predicted values by predicted band. We are able to achieve a good variation in income using only these eight demographics.

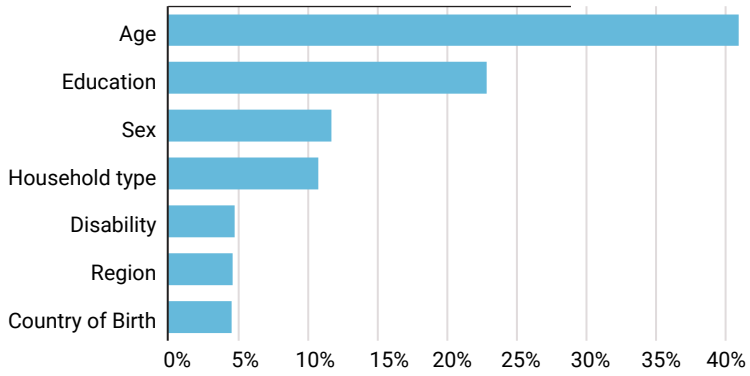
Figure A.1 – Actual and predicted values by 1 percentile prediction band



Source: HILDA, authors' calculation

Figure A.2 shows the variable importance for this model. Age is the most important predictor of disposable income, followed by education, gender and household type.

Figure A.2 – Relative variable importance in GBM



Source: HILDA, authors' calculation

We have then calculated:

- The GINI coefficient based on actual incomes;
- the GINI coefficient based on predicted incomes. The difference between the two gives us the residual (29%). This is variation that is not explained by the seven demographics we included.

We then toggle variables to gauge their contribution to the overall Gini difference. To do this, we set each demographic to a constant value (generally the mode) one-by-one. The change in the coefficient at each step gives us the proportion attributed to that demographic. We repeated the above for a random selection of 100 different orderings of the demographics and averaged the results.

A.2 Indicator details

The following table provides further details of the indicators used to explore inequality across the wellbeing domains.

Table A.1 – Further details on indicators of wellbeing domain outcomes

Economic	Poverty rate	HILDA	2021	Equivalised household disposable income below 50% of median (<$26,622 in 2020). Difference between positive and negative values of: DV: Household financial year disposable regular income ($) [imputed] positive (negative) values [weighted topcode]. Equivalised using OECD equivalence scale. Inflated to 2020 using CPI.
	Household net wealth, $000	HILDA	2018	Equivalised household net wealth. Difference between positive and negative values of: Derived Value: Household Net Worth [positive(negative) values] [imputed] ($). Inflated to 2020 using CPI. Equivalised using OECD equivalence scale.
	Weighted underutilisation rate	HILDA	2021	Based on current labour force status, hours per week usually worked and hours would like to work. If hours <35 and would like to work ≥35 then underemployed. Weighted by number of hours underemployment. For unemployed the weight is 1, for underemployed the weight is the difference between hours and desired hours divided by desired hours.
	Welfare, fraction of total income	HILDA	2021	Derived Value: Household current weekly Australian public transfers ($) [imputed].
	Unpaid carer rate	HILDA	2021	Is there anyone in this household who has a long-term health condition, who is elderly or who has a disability, and for who you care or help on an ongoing basis with self-care (for example, bathing, eating or getting dressed), mobility, and communication in their own language?
Housing	Home ownership rate	HILDA	2021	Do you (or any other members of this household) own this home, rent it, or do you live here rent free?
	Housing affordability	HILDA	2021	Since January 2020, did any of the following happen to you because of a shortage of money? b) Could not pay the mortgage or rent on time.
Health & disability	Obesity rate	HILDA	2021	Body Mass Index (BMI) >30. Based on weight and height.
	Rate of psychological distress	HILDA	2021	Kessler K10 score ≥20, likely to have mild mental disorder.
	Suicide deaths	AIHW	2020	Age standardised rate per 100,000 based on SEIFA quintiles (IRSD).
	Mortality	AIHW	2020	Age standardised rate per 100,000 based on SEIFA quintiles (IRSD).
Social	Violent crime victimisation	HILDA	2021	We now would like you to think about major events that have happened in your life over the past 12 months. For each statement cross either the YES box or the NO box to indicate whether each event happened during the past 12 months. k) Victim of physical violence (e.g., assault).
	Homelessness rate	ABS	2016	Based on IRSD deciles of SA1. Total across operation groups of homelessness. From ABS Census of Population and Housing, 2016, TableBuilder.
	Child protection substantiations	AIHW	2021	Rate of children aged 0–12 with 1 or more substantiations, per 1,000. Based on IRSAD by postcode. See: https://www.aihw.gov.au/reports/child-protection/child-protection-australia-2020-21/data
	Teenage birth rate	AIHW	2019	Rate of live births to females aged 15-19, per 1,000. Based on IRSD. See: https://www.aihw.gov.au/reports/children-youth/australias-children/data?page=1
Education	Year 12 certification rates for Year 12 population	ACARA	2020	Estimate based on potential population and using three groupings of IRSD deciles. See: https://www.acara.edu.au/reporting/national-report-on-schooling-in-australia/national-report-on-schooling-in-australia-data-portal/year-12-certification-rates
	Early childcare use	HILDA	2021	Uses paid childcare (any of while undertaking paid work, non-work activities or not undertaking paid work).
	Access to childcare	Mitchell Institute	2019	Based on median number of childcare places per child by IRSD decile. See: https://www.vu.edu.au/sites/default/files/how-accessible-is-childcare-report.pdf
Environment	Home insurance natural hazards risk relativity	Finity Defin'd	2018	Annual home insurance risk premium for natural hazards (bushfire, cyclone, earthquake, flood and storm). See HIA Green Paper for details: https://actuaries.asn.au/Library/Opinion/2022/HIAGreenPaper.pdf
	Home insurance affordability	Finity Defin'd	2018	Annual home insurance premium as a ratio of weekly gross household income. See HIA Green Paper for details: https://actuaries.asn.au/Library/Opinion/2022/HIAGreenPaper.pdf

The table shows that several indicators drawn from outside HILDA when data was not available within the survey. Summarising these:

- Suicides and Mortality are age-adjusted rates by SEIFA quintile (specifically the Index of Relative Socio-economic Disadvantage or IRSD). There is a clear relationship between SEIFA quintile and household income, however it is imperfect. Two key factors are:
  - SEIFA quintile reflects more information than just income;
  - there is significant variation in incomes within a Statistical Area 2, which is then allocated one SEIFA quintile.

This potentially understates the differences between quintiles compared to if based on a pure household income metric.

- Data for our environmental indicators was provided by Finity from their Defin'd database, which was also used for the AAHIA. The quintile is based on gross household income.
- Homelessness is based on all age rates from the ABS Census, mapped from Statistical Area 1 region to IRSD.
- Child protection substantiation rates are per child aged 0-12, based on IRSAD mapped from postcode.
- Teenage births are per females aged 15-19, based on IRSD.
- Access to childcare is based on the median number of places per neighbourhood by IRSD decile. We have averaged the medians of deciles to obtain an estimate for the relevant quintile.

A.3 Characteristic details

The following table provides further details of the characteristics used to explore dimensions of inequality using HILDA data.

Table A.2 – Further details on indicators of wellbeing domain outcomes

Characteristic	Source	Description
Female	HILDA	Recorded gender as Female.
Has a disability	HILDA	Reported long-term health condition.
First Nations	HILDA	Identifies as Indigenous, excludes "Unknown/Missing".
CALD	HILDA	Country of Birth outside of: Australia, New Zealand, UK, USA, Canada, excludes "Unknown/Missing".
LGBTQI	HILDA	Sexuality Gay, Lesbian or Other, excludes "Unknown/Missing".
No Year 12 Education	HILDA	Highest education level below Year 12, excludes "Unknown/Missing".
No Bachelors' degree	HILDA	Highest education level below Bachelors' degree, excludes "Unknown/Missing".
Working age, dependent children, no employment	HILDA	At least one dependent child in the household and an adult under 65 and no employed adults.
Working age, no dependent children, unemployed	HILDA	No dependent children in the household and an adult under 65 and no employed adults.
Non-Metro	HILDA	Region other than the Greater areas of Sydney, Melbourne, Brisbane, Adelaide, Perth, and the NT and ACT. Excludes "Unknown/Missing".

Appendix B
Further outcome tables

Table B.1 – Outcome indicators by equivalised disposable housing income quintile, primary householders aged 35-54 (e)

Domain	Outcome	Values Quintile (1 = lowest) of equivalised disposable household income					
		1	2	3	4	5	All
	Average equivalised income p.a.	$30k	$49k	$63k	$82k	$144k	$73k
Economic	Poverty rate	31%	0%	0%	0%	0%	6%
	Household net wealth, $000	231	277	437	546	1,004	499
	Weighted underutilisation rate	13%	5%	3%	2%	2%	5%
	Welfare, fraction of total income	48%	10%	3%	1%	0%	13%
	Unpaid carer rate	16%	8%	3%	4%	2%	7%
Housing	Home ownership rate	45%	62%	69%	76%	79%	66%
	Struggled to pay housing costs on time	15%	9%	9%	6%	4%	9%
Health & disability	Obesity rate	32%	30%	33%	29%	24%	29%
	Rate of psychological distress	49%	34%	25%	23%	24%	31%
	Suicide deaths per 100,000[(a)(b)]	18	14	11	10	9	12
	Total deaths per 100,000[(a)(b)]	589	542	472	432	390	485
Social	Violent crime victim, past 12 months	3.5%	0.6%	1.3%	0.4%	1.1%	1.4%
	Homelessness rate[(a)]	2.1%	1.0%	0.7%	0.5%	0.3%	0.9%
	Child protection substantiations, per 1000[(a)]	16.5	12.2	9.6	5.8	3.4	9.5
	Teenage births, per 1000[(a) (c)]	17.8				1.4	7.7
Education	Year 12 attainment rate[(a) (c)]	72%		76%	82%		76%
	Early childcare use	41%	48%	53%	58%	61%	52%
	Access to childcare - places per child[(a)]	0.36	0.36	0.36	0.40	0.45	0.39
Environment	Natural hazard insurance risk relativity[(d)]	668	673	676	686	703	681
	Home insurance affordability[(d)] (premium ÷ weekly income)"	3.5	1.6	1.0	0.6	0.4	1.4

(a) Based on small-area SEIFA quintiles rather than household-level incomes

(b) Standardised rates across all ages, rather than 35-54 age band only

(c) For children in the household, based on indicator-appropriate age range, rather than 35-54 age band

(d) No age restriction

(e) Sources: HILDA, ABS, AIHW, Australian Curriculum, Assessment and Reporting Authority (ACARA), Mitchell Institute, Finity Defin'd.

Table B.2 – Outcome indicators by equivalised disposable housing income quintile, primary householders aged 15-34[e]

Domain	Outcome	Values Quintile (1 = lowest) of equivalised disposable household income					
		1	2	3	4	5	All
	Average equivalised income p.a.	$24k	$44k	$58k	$75k	$113k	$63k
Economic	Poverty rate	54%	0%	0%	0%	0%	11%
	Household net wealth, $000	52	110	153	209	401	185
	Weighted underutilisation rate	20%	7%	3%	2%	3%	7%
	Welfare, fraction of total income	53%	13%	5%	3%	1%	15%
	Unpaid carer rate	9%	3%	2%	1%	1%	3%
Housing	Home ownership rate	9%	25%	38%	42%	52%	33%
	Struggled to pay housing costs on time	13%	9%	7%	8%	2%	8%
Health & disability	Obesity rate	29%	26%	25%	27%	17%	25%
	Rate of psychological distress	56%	44%	39%	35%	39%	43%
	Suicide deaths per 100,000[a][b]	18	14	11	10	9	12
	Total deaths per 100,000[a][b]	589	542	472	432	390	485
Social	Violent crime victim, past 12 months	5.8%	2.5%	2.8%	0.8%	0.8%	2.5%
	Homelessness rate[a]	2.1%	1.0%	0.7%	0.5%	0.3%	0.9%
	Child protection substantiations, per 1000[a]	16.5	12.2	9.6	5.8	3.4	9.5
	Teenage births, per 1000[a] [c]	17.8				1.4	7.7
Education	Year 12 attainment rate[a] [c]	72%		76%	82%		76%
	Early childcare use	53%	63%	73%	77%	67%	67%
	Access to childcare - places per child[a]	0.36	0.36	0.36	0.40	0.45	0.39
Environment	Natural hazard insurance risk relativity[d]	668	673	676	686	703	681
	Home insurance affordability[d] (premium ÷ weekly income)"	3.5	1.6	1.0	0.6	0.4	1.4

(a) Based on small-area SEIFA quintiles rather than household-level incomes

(b) Standardised rates across all ages

(c) For children in the household, based on indicator-appropriate age range

(d) No age restriction

(e) Sources: HILDA, ABS, AIHW, Australian Curriculum, Assessment and Reporting Authority (ACARA), Mitchell Institute, Finity Defin'd.

Table B.3 – Outcome indicators by equivalised disposable housing income quintile, primary householders aged 55 and over[e]

Domain	Outcome	Values Quintile (1 = lowest) of equivalised disposable household income					
		1	2	3	4	5	All
	Average equivalised income p.a.	$19k	$31k	$45k	$65k	$142k	$60k
Economic	Poverty rate	100%	25%	0%	0%	0%	25%
	Household net wealth, $000	512	478	747	971	1,881	918
	Weighted underutilisation rate	33%	7%	8%	2%	1%	10%
	Welfare, fraction of total income	75%	71%	29%	10%	3%	38%
	Unpaid carer rate	10%	15%	13%	7%	4%	10%
Housing	Home ownership rate	72%	69%	78%	84%	89%	78%
	Struggled to pay housing costs on time	5%	4%	6%	4%	3%	4%
Health & disability	Obesity rate	34%	33%	32%	28%	26%	31%
	Rate of psychological distress	30%	24%	19%	21%	15%	22%
	Suicide deaths per 100,000[a][b]	18	14	11	10	9	12
	Total deaths per 100,000[a][b]	589	542	472	432	390	485
Social	Violent crime victim, past 12 months	0.4%	1.4%	0.6%	0.5%	0.1%	0.6%
	Homelessness rate[a]	2.1%	1.0%	0.7%	0.5%	0.3%	0.9%
	Child protection substantiations, per 1000[a]	16.5	12.2	9.6	5.8	3.4	9.5
	Teenage births, per 1000[a] [c]	17.8				1.4	7.7
Education	Year 12 attainment rate[a] [c]	72%		76%	82%		76%
	Early childcare use	2%	39%	36%	37%	47%	32%
	Access to childcare - places per child[a]	0.36	0.36	0.36	0.40	0.45	0.39
Environment	Natural hazard insurance risk relativity[d]	668	673	676	686	703	681
	Home insurance affordability[d] (premium ÷ weekly income)"	3.5	1.6	1.0	0.6	0.4	1.4

(a) Based on small-area SEIFA quintiles rather than household-level incomes

(b) Standardised rates across all ages

(c) For children in the household, based on indicator-appropriate age range

(d) No age restriction

(e) Sources: HILDA, ABS, AIHW, Australian Curriculum, Assessment and Reporting Authority (ACARA), Mitchell Institute, Finity Defin'd.

Table B.4 – Outcome indicators for subgroups, primary householders aged 35-54

	Outcome	National average	Male	Female	First Nations	CALD	Has a disability	LGBTQI *2020	No Year 12 education	No Bachelors' degree	Dependant children, no employment	No dependant children, no employment	Non-Metro
Economic	Poverty rate	6%	6%	7%	10%	6%	15%	13%	13%	9%	61%	49%	9%
	Household net wealth, $000	499	518	478	212	393	372		299	405	296	145	445
	Weighted underutilisation rate	5%	4%	4%	11%	4%	10%	9%	7%	5%	100%	100%	5%
	Welfare, fraction of total income	13%	11%	14%	30%	10%	30%	22%	27%	18%	84%	90%	17%
	Unpaid carer rate	7%	7%	6%	12%	5%	16%	9%	8%	9%	33%	25%	7%
Housing	Home ownership rate	66%	69%	63%	36%	69%	55%	49%	49%	61%	30%	11%	64%
	Struggled to pay housing costs on time	9%	9%	8%	19%	10%	10%	12%	8%	10%	23%	8%	8%
Health & disability	Obesity rate	29%	28%	31%	44%	17%	40%	35%	40%	36%	36%	48%	35%
	Rate of psychological distress	31%	28%	34%	50%	29%	55%		42%	35%	66%	69%	33%
	Suicide deaths per 100,000[(a)(b)]												
	Total deaths per 100,000[(a)(b)]												
Social	Violent crime victim, past 12 months	1.4%	0.6%	2.1%	3.5%	0.0%	3.2%	6.8%	3.7%	1.6%	9.0%	5.9%	1.9%
	Homelessness rate[(a)]												
	Child protection substantiations, per 1000[(a)]												
	Teenage births, per 1000[(a) (c)]												
Education	Year 12 attainment rate[(a) (c)]	76%	72%	81%									
	Early childcare use	52%	49%	54%	38%	49%	48%	47%	44%	48%	23%	38%	52%
	Access to childcare - places per child[(a)]												
Environment	Natural hazard insurance risk relativity[(d)]												
	Home insurance affordability[(d)] (premium ÷ weekly income)"												

Source: Analysis of HILDA data

Table B.5 – Outcome indicators for subgroups, primary householders aged 15-34

	Outcome	National average	Male	Female	First Nations	CALD	Has a disability	LGBTQI *2020	No Year 12 education	No Bachelors' degree	Dependant children, no employment	No dependant children, no employment	Non-Metro
Economic	Poverty rate	11%	11%	11%	35%	8%	21%	16%	26%	14%	83%	61%	13%
	Household net wealth, $000	185	202	168	40	289	105		84	147	10	21	135
	Weighted underutilisation rate	7%	7%	5%	22%	13%	13%	15%	12%	6%	100%	100%	6%
	Welfare, fraction of total income	15%	12%	17%	49%	9%	31%	24%	37%	20%	85%	95%	20%
	Unpaid carer rate	3%	2%	3%	8%	0%	8%	5%	7%	4%	9%	16%	6%
Housing	Home ownership rate	33%	31%	35%	16%	39%	23%	18%	16%	28%	7%	4%	35%
	Struggled to pay housing costs on time	8%	9%	7%	16%	10%	12%	12%	13%	10%	13%	15%	9%
Health & disability	Obesity rate	25%	23%	26%	39%	11%	40%	27%	31%	30%	26%	30%	29%
	Rate of psychological distress	43%	36%	48%	53%	33%	65%		53%	47%	61%	60%	44%
	Suicide deaths per 100,000[(a)(b)]												
	Total deaths per 100,000[(a)(b)]												
Social	Violent crime victim, past 12 months	2.5%	2.0%	3.0%	11.%	0.3%	7.0%	7.3%	6.9%	3.5%	6.8%	13.5%	3.1%
	Homelessness rate[(a)]												
	Child protection substantiations, per 1000[(a)]												
	Teenage births, per 1000[(a) (c)]												
Education	Year 12 attainment rate[(a) (c)]	76%	72%	81%									
	Early childcare use	67%	60%	69%	54%	77%	63%	45%	51%	63%	0%	46%	64%
	Access to childcare - places per child[(a)]												
Environment	Natural hazard insurance risk relativity[(d)]												
	Home insurance affordability[(d)] (premium ÷ weekly income)"												

Source: Analysis of HILDA data

Table B.6 – Outcome indicators for subgroups, primary householders aged 55 and over

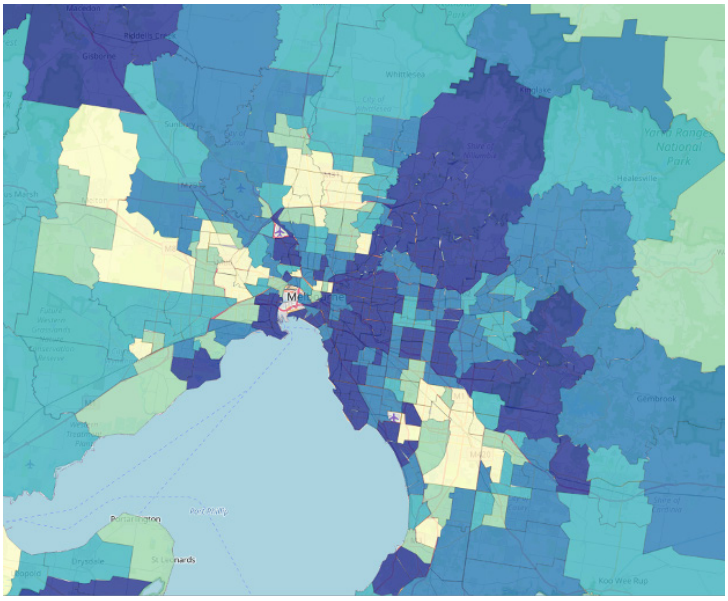
	Outcome	National average	Male	Female	First Nations	CALD	Has a disability	LGBTQI *2020	No Year 12 education	No Bachelors' degree	Dependant children, no employment	No dependant children, no employment	Non-Metro
Economic	Poverty rate	25%	22%	29%	32%	34%	33%	21%	37%	29%	44%	55%	27%
	Household net wealth, $000	918	952	881	368	756	744		682	762	742	162	776
	Weighted underutilisation rate	10%	3%	6%	6%	10%	9%	14%	5%	5%	100%	0%	3%
	Welfare, fraction of total income	38%	33%	43%	52%	41%	51%	34%	53%	44%	65%	68%	44%
	Unpaid carer rate	10%	7%	12%	25%	8%	11%	15%	12%	10%	26%	14%	10%
Housing	Home ownership rate	78%	80%	77%	48%	76%	73%	74%	73%	76%	66%	40%	79%
	Struggled to pay housing costs on time	4%	5%	4%	7%	6%	6%	10%	5%	4%	5%	14%	4%
Health & disability	Obesity rate	31%	29%	32%	27%	25%	37%	38%	38%	34%	35%	41%	34%
	Rate of psychological distress	22%	20%	24%	27%	29%	32%		25%	24%	39%	15%	20%
	Suicide deaths per 100,000[(a)(b)]												
	Total deaths per 100,000[(a)(b)]												
Social	Violent crime victim, past 12 months	0.6%	0.7%	0.5%	2.3%	0.5%	0.7%	0.7%	0.5%	0.7%	0.9%	4.3%	0.4%
	Homelessness rate[(a)]												
	Child protection substantiations, per 1000[(a)]												
	Teenage births, per 1000[(a) (c)]												
Education	Year 12 attainment rate[(a) (c)]	76%	72%	81%									
	Early childcare use	32%	26%	47%	13%	26%	33%	0%	41%	34%	0%	18%	33%
	Access to childcare - places per child[(a)]												
Environment	Natural hazard insurance risk relativity[(d)]												
	Home insurance affordability[(d)] (premium ÷ weekly income)"												

Source: Analysis of HILDA data

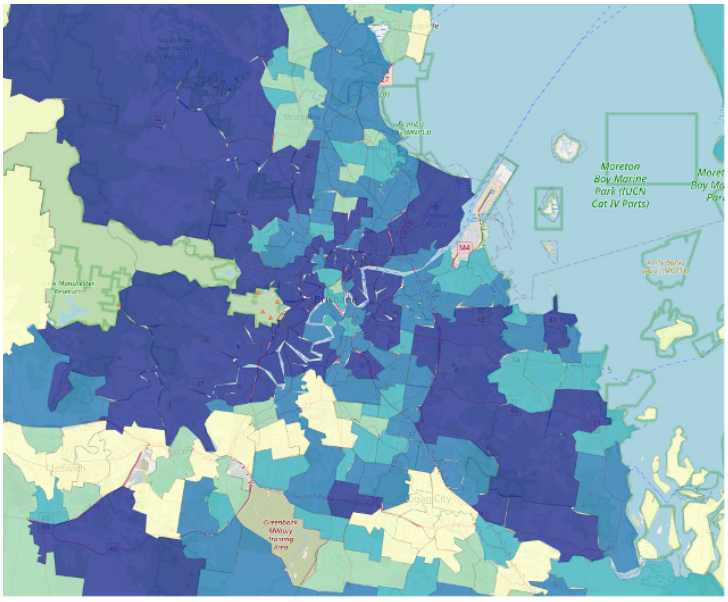
Appendix C
Additional maps of socioeconomic quintiles

Maps show ABS-defined SEIFA quintiles at a Statistical Area 2 (SA2) level, using the Index of Relative Socio-Economic Disadvantage[33]

C.1 Melbourne area

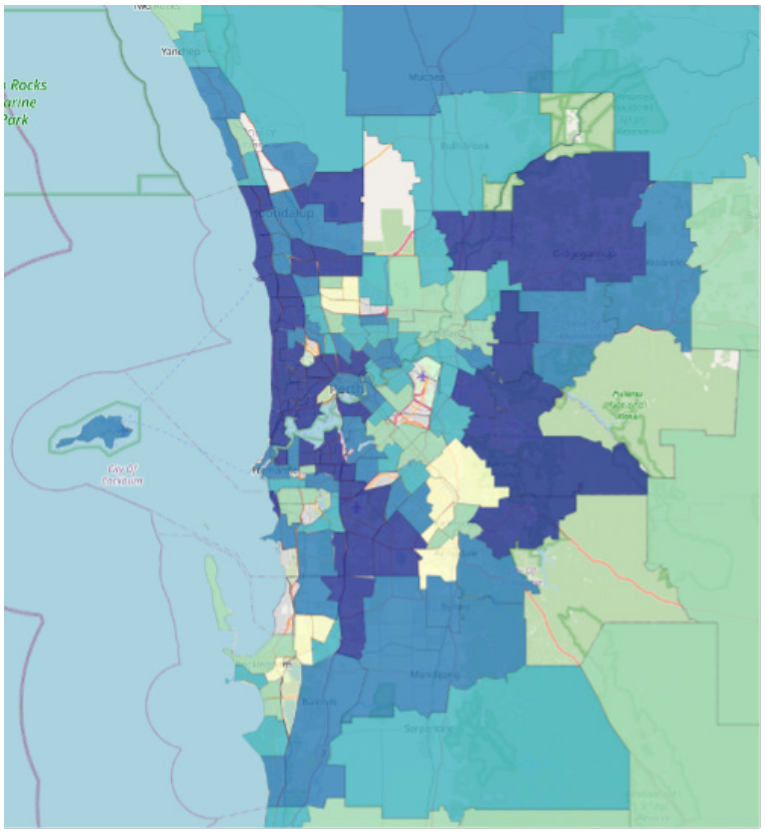


C.2 Brisbane area

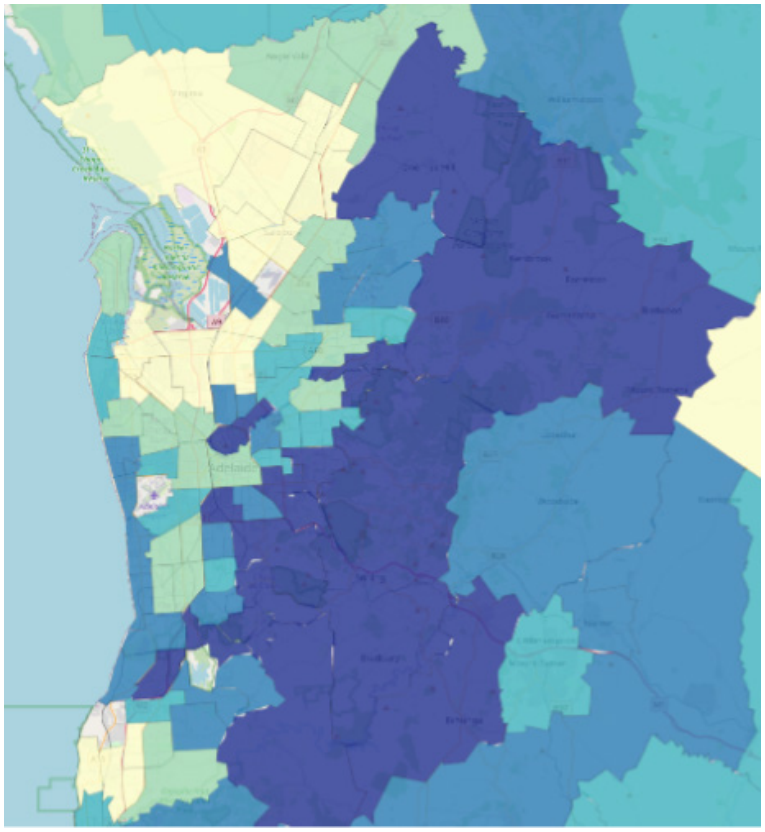


[33] https://www.abs.gov.au/websitedbs/censushome.nsf/home/seifa

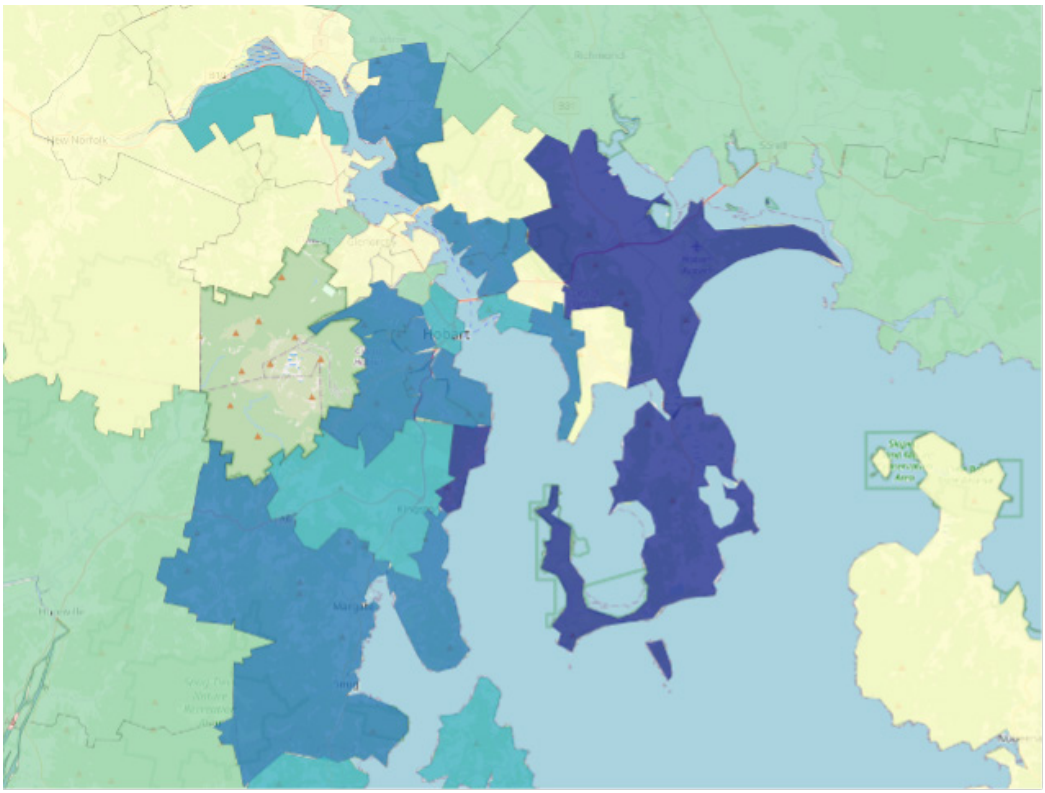
C.3 Perth area



C.4 Adelaide area



C.5 Hobart area



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