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Inflation and inequality: How high inflation is affecting different Australian households

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Overview

Australia is living through its worst inflationary episode since the late 1980s. High inflation can affect inequality, because not all types of households are hit in the same way when prices are rising quickly.

First, different household types buy different goods and services, so faster growth in some prices will hit the households that buy more of those goods and services harder.

Second, different types of households have different capacity to absorb the 'shock' of higher prices – including by reducing their discretionary spending, eating into their savings, or drawing down on their assets.

Third, and less directly, in periods of high inflation, nominal income growth can differ across household types. This may reduce the capacity of some to manage the shock.

Our analysis finds that recent high inflation has disproportionately hit low-income households.

We find that the rates of effective inflation have been similar for most household types through 2022 and 2023, because price rises have been broad-based.

High growth in the prices of essentials such as food and energy have disproportionately hit lower-income households. On the other hand, high growth in the prices of some discretionary items, such as holiday travel, have hit high-income earners harder.

Effective inflation has been higher for homeowners than renters, because housing construction costs have been rising fast. However,

given most homeowners have not purchased a newly constructed dwelling recently, this overstates the impact on most homeowners. Further, the squeeze on renters from recent high growth in advertised rents will take time to flow through to the Consumer Price Index.

But households differ in their capacity to absorb high inflation.

Lower-income households have less 'fat' in their spending, as do low-wealth households, renters, and people on government payments. This means less scope to reduce spending before spending on essentials is squeezed.

Low-income households also have fewer savings and fewer liquid assets, and so have less capacity to draw on their savings to maintain their consumption when prices rise.

On the other hand, lower-income households have had faster overall average income growth. But this is partly because some low-income earners are working more hours.

Overall, high inflation has hit many low-income Australians particularly hard. Indicators of financial distress are much higher among low-income households than for others.

The disproportionate impact on the most vulnerable is another reason for the Reserve Bank to shoot for low and stable inflation. And it also suggests any government response to mitigate the effects of high inflation should be targeted to the most vulnerable.

Finally, our work highlights the need for expenditure data to be made available more quickly, so we can better understand any distributional impacts of inflation.

1 High inflation affects different households differently

Australia is living through its worst inflationary episode since the late 1980s. But not every Australian is hit in the same way when prices are rising quickly.

Inflation can affect different types of households differently because households have different consumption 'baskets' – they buy different goods and services. For example, faster growth in the prices of essential items can disproportionately affect lower-income households, because these items make up a larger percentage of their spending.

Different households also have different capacity to absorb the shock of higher prices – including by reducing their discretionary spending, eating into their savings, or drawing down on their assets.

Understanding the differing effects of inflation across different groups is important for appreciating the risks of higher inflation contributing to greater inequality, and for considering the appropriate policy responses.

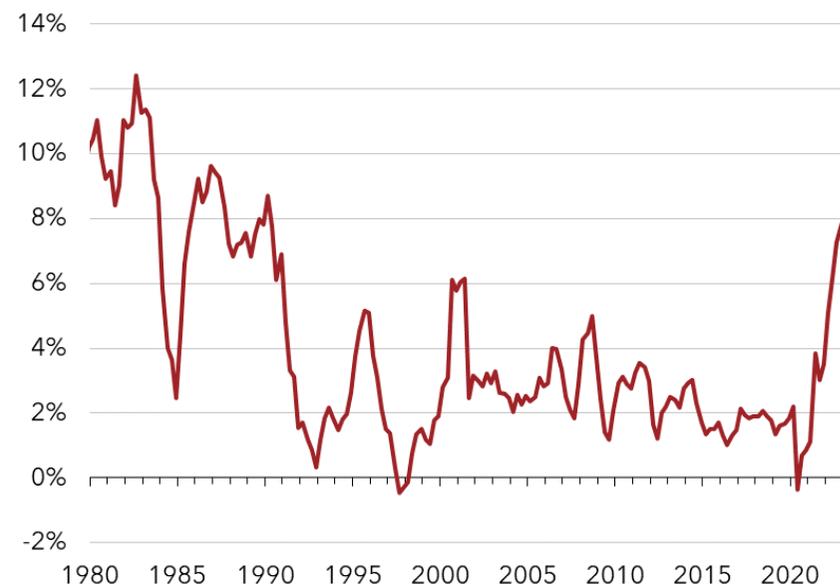
1.1 Recent high inflation has squeezed household living standards

From about mid-2021, as the Australian economy recovered from the COVID pandemic, inflation rose rapidly, from 1.1 per cent to a peak of 7.8 per cent at the end of 2022 (Figure 1.1). The last time

inflation was higher in Australia was in 1990, before the Reserve Bank began targeting inflation.¹

Figure 1.1: Australia is experiencing its highest inflation in more than three decades

Annual consumer price inflation in Australia



Source: ABS (2023a).

Supply problems have played a key role in keeping inflation high, including pandemic-related disruptions to global supply chains, and sharp increases to commodity and energy prices as a result of Russia's invasion of Ukraine.² The significant amount of fiscal and

¹ The earliest references to the Reserve Bank of Australia adopting inflation targeting were in August 1992: RBA (2023b).

² Beckers, Hambur, and Williams (2023).

monetary support provided by the government underpinned a strong recovery in demand and put further pressure on prices.³

The upshot has been a big jump in the inflation rate for some goods and services, compared to the two years before the pandemic (Figure 1.2). The two most important groups of ‘essentials’ – housing and food – have had particularly steep price rises.

Wages have not kept pace with inflation. Real wages have fallen by 3.5 percentage points per year on average since December 2021 (Figure 1.3). But declines in real income have been less pronounced, because of increases in working hours, people switching to higher-paid jobs or getting promotions, and firms offering additional payments such as overtime or cost-of-living bonuses.⁴

Nonetheless, as inflation has persisted, more households are saying price rises are a very big problem for them (Figure 1.4).

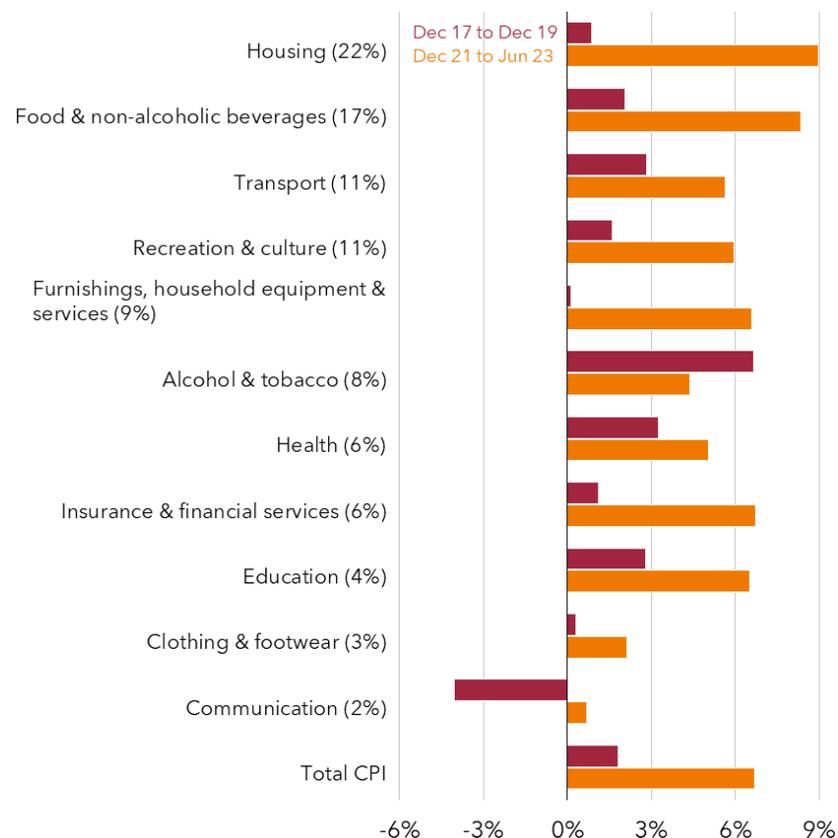
1.2 High inflation can hit some households harder than others

High inflation can affect different households differently.

The first reason is that different households buy different goods and services.

The typical measure of inflation – the consumer price index (CPI) – is a summary of economy-wide inflation: specifically a weighted average of inflation for specific products (the ‘basket’ of goods and services) across Australia’s eight capital cities.

Figure 1.2: Inflation in essential items have increased substantially
Annualised price changes in CPI groups

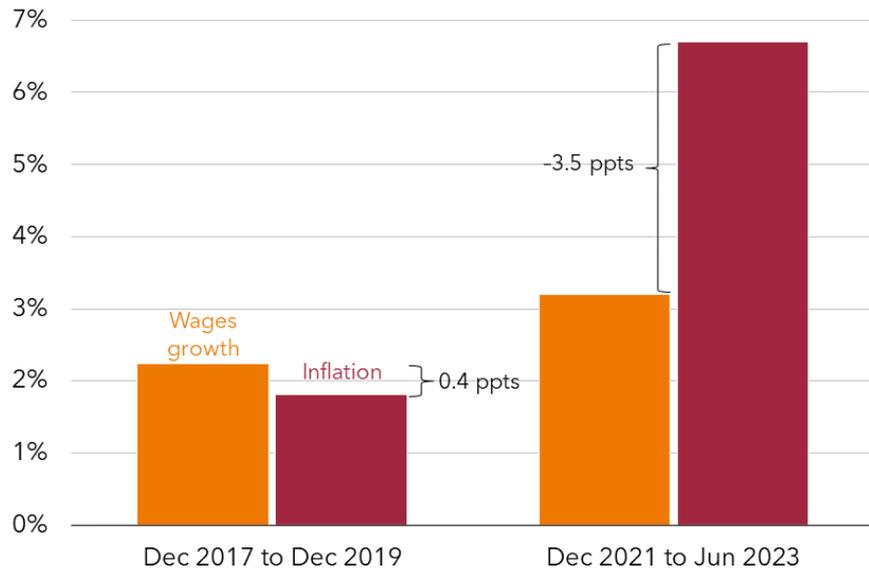


Note: Numbers in parentheses are shares in the CPI ‘basket’ as at December 2022.
Sources: ABS (2022a and 2023a).

3 Lowe (2023b).

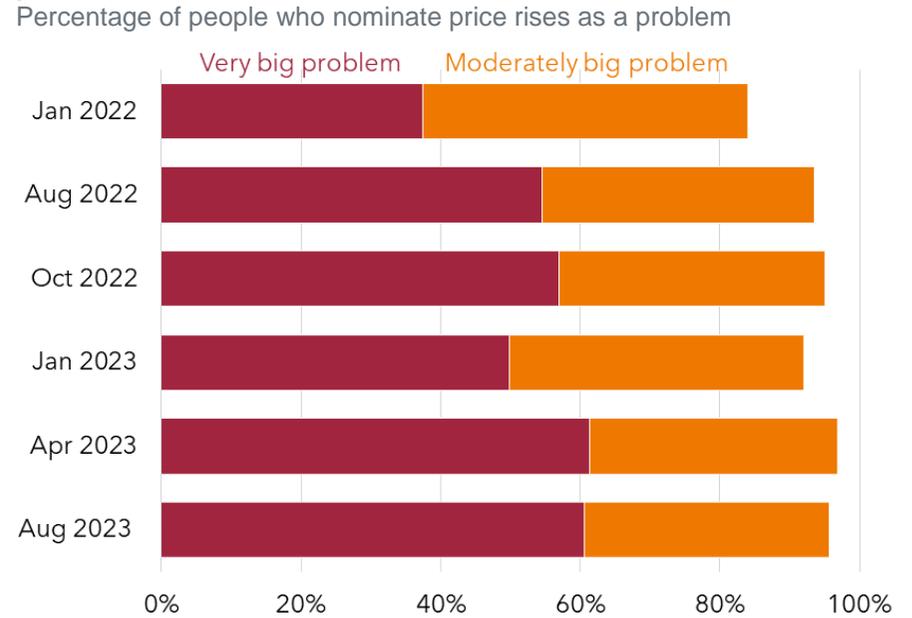
4 RBA (2023a), Chapter 4.

Figure 1.3: Incomes have not kept pace with inflation
Annualised changes in the consumer price index and wage price index



Note: The wage price index measure used is the hourly rate of pay excluding bonuses.
Sources: ABS (2023a and 2023b).

Figure 1.4: Households are increasingly reporting price rises are a problem for them
Percentage of people who nominate price rises as a problem



Source: Adapted from Biddle and Gray (2023), Figure 9.

Effective inflation rates vary across household types according to their baskets and the relative growth in prices of goods and services.⁵

Previous Australian studies found that effective inflation was slightly higher for lower-income households in the decade before COVID (Box 1).

Second, different households have different amounts of ‘fat’ in their spending. Households that buy a higher proportion of essentials and lower-cost versions of goods have less opportunity to change their consumption patterns without cutting into their spending on essential items (**‘the consumption buffer’**).⁶

Some studies have found that inflation has historically had bigger impacts on low-income households (Box 1). These were done in the pre-COVID era of low and stable inflation. Studies looking at the current high inflation period are discussed in Section 1.3.

Third, the capacity to manage or absorb the impact of high inflation will also differ across households. Low-income households have less room to buffer sharp increases in their living costs by reducing savings or drawing down on wealth. The same is true of younger households (**‘the savings buffer’**).

Finally, and less directly, income increases in response to the prevailing economic conditions might differ across household types. If pay increases differ across households by socio-economic status

or age, the way inflation is felt by different groups may also differ (**‘income growth’**).

1.3 International evidence suggests recent high inflation may be disproportionately hurting low-income households

Several international studies attempt to estimate the distributional impacts of recent inflation.

Researchers at the European Central Bank find a large differential – almost 2 percentage points – in the inflation rates experienced by the highest and lowest quintiles of income earners, as the result of higher energy and food prices through 2022.⁷

This was similar to findings of the World Bank that households in Europe and Central Asia in the poorest decile of the consumption distribution faced effective inflation 2.3 percentage points higher than households in the top decile in 2022.⁸ This difference was more than 5 percentage points in some countries.

However, research for the European Parliament drawing on data through the first quarter of 2023 finds that this gap has almost completely closed across the euro area as the impacts of the high prices of energy and food have been increasingly accompanied by fast-growing prices of luxury goods (restaurants and travel) and low growth in rents (Figure 1.5). But a more pronounced differential remains in some countries, such as Italy and Latvia.⁹

5 See the overviews in Jaravel (2021) and Brainard (2022).

6 See Brainard (2022).

7 Charalampakis et al (2022). This contrasts with their findings that in the low-inflation environment pre-pandemic, there was almost no difference in the

effective inflation rates between high- and low-income households (not including rent and owner-occupied housing costs).

8 Lokshin et al (2023).

9 Gros and Shamsfakhr (2023).

Box 1: Historical evidence on how inflation affects different types of households

Two broad approaches have been used to study how inflation affects different household types through differences in consumption patterns. The first uses aggregated expenditure data from surveys with official inflation measures, and the second uses granular data from supermarket scanners. Studies using more granular data have generally found bigger distributional effects, in part because consumers' substitution behaviour may be missed in more aggregated data.¹⁰

Australian studies

The studies of inflation distribution in Australia to date have used aggregated expenditure data.

Van Kints and Breunig (2021) study the effects of inflation across the income distribution. They find that households in the lowest 20 per cent of incomes experienced slightly higher effective inflation than those in higher quintiles – a cumulative difference of 1.5 percentage points between 2011 and 2018. This was due entirely to higher spending on tobacco by low-income households, and large tobacco tax increases.

Yuen and Rozenbes (2022) used a similar approach, constructing both CPI and Living Cost Index (LCI) inflation measures for low-paid employee households. They found little difference between both types of inflation experienced by those households and the overall CPI and LCI in the four years to December 2021.

Jacobs et al (2014) constructed cost-of-living inflation measures for different types of households from 2003 to 2013. They find a modestly higher rate of inflation – 4 percentage points over a decade – for households in the lowest 20 per cent of incomes compared to the households in the highest 20 per cent.

International studies

Using Consumer Expenditure Survey data, Klick and Stockburger (2021) find that for households in the US, the lowest income quartile experienced an inflation rate around 0.3-to-0.4 percentage points higher than those in the highest income quartile between 2003 and 2019. They also find evidence that higher-income households are more able to switch to cheaper alternatives. By contrast, earlier studies – e.g. McGranahan and Paulson (2006), and Hobijn and Lagakos (2005) – using similar US data find little systematic difference in inflation experienced by different household types.

Several more recent international studies have used scanner data to compare the effects of inflation.

Argente and Lee (2020) show that inflation inequality increases after an economic shock. Using US data for 2004 to 2016, they find that the difference in inflation between the lowest and the highest income quartiles widened four-fold in the five years after the Global Financial Crisis, and only narrowed again in 2014, when the macroeconomy stabilised. They find that the gap was driven by richer households having more leeway to respond to higher prices, through product substitution and changes in shopping behaviour.

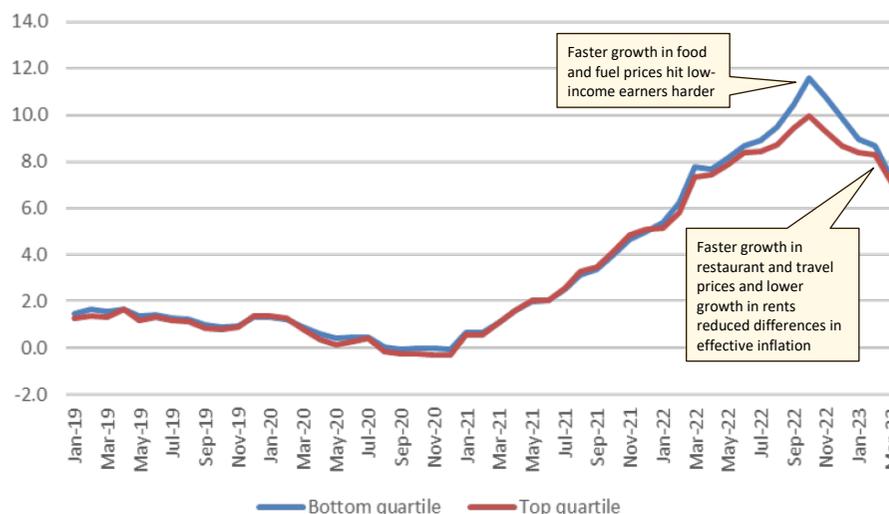
Kaplan and Schulhofer-Wohl (2017) find that poorer households experience higher retail inflation primarily because they pay more for the same type of goods, rather than consuming a different broad mix of goods. In contrast to the other papers, they find little evidence for a systematic relationship between income and substitution into cheaper goods.

Jaravel (2019) finds that annual retail inflation for the bottom income quintile in the US was 0.7 percentage points higher than the top quintile. He also finds that as income inequality grows, the products high-income households purchase expand quickly, so those products are subject to more competitive pressures and therefore have lower prices. This could explain half of inflation inequality in the US between 2004 and 2015.

¹⁰ For instance, Jaravel (2019) finds that when the consumption basket is aggregated from 256 categories to 22, measured inflation inequality falls by around 80 per cent.

Figure 1.5: In Europe, effective inflation was initially higher for lower-income households, but the differences have moderated

Estimate of effective inflation for top and bottom income quartile, euro area



Note: GDP weights are used for calculating the euro area average.
Source: Gros and Shamsfakhr (2023), Figure 2.

The European Central Bank notes that high inflation also hits low-income households the hardest because they have less room to buffer these sharp increase in living costs: they save less and have fewer liquid assets.¹¹

Researchers from the European Parliament point out that in the large euro area countries, wages have increased more in low-wage sectors, reducing income inequality.¹²

11 Charalampakis et al (2022).

12 Gros and Shamsfakhr (2023).

1.4 Why does it matter?

High inflation is generally considered a problem because it erodes the value of savings, hurts household budgets, and makes it harder for households and businesses to plan and invest.¹³

But if inflation increases inequality – particularly if it disproportionately hits the most vulnerable – then this may be an additional reason to try to stamp it out swiftly.

Indeed, outgoing Reserve Bank Governor Philip Lowe has frequently referred to the impact on income inequality to support the Bank’s strong monetary policy response to high inflation.¹⁴

Inflation that disproportionately affects low-income or other vulnerable households may also mean that the government needs to pay more attention to delivering targeted income supports or cost-of-living relief to those groups.

Similarly, if indexation of government payments does not keep up with effective inflation because the prices of essentials are rising more quickly than other prices, then there may need to be extra adjustments to payments to ensure the most vulnerable do not go backwards in their standard of living.

1.5 Our approach

In this paper we consider whether the current bout of inflation has a different impact on different types of households. We focus on differentials by household income, but also include some

13 Lowe (2023c).

14 For example, Lowe (2022a, 2022b, 2023a and 2023c).

comparisons by households wealth, housing tenure, age, and reliance on government pensions and allowances.

We examine the three main mechanisms by which inflation might have differential impacts on low-income households: basket effects, consumption buffers, and savings buffers. We also consider the effects of differential income growth during the period.

In examining basket effects, we focus on CPI inflation. The CPI is the measure the Reserve Bank uses in targeting inflation and is widely used by other policy-makers to index government payments. However, it differs in important conceptual ways to measures of cost of living (see Box 2). We focus on the distribution effects of CPI inflation rather than cost-of-living inflation, to allow for easier comparisons across household types. This approach also allows us to examine policy implications for payments indexation, which currently uses the CPI.

Box 2: CPI inflation is not the same as the cost-of-living increases

Many people may understand ‘inflation’ to mean the extra amount they need to spend to maintain a specific standard of living – that is, their ‘cost of living’. The CPI measures price increases in a slightly different way.

The most important conceptual difference is that the CPI measures price changes for a fixed basket of goods and services, so CPI inflation is a measure of ‘pure’ price changes in the economy.¹⁵ In practice, if the price for a good a household regularly buys increases sharply compared to other goods, that household may choose to swap to another similar, but cheaper, good. This means CPI inflation may overstate the true increase in a household’s cost of living (**‘substitution bias’**).

In Australia, the largest practical difference between the two concepts comes from the treatment of housing costs for owner-occupiers. Mortgage servicing costs – a significant part of the cost of living for owner-occupiers – are excluded from the CPI. Instead, the CPI measures the change in the price of building a new dwelling, excluding the cost of land.¹⁶

Other differences include the potential for incomplete quality adjustment in the CPI, and the CPI covering price changes only in the eight capital cities, which may not be a good proxy for inflation in regional and remote areas.¹⁷

In practice, CPI inflation and alternative cost-of-living measures tend to yield similar results over the long term but can diverge significantly in the short-run.¹⁸

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15 Since late 2017, the ABS has updated its CPI basket every year to reflect people’s changing consumption patterns. But it uses chain-linking to ensure that CPI inflation between two consecutive periods will still reflect pure price changes: see ABS (2019a).

16 This is because the CPI uses the ‘acquisitions method’ and measures prices at the point that items are acquired, rather than the point at which payments are made to access the good or service (‘outlays method’, which is used by the ABS to calculate its Selected Living Cost Indexes). These methods yield similar results for most items except for new dwellings, durable goods, and the use of credit. See ABS (2023d).

17 See Phillips and Joseph (2022) for modelled estimates of cost-of-living indices for each SA3.

18 Jacobs et al (2014), and Phillips and Joseph (2022).

2 Effective inflation has been similar across household types

We find that most household types in Australia experienced similar rates of effective inflation through 2022 and 2023. Importantly, we find little difference between low- and high-income households. This reflects the broad-based nature of the current episode of inflation.

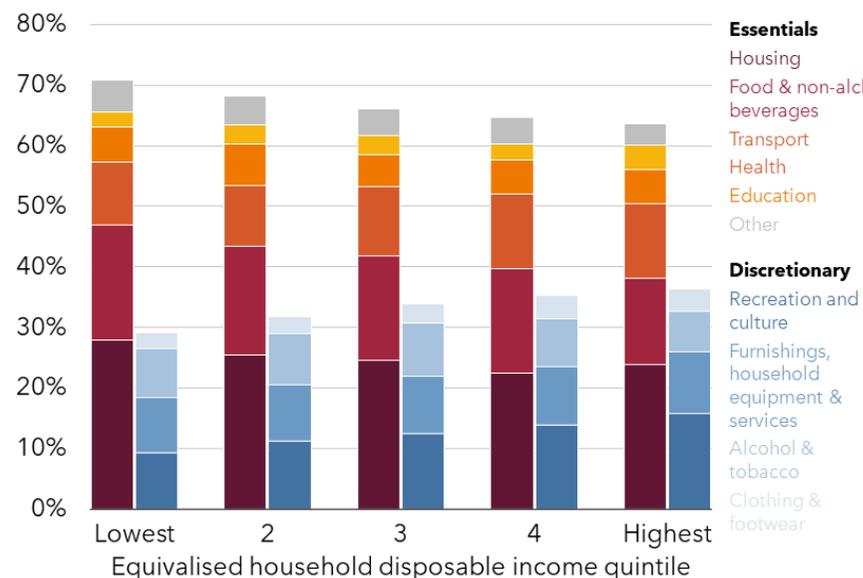
The one exception is the larger impact of inflation to date on owner-occupiers than on renters. But this reflects the fact that owner-occupied housing is measured in the CPI based on construction costs. Given very few owner-occupiers have purchased a newly constructed home over the past 18 months, this method of measurement overstates the effective inflation rate for most owner-occupiers. The differences also reflect the lag in the impact of higher rents, which will continue to bite into the living costs for renters over the next year as existing rental contracts are renegotiated.

Our finding of generally similar rates of effective inflation is consistent with the ABS living cost indexes, which also show only small differences across household types other than on housing costs.

2.1 Spending patterns vary across households

Low-income households tend to spend more of their money on essentials, including food, housing, and utilities (Figure 2.1), and less on so-called discretionary items, such as recreation and culture (which includes holidays). They spend slightly less than other households on clothing and footwear, and household furnishings.

Figure 2.1: Spending patterns differ across household types
Percentage of spending on household ‘basket’ of goods and services, by income quintiles, 2017



Notes: Weights are constructed by mapping 2015-16 HES data to CPI categories, and price-updating to the September 2017 quarter (see Appendix A for details); weights differ from those of the published CPI because not all expenditure classes can be mapped. The lowest equivalised household disposable income quintile excludes the first and second percentiles. Sources: Grattan Institute analysis of ABS (2017a), Tables 3.3A and 4; ABS (2017b), Table 5; ABS (2018a), Table 3; and ABS (2023), Table 7.

There are also important differences within categories: for instance, despite spending a higher share of their incomes on food overall, lower-income households spend less on meals out and takeaway than higher-income households.

And despite similar shares of alcohol and tobacco spending across high- and low-income groups, share of spending on tobacco is far

higher for both low-income and low-wealth households, and share of alcohol spending correspondingly lower.

Outside of housing and food, broadly similar patterns of spending on essential items are evident across low-income and high-income households and among those that receive a higher share of their income from government allowances (see Figure 2.1).

Lower-wealth, lower-income households and those more reliant on government support payments are more likely to be renters. Similarly, younger households are disproportionately renters; they also spend less on health and more on education than the oldest households.

2.2 Effective inflation is similar across household types

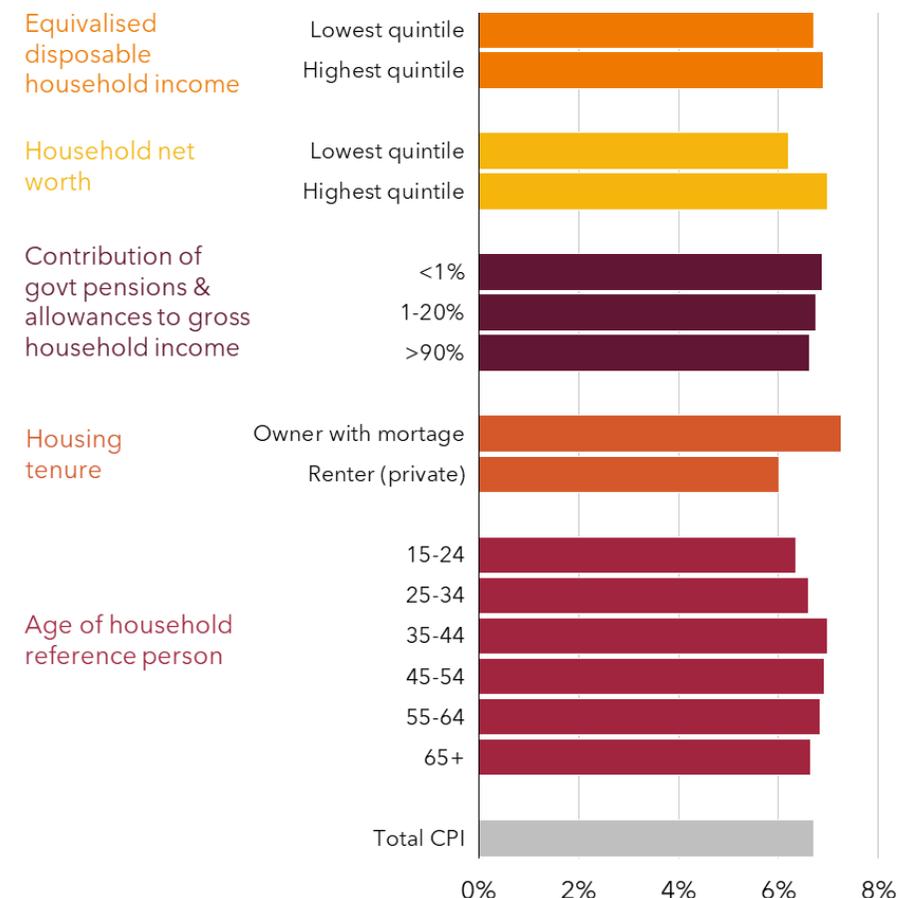
We find little overall difference in effective inflation rates across high- and low-income households (Figure 2.2). We estimate that annualised effective CPI since December 2021 has been 6.7 per cent for the lowest-income households and 6.9 per cent for the highest-income households (see Box 3 and Appendix A for an explanation of our approach).

This reflects the fact that the current inflation episode has been fairly broad-based. Inflation in food and housing has hit lower-income households hard; high inflation in recreation and culture, education, and transport has hit higher-income households more (Figure 2.3).

The differences between those reliant on government pensions and allowances and those who are not, and across age groups, are also small (Figure 2.2).

Figure 2.2: The starkest difference in effective inflation rates is between owner-occupied and rental households

Annualised CPI inflation from December 2021 to June 2023



Note: The lowest equivalised disposable household income quintile excludes the first and second percentiles.

Sources: Grattan Institute analysis of ABS (2017a, 2017b, 2018a, 2018b, 2019b, 2020, 2021, 2022a, and 2023a).

The clearest difference is between owner-occupiers and renters. There are two big reasons for the difference.

First, the cost of building a new house has risen by 20 per cent since December 2021, fuelled by material and labour shortages.¹⁹ This is a major component of the spending ‘basket’ of owner-occupiers (Figure 2.4).

But while this looms large in the basket, it doesn’t necessarily reflect the experience of inflation for most homeowners: less than 1 per cent of homeowners each year purchase a newly constructed dwelling.²⁰

Second, sharp rises in advertised rents take a while to flow through to the CPI, because CPI rents are for the stock of all rentals (see Appendix C for inflation rates in different CPI groups).²¹ But as more existing rental contracts are repriced higher and CPI rental growth ‘catches up’, renters will bear a higher effective inflation burden.

The increase in the cost of new dwelling purchases also explains the difference in effective inflation for high- and low-wealth households, because high-wealth households have a lot more exposure to owner-occupier housing (Figure 2.4).

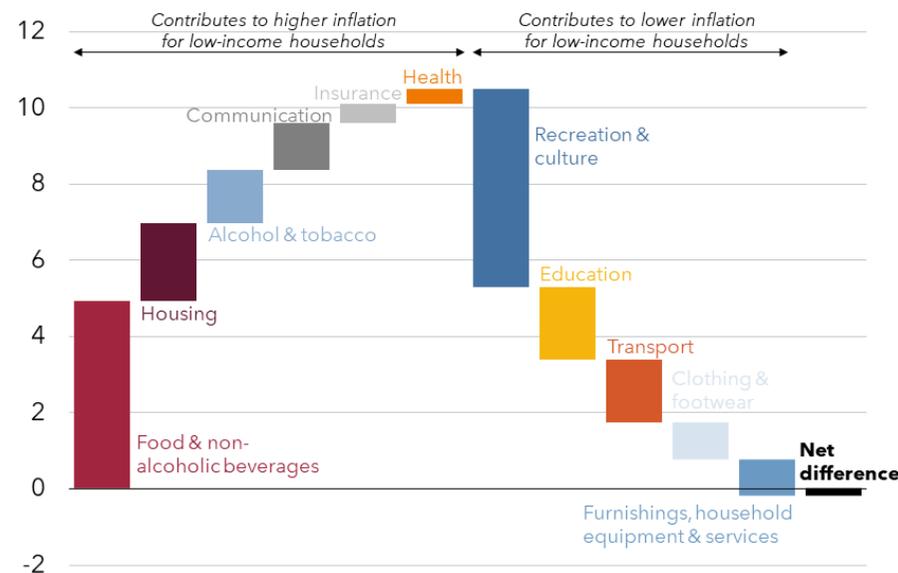
An alternative measure that strips out housing costs²² shows very little difference in effective inflation between homeowners and renters (or between high wealth and low wealth households), with effective inflation rates ranging from 6.1 to 6.4 per cent (Figure 2.5).

19 Calculated from ‘new dwelling purchase by owner-occupiers’ in ABS (2023a), Table 7.

20 According to the 2019-20 Survey of Income and Housing, 2.5% of owner-occupiers were living in a dwelling that was purchased in the last 3 years and was new at the time. In addition, few Australians would pay the cost of building

Figure 2.3: Food and housing costs consistently push inflation higher for low-income households than for high-income households

Difference in contributions to annualised inflation between households in the lowest and highest equivalised household income quintiles, December 2021 to June 2023, percentage points



Notes: Index point contributions for each household type are approximated by multiplying the 2022 CPI expenditure class weights with our estimated index for each household type (see Appendix A for details). The lowest quintile for equivalised disposable income excludes the first and second percentiles. Sources: Grattan Institute analysis of ABS (2017a, 2017b, 2018a, 2018b, 2019b, 2020, 2021, 2022a, and 2023a).

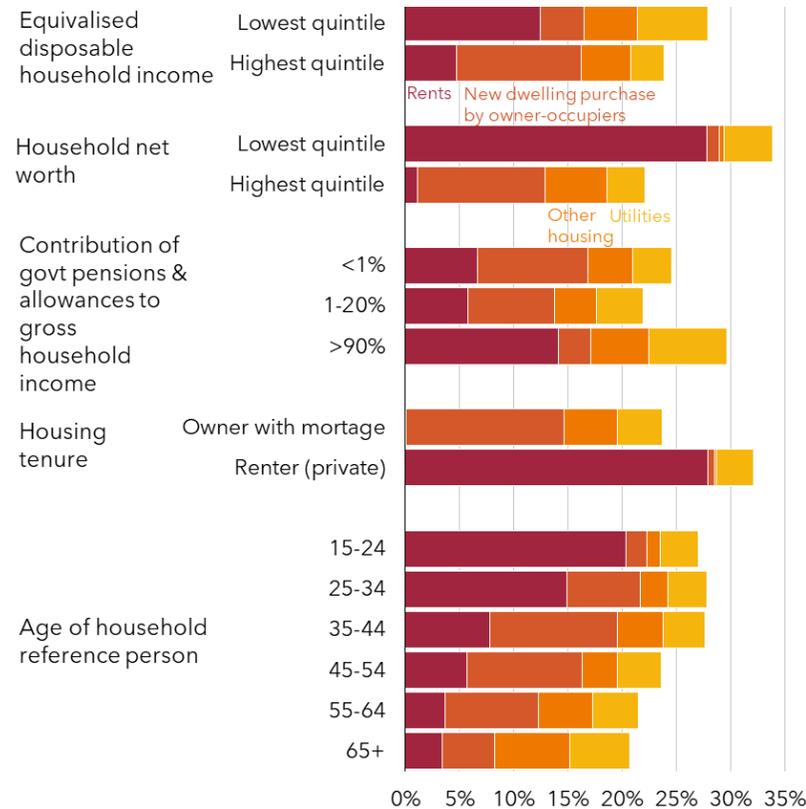
a new home upfront, which means that few would be directly affected by this large price increase: Phillips (2022).

21 Hanmer and Marquardt (2023).

22 This excludes all housing components from baskets except utilities. The difference in effective inflation rates is even smaller if we exclude only the ‘new dwellings purchased by owner occupiers’ component.

Figure 2.4: Spending on housing differs markedly between household types

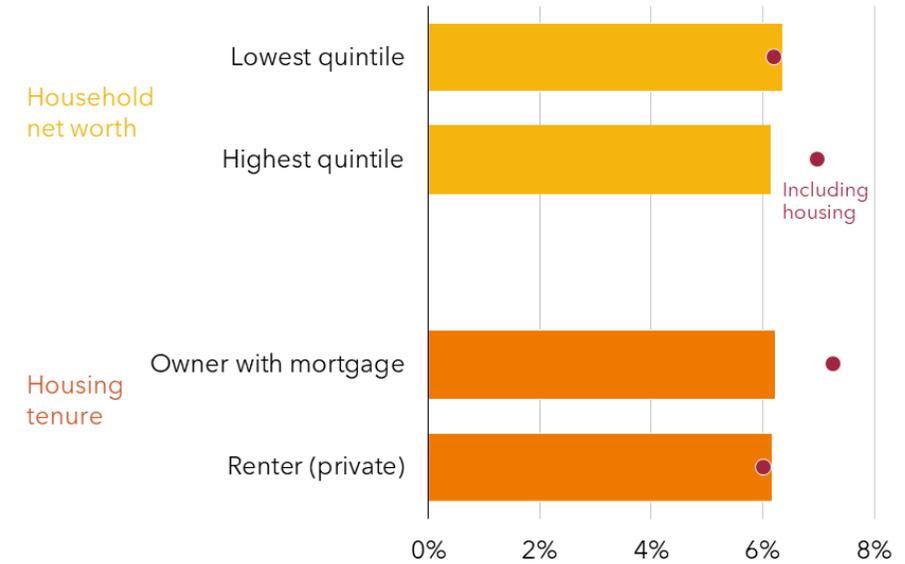
CPI basket weights as at September 2017



Notes: Weights are constructed by mapping 2015-16 HES data to CPI categories, and price-updating to the September 2017 quarter (see Appendix A for details); weights differ from those of the published CPI because not all expenditure classes can be mapped. The lowest equivalised household disposable income quintile excludes the first and second percentiles. Sources: Grattan Institute analysis of ABS (2017a); ABS (2017b), Table 5; ABS (2018a), Table 3; and ABS (2023), Table 7.

Figure 2.5: Excluding housing costs, differences in effective inflation rates are minimal

Annualised CPI inflation from December 2021 to June 2023



Note: The bars are effective inflation rates excluding rents, new dwelling purchased by owner-occupiers, maintenance and repair of the dwelling, and property rates and charges; utilities are included.

Sources: Grattan Institute analysis of ABS (2017a, 2017b, 2018a, 2018b, 2019b, 2020, 2021, 2022a, and 2023a).

Much lower effective inflation rates for homeowners also aligns with results from ANU researchers that inflation would have measured much lower last year using an approach to modelling house costs that is closer to the cost-of-living approach (Box 3).²³

2.3 Comparison with the ABS living costs indexes

Another way to examine the effective impact of recent inflation on different groups is through the ABS living costs indexes (LCIs).

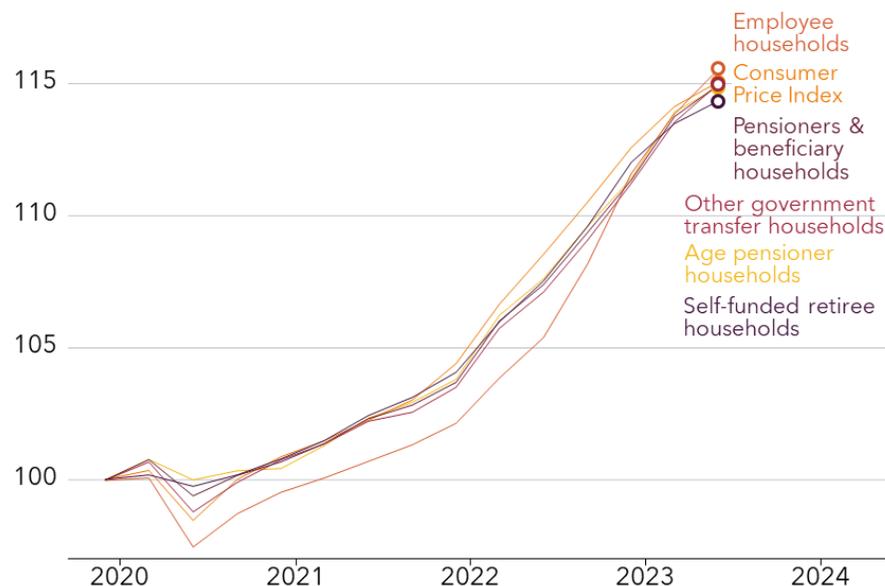
The LCIs compare the cost of living across several types of households, instead of measuring pure price changes for a specific basket of goods (see Box 2). The key difference from the CPI basket comparisons above is the treatment of owner-occupied housing. In the LCIs, owner-occupied housing costs are included via mortgage servicing costs, whereas in the CPI they are included via the price of building a new dwelling (see Section 2.2 above).

Despite this difference, the living cost indexes tell a similar story to our CPI analysis above: increases across household types have been broadly similar because of the broad-based nature of the current episode of inflation (Figure 2.6).

The biggest differences are again driven by housing costs: employee households have experienced the strongest growth in inflation because mortgage interest charges make up a higher proportion of their expenditure. Mortgage interest charges almost doubled in the year to June 2023.²⁴

Figure 2.6: Living costs indexes are relatively consistent across cohorts

Cost of living indexes, Dec 2019 = 100



Sources: ABS (2023a and 2023c).

23 Phillips (2022).

24 ABS (2023c).

Box 3: Our approach to modelling the spending of different households

In this paper we use detailed average weekly expenditure data published in the ABS 2015-16 Household Expenditure Survey for various household types to form our 'spending baskets'.

Following the method of van Kints and Breunig (2021), these expenditure categories are mapped to CPI expenditure classes.

Our CPI weights for each household type are their 'basket' at the time of the 2015-16 HES survey. Since 2018, the ABS has re-weighted the CPI annually to ensure the basket is representative of actual household spending. We assign the same proportionate change for each expenditure class from the ABS's annual weights to each household type, and construct a 'CPI' for each household type and each set of weights. These annual CPI series are then chain-linked into a single series for each household type.

This approach of constructing household-specific CPIs is limited in at least two ways:

- We implicitly assume that different types of households consume the same mix of goods and services, and at the same average price, within each expenditure class. If poorer households consume more generic brands within an expenditure class and if those prices rise at a different rate to their branded counterparts, for example, it will not be captured in our constructed CPIs.
- We will miss any systematic difference in different household types substituting their consumption within and across expenditure classes, for instance into cheaper products.

These limitations mean that our analysis will probably understate the extent of inflation inequality in Australia. But our estimates are a lower bound for the dispersion of inflation experienced in the most serious inflationary episode in Australia in more than three decades. Until researchers have ready access to detailed transaction-level data at the household level, or to more detailed and timely expenditure survey data, these limitations are unavoidable.

Details of our methodology, including adjustments and estimates for missing and incomplete CPI categories, can be found in Appendix A.

3 Lower-income households have fewer buffers against inflation

Most household types in Australia experienced similar rates of effective inflation through 2022 and 2023 – at least when measuring differences attributable to the different spending ‘baskets’ of different household types. But that does not mean that the sharp rise in inflation has been felt equally.

Low-income households tend to have less ‘fat’ to trim before cutting into their spending on essential items. They also save less, and have fewer liquid assets.

On the flip side, low-income households have had slightly faster overall income growth, which helps lessen the impact of the cost-of-living crisis. However, indicators of financial distress are much higher – and remain higher than pre-COVID levels – for low-income earners.

3.1 Low-income households have fewer buffers

No one likes reducing their spending, but it is far less painful to cut back on discretionary items such as recreation, alcohol, and household furnishings than to ration essentials such as food and rent.

Lower-income households have fewer buffers. Among the bottom one-fifth of income earners, over 70 per cent of spending is on essential items, and 30 per cent on non-essentials. Non-essentials

are skewed towards tobacco which, given its addictive nature, is likely to be one of the hardest ‘non-essentials’ to cut back on in the short-term. Lower wealth households and those more reliant on government payments similarly spend proportionately more on essentials.

By contrast, essentials make up less than 65 per cent of higher income earners’ baskets. And high-income earners spend much more on recreation and culture, especially holiday travel and accommodation.

These spending patterns mean better-resourced households have a lot more room to adjust their spending without forgoing the essentials when an inflation shock hits.

Lower-income households are also likely to have less scope for substitution *within* their essential spending, because they already tend to make more budget-conscious choices. For example, there is some evidence that low-income households consume more private-label groceries.²⁵ This means they have less scope to substitute to cheaper essentials to save money during periods of high inflation.

This substitution has been an important way that Australians have responded to high prices, particularly in recent months (Figure 3.1).

²⁵ For example, Zorbas et al (2020) find that low- and middle-income households in New Zealand spend proportionately more on generic-branded foods and beverages.

3.2 Low-income households have fewer savings and assets to draw on

Households can also moderate the impacts of high inflation on their consumption through reducing their savings or drawing down on their assets.

Lower-income people tend to spend a larger share of their income and therefore save less. Indeed, the bottom one-fifth of income earners are already dis-savers on average, meaning they can only maintain consumption in the face of high inflation by drawing down more on their assets. Yet those with lower incomes also have considerably less in liquid assets to draw on (Figure 3.2).

3.3 Income growth has been higher for lower-income households

On the flip side of these forces that have squeezed the most economically vulnerable households, households with the lowest employment income have had bigger increases in their nominal earnings than higher-income households.

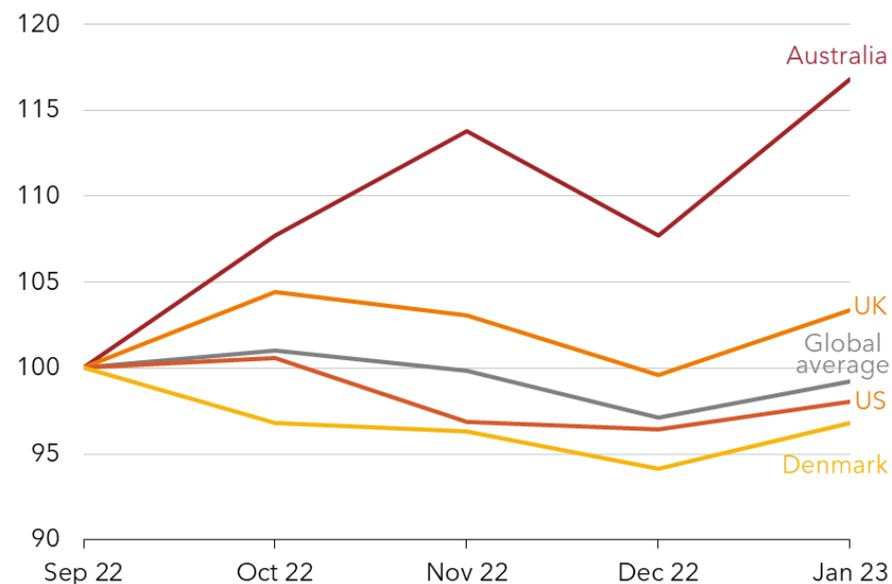
The RBA's analysis of administrative employment data suggests that lower-income workers had stronger earnings growth than higher-income workers in the year to the March quarter 2023 (Figure 3.3). This probably reflects the strong increase in the minimum wage and the larger increase in hours worked for those on lower incomes.²⁶

26 RBA (2023a), Chapter 4.

This is consistent with historical experience that low unemployment offers the largest benefits for those at the fringes of the labour market, including younger and less educated workers.²⁷

Figure 3.1: Australians have been increasingly frugal in their shopping as inflation persists

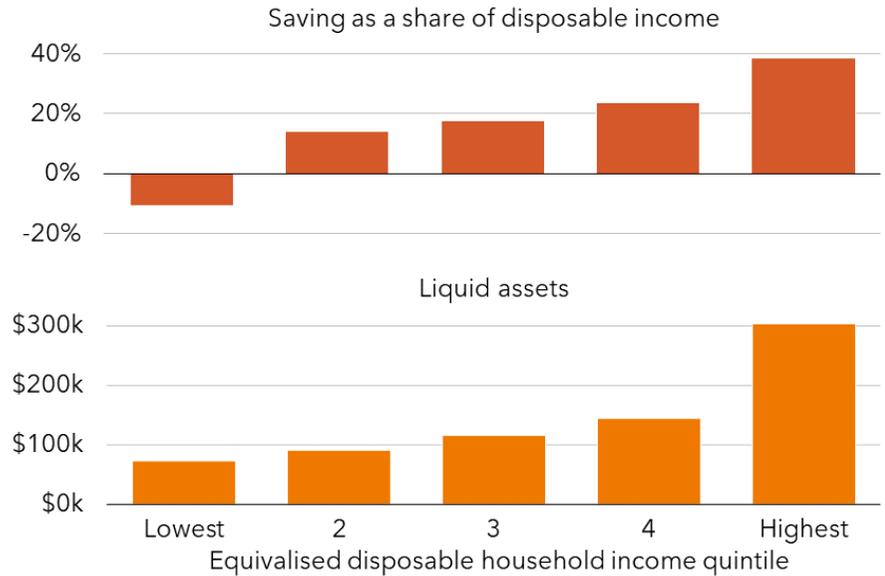
Food Frugality Index, September 2022 = 100



Notes: Sample of 23,000 per monthly study wave. Global average is a 23-country average. Source: Deloitte (2023), Figure 2.

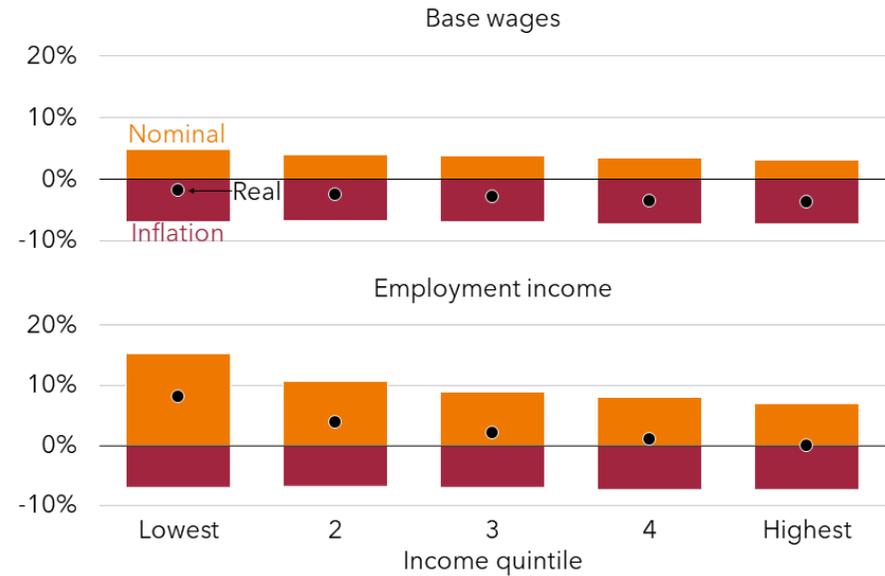
27 Coates and Ballantyne (2022).

Figure 3.2: Lower-income households have less savings and liquid assets to draw on to cushion against high inflation
Average household saving and liquid assets by income quintile in 2021-22



Note: The measures used are: gross saving as a share of gross disposable income; and currency and deposits ('liquid assets').
Source: ABS (2022b), Table 3.11.

Figure 3.3: Employment income has been strongest among lower-income workers
Growth in earnings by income quintile, year-ended March 2023



Notes: Base wages are total hourly rates of pay, excluding bonuses and commissions; quintiles constructed using hourly wage rates in the previous period. Employment income is Single Touch Payroll employment income per worker for those with a 2019/20 tax return; percentiles constructed using employment income in the current period; estimates are based on the percentile at the mid-point of each group; administrative data on incomes are not necessarily directly comparable to published aggregate estimates.
Source: RBA (2023a), Graph 4.29.

While this paints a relatively benign picture for lower-income workers, there is a large diversity of experiences within this group. Those who have found a job or been able to significantly increase their hours will have had a real improvement in their material living standards, at the cost of less leisure time. On the other hand, those who have remained in same job and maintained the same hours are likely to have had a significant decline in their real incomes over the past year.

For people on government payments, indexation of those payments helps maintain real living standards over time. But because payments are indexed only every six months, recipients are left playing 'catch up' in a period of rapidly rising prices. This is particularly difficult because the level of JobSeeker and related payments is 'seriously inadequate' compared to any reasonable benchmark of a basic standard of living.²⁸

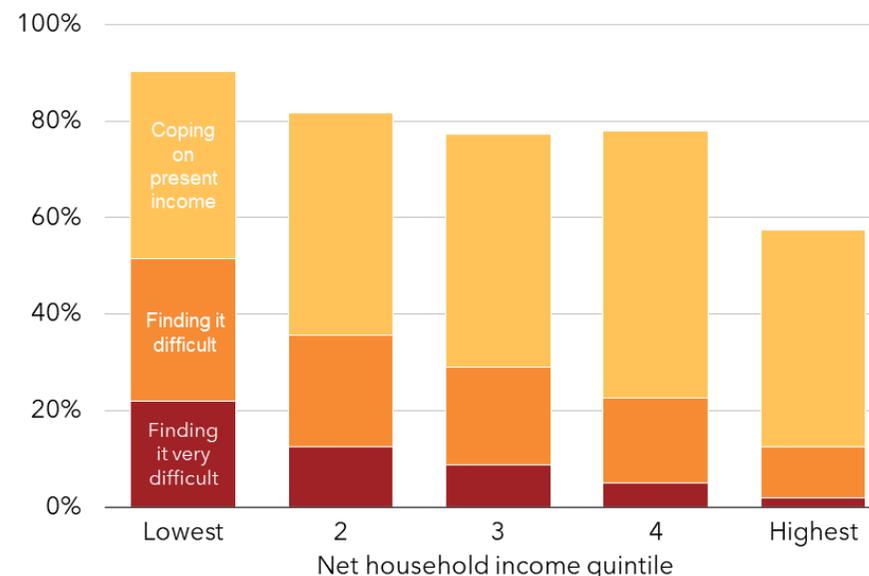
3.4 Lower-income households report more financial stress

Where has the recent bout of inflation left our most vulnerable households?

Many of the lowest-income households reported difficult in getting by as at August 2023. According to the August ANUpoll, more than half of households in the bottom 20 per cent of income earners reported finding it difficult or very difficult to cope on their present levels of income (Figure 3.4). By contrast, only 13 per cent of the highest income earners found it hard to cope.

Figure 3.4: More than half of households in the lowest quintile are funding it difficult to get by on their present income

Level of financial stress by net household income quintile, August 2023



Source: ANUpoll August 2023 in Biddle and Gray (2023), Figure 2.

28 Interim Economic Inclusion Advisory Committee (2023).

4 Conclusions and implications

Our findings suggest the Reserve Bank is right to worry about the impact of high inflation on inequality. There are many reasons the Bank should act to tame high inflation, but the disproportionate impact on the lowest-income households is an important one.

While effective inflation has been similar across households, more vulnerable households remain more exposed to the fallout from high inflation.

Our findings also suggests that any government interventions to ease cost-of-living shocks should be targeted towards the most vulnerable. While governments should refrain from additional spending during periods of high inflation to avoid ‘adding fuel to the fire’, targeted interventions to support low-income households may be required to prevent those households from having to cut essential spending.

The 2023 federal Budget ‘cost of living package’ included a number of targeted components, including increases to JobSeeker and related payments and rent assistance. These were welcome both as an immediate cost-of-living support and a first step in addressing the long-term structural deterioration in these payment levels.

The current inflationary episode does not suggest a need for more tailored indexation of support payments, because the impact has been broadly similar across different household types.

Finally, if we are concerned about the impact of inflation on inequality, it would be helpful if better and more timely measures of household spending could be available to researchers – for instance estimates from supermarket scanner data, and credit and debit card

transaction data. More generally, an update of the Household Expenditure Survey, last conducted in 2015-16, is desperately needed for this and for many other important distributional research questions.

Appendix A: Calculating CPIs for different household types and individual households

This appendix outlines the steps we took to estimate our group-specific CPIs. These steps closely follow the approach used in van Kints and Breunig (2021), with adjustments made for changes that the ABS introduced in its current 17th series of the CPI.

In brief, our approach uses the latest available household expenditure information – the 2015-16 Household Expenditure Survey (HES), which also underpins the current series of the CPI – to derive expenditure ‘baskets’ for different household types. We map these expenditures to the most disaggregated CPI data published (expenditure classes), and use these household-specific baskets as weights to construct a CPI for that household type.

Mapping expenditures for different household types to CPI expenditure classes

We use detailed expenditure data from ABS (2017a), published for selected household types from a nationally representative sample, as the basis for our baskets.

More than 800 detailed expenditure items from the HES must be aggregated into 85 expenditure classes in the CPI.²⁹ To do this, we

29 The remaining two of the 87 expenditure classes – ‘deposit and loan facilities (direct charges)’ and ‘other financial services’ – are excluded because of data availability (see discussion below).

30 ABS (2018a), Table 3.

31 Given that HES expenditure data were collected across the 2015-16 financial year, we use a simple average across the four quarters of financial year as our

use the ABS’s published correspondence between the detailed HES expenditure and CPI expenditure classes.³⁰

Some HES items are split into multiple CPI expenditure classes (‘one-to-many mappings’). For mappings denoted as having a ‘fixed split’ in the ABS correspondence, we apportion the HES item equally across matching CPI categories. For mappings with a ‘proportional prorate’, we used an additional set of ratios provided by the ABS for apportionment. One-to-one and many-to-one mappings are aggregated as they are. Missing and incomplete mappings are discussed below.

Price-updating the basket to the September quarter of 2017

We follow a similar process used to derive the 17th CPI series and convert our baskets – in 2015-16 dollars – to September 2017 dollars. We use the ABS’s published expenditure class indices (weighted average of eight capital cities) to do this.³¹

Missing and under-reported items

We then use the ABS’s published CPI average expenditure data for the September quarter of 2017 as a basis to scale items that are missing or under-reported in the HES.³² We use the mapped basket for all HES households for this scaling.³³

base. See <https://www.abs.gov.au/methodologies/household-expenditure-survey-australia-summary-results-methodology/2015-16>.

32 ABS (2017b), Table 5.

33 While we do not expect our HES-derived basket (from a nationally representative sample) to be the same as the CPI basket (a weighted average across eight capital cities), the baskets are close enough for this scaling purpose.

Alcohol and tobacco

Spending on alcohol and tobacco is under-reported in survey data, including the HES.³⁴ We address this by calculating a scaling factor for each expenditure class within the group (spirits, wine, beer, and tobacco) that would bring our HES all-household expenditure up to the CPI average expenditure for those items. We then apply these scaling factors to our mapped alcohol and tobacco spending for every household group of interest.³⁵ This method implicitly assumes that the extent of under-reporting is similar across different household types – a necessary assumption given that we do not have distributional information on under-reporting.

New dwelling purchase by owner-occupiers

While several items in the HES map to the ‘new dwelling purchased by owner-occupiers’ CPI expenditure class, these items amount to only about half of the average weekly for the expenditure class.

In its current CPI series, the ABS relies primarily on national accounts data – rather than the HES – for this expenditure class. Taking a similar approach is not possible for us given the lack of distributional data for our household types of interest.

Instead, we estimate the basket weight for this expenditure class in two steps. First, we calculate the shortfall between the HES-derived expenditure for all households and the CPI basket. Second, we distribute this shortfall across households in a way that is correlated with how much each household is likely to have spent on their new

dwelling. We do this by calculating a scaling factor between the shortfall and the average weekly mortgage principal repayment for all HES households, and applying it to each household type’s mortgage principal repayments.

Insurance and financial services

Insurance is measured on a gross-premium-paid basis in the HES and on a net-of-claims basis in the CPI.³⁶ We estimate net-of-claims insurance expenditure by calculating a scaling factor between all HES households’ spending mapping to the insurance CPI expenditure class, and the equivalent expenditure in the CPI. We again apply this scaling factor to each household type of interest from the HES.

We exclude the financial services sub-group from our analysis because of the lack of data in the HES.

Constructing household-specific CPIs

We construct a set of CPIs, one for each household type k and for each link (see chain-linking section below), using the Lowe index formula:³⁷

$$P_k^t = \sum_{i=1}^n \left(\frac{p_i^t}{p_i^0} \right) w_{i,k}$$

34 See van Kints and Breunig (2021).

35 For instance, the four HES items that map to the ‘tobacco’ CPI expenditure class sum to \$15.66 (in September 2017 dollars) for all households. The weighted average of eight capital cities for the same expenditure class was

\$41.51. We therefore apply a scaling factor of $41.51/15.66 = 2.65$ to the corresponding HES expenditures for each household type of interest.

36 ABS (2017c).

37 See van Kints and Breunig (2021), p. 8 for a detailed discussion.

where p_i^t is the price for expenditure class $i \in \{1, \dots, n\}$ at time t , and p_i^0 is the price in the base/reference period in the same link; $w_{i,k}$ is the basket weight derived from the spending of household type k on expenditure class i . As an example, for the first link (September 2017 to September 2018), $w_{i,k}$ would be calculated from the average weekly expenditure from the 2015-16 HES, price-updated to September 2017, while p_i^0 would be the price in September 2017.

Updating basket weights

The 2015-16 HES remains the best publicly available data of sufficient detail and representativeness to investigate the distribution of inflation. Keeping the basket constant across time, however, would worsen the upward substitution bias in our estimated inflation rates (see Box 2). But we do not have enough information to re-weight the basket of each household type in line with how those households actually changed their spending.

Starting in the current 17th CPI series, the ABS has re-weighted the CPI annually based on national accounts data.³⁸ We can limit substitution bias by using these aggregate weight updates to proportionately re-weight baskets across all households.

We do this by applying the annual proportional change in the weight for each expenditure class to the equivalent expenditure class in our mapped CPI baskets.³⁹ While the implicit assumption that upper-level substitution is the same across all household types may not be realistic, our estimate should at least reduce the bias, while taking

into account the difference in consumption patterns across household types.

Chain-linking the series

We use our original HES basket weights and updated series – for each year from 2017 to 2022 – to derive six CPI series for each household group. These series are then chain-linked together using analogous timing to the ABS CPI series, with each series used for five quarters. For instance, the 2017 basket was used to compile the index from the September quarter of 2017 to the September quarter of 2018, and the 2018 basket was used from the September quarter of 2018 to the September quarter of 2019. The 2018 series was then chain-linked to the 2017 series by rebasing the 2018 series to the value of the index in the 2017 series in the September quarter of 2018, and splicing in the 2018 series thereafter.

Calculating contributions from CPI groups and sub-groups to inflation differentials across households

For the annual difference in contributions charts in Appendix B (Figures B.5 to B.9), we first calculate the contribution of each expenditure class to the inflation index we constructed for each household type. Because the year-ended contributions are from September to September, the two time periods we are comparing lie on the same link, with the same set of weights. That means we can derive the contributions by rebasing the index to 100 for the September quarter of the base year, and multiplying the basket weight for each expenditure class and the index for that class.

applied to that expenditure class in our HES-derived baskets to get the new basket.

38 ABS (2022a).

39 For instance, if the contribution from an expenditure class changed from 3.56 per cent to 3.42 per cent in the CPI, a factor of $3.42/3.56 = 0.96$ would be

These expenditure class contributions are then summed by broader CPI groups, and compared across household types.

For the 'waterfall' graphs showing contributions from December 2021 to June 2023, contributions are approximated by applying 2022 weights (which should only apply from September 2022) to the index for each expenditure class.

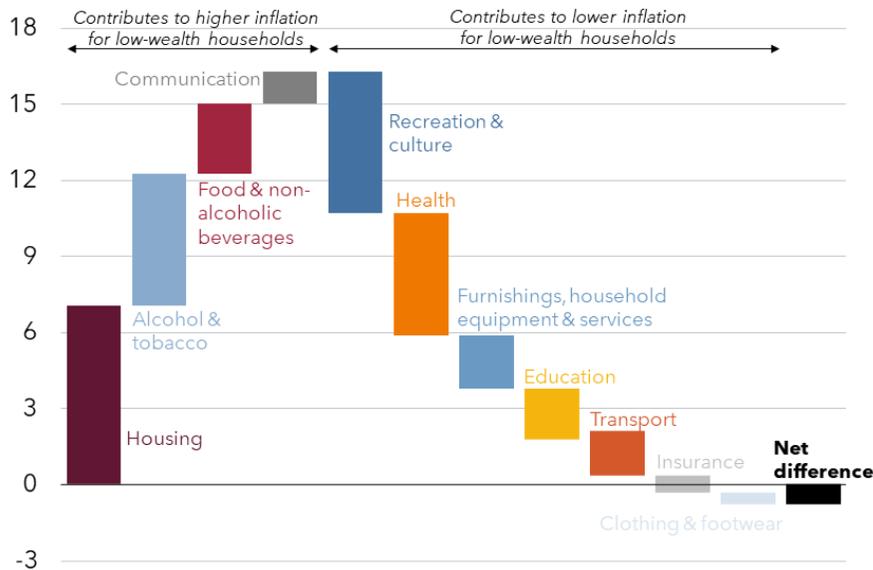
Calculating effective inflation rates excluding housing

The estimated inflation rates excluding housing (bars in Figure 2.5) are calculated by removing rents, new dwelling purchased by owner-occupiers, maintenance and repair of the dwelling, and property rates and charges from the consumption basket; utilities remain in the basket. Weights for each household type are recalculated, and inflation rates estimated following the same approach described in this appendix.

Appendix B: Drivers of difference in inflation experienced by different households

Figure B.1: Housing costs push inflation higher for low-wealth households

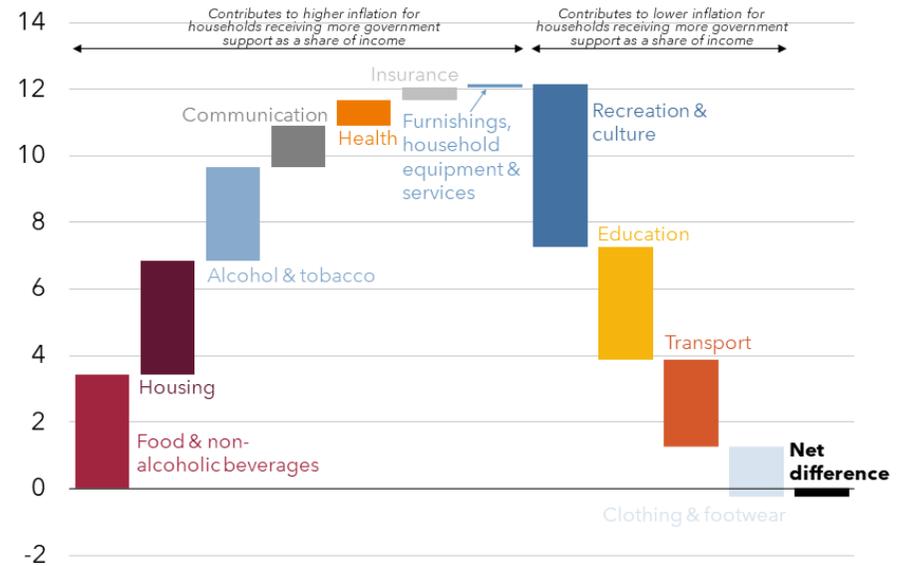
Difference in contributions to annualised inflation between households in the lowest and highest net worth quintiles, December 2021 to June 2023, percentage points



Note: Index point contributions for each household type are approximated by multiplying the 2022 CPI expenditure class weights with our estimated index for each household type (see Appendix A for details).
Sources: Grattan Institute analysis of ABS (2017a, 2017b, 2018a, 2018b, 2019b, 2020, 2021, 2022a, and 2023a).

Figure B.2: Food and housing costs push inflation higher for households more reliant on government payments

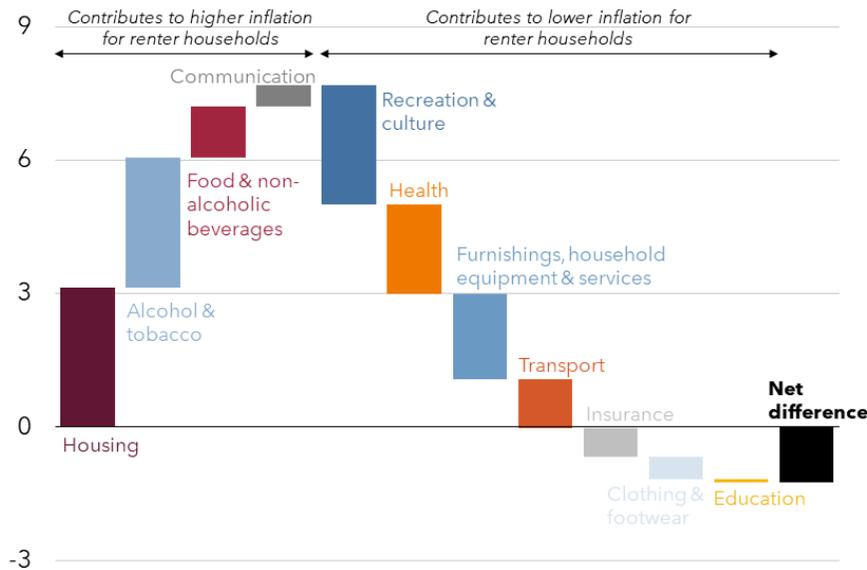
Difference in contributions to annualised inflation between households for whom government payments make up more than 90 per cent, compared with less than 1 per cent, of gross household income, December 2021 to June 2023, percentage points



Note: Index point contributions for each household type are approximated by multiplying the 2022 CPI expenditure class weights with our estimated index for each household type (see Appendix A for details).
Sources: Grattan Institute analysis of ABS (2017a, 2017b, 2018a, 2018b, 2019b, 2020, 2021, 2022a, and 2023a).

Figure B.3: Housing costs are a major and consistent driver of higher CPI inflation for renters, but the difference has shrunk recently because of high construction costs for owner-occupiers

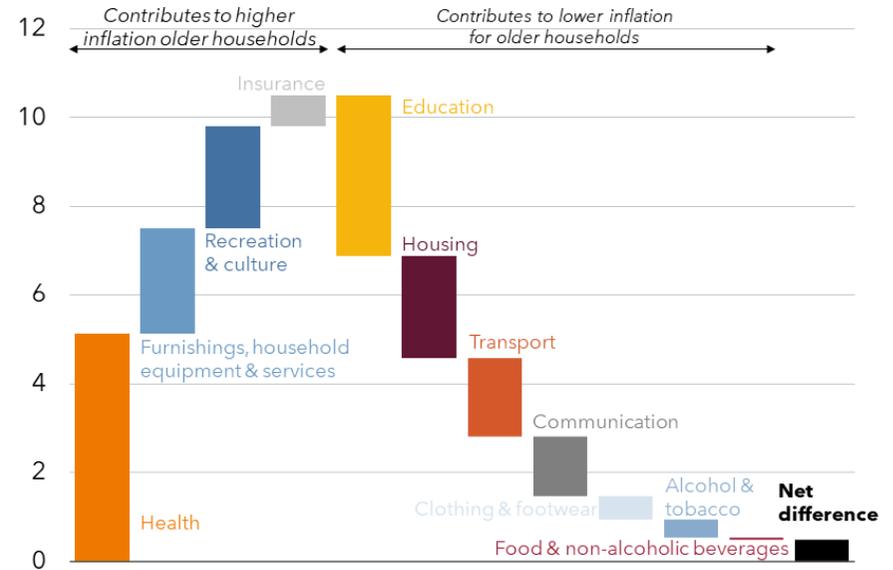
Difference in contributions to annualised inflation between private renter and owner (with mortgage) households, December 2021 to June 2023, percentage points



Note: Index point contributions for each household type are approximated by multiplying the 2022 CPI expenditure class weights with our estimated index for each household type (see Appendix A for details).
Sources: Grattan Institute analysis of ABS (2017a, 2017b, 2018a, 2018b, 2019b, 2020, 2021, 2022a, and 2023a).

Figure B.4: Health spending is a major source of inflation difference between older and younger households

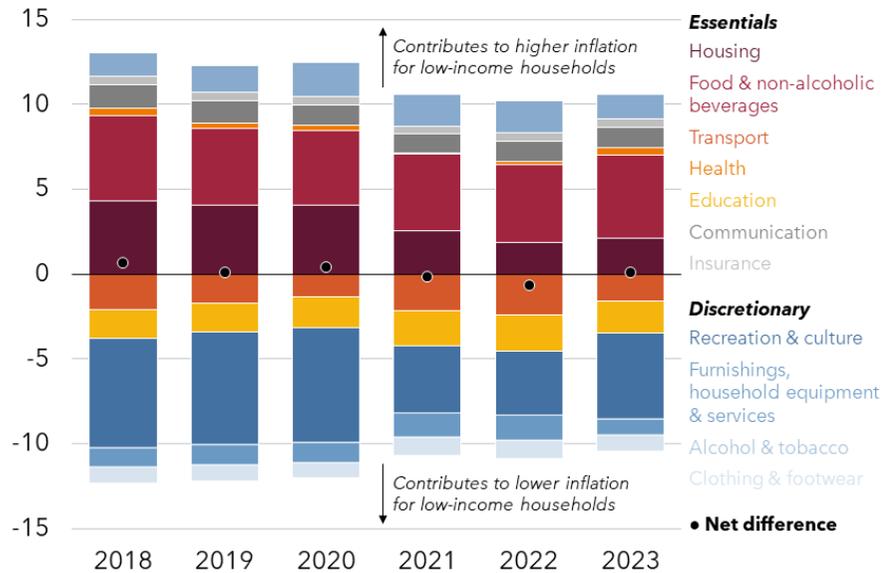
Difference in contributions to annualised inflation between households with a reference person aged 55-64 and aged 15-24, December 2021 to June 2023, percentage points



Note: Index point contributions for each household type are approximated by multiplying the 2022 CPI expenditure class weights with our estimated index for each household type (see Appendix A for details).
Sources: Grattan Institute analysis of ABS (2017a, 2017b, 2018a, 2018b, 2019b, 2020, 2021, 2022a, and 2023a).

Figure B.5: Costs for essentials consistently push inflation higher for low-income relative to high-income households

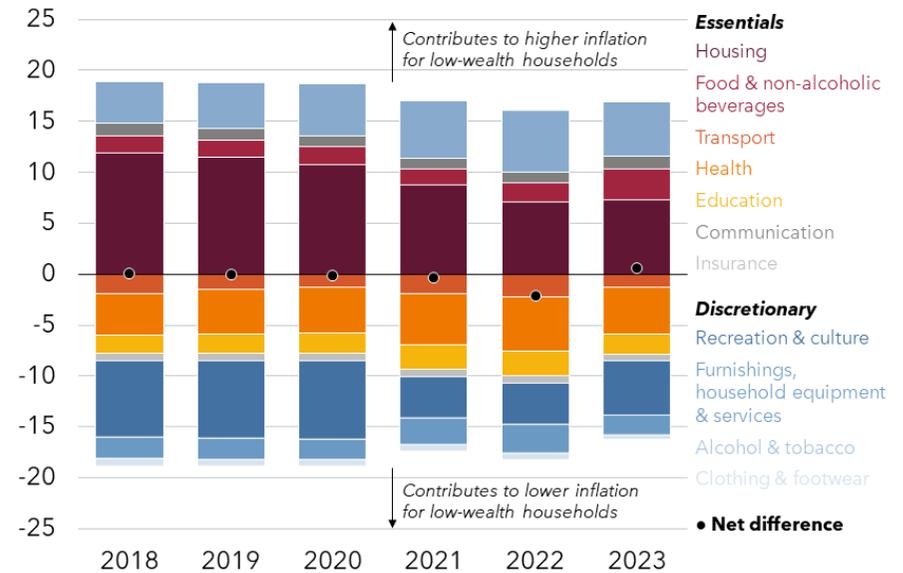
Difference in contributions to inflation between households in the lowest and highest equivalised household income quintiles, percentage points



Notes: Differences in index point contributions are for the year ended September, and annualised for 2023 (see Appendix A for details). The lowest quintile for equivalised disposable income excludes the first and second percentiles.
Sources: Grattan Institute analysis of ABS (2017a, 2017b, 2018a, 2018b, 2019b, 2020, 2021, 2022a, and 2023a).

Figure B.6: Housing costs push inflation higher for low-wealth households, but the difference has shrunk recently

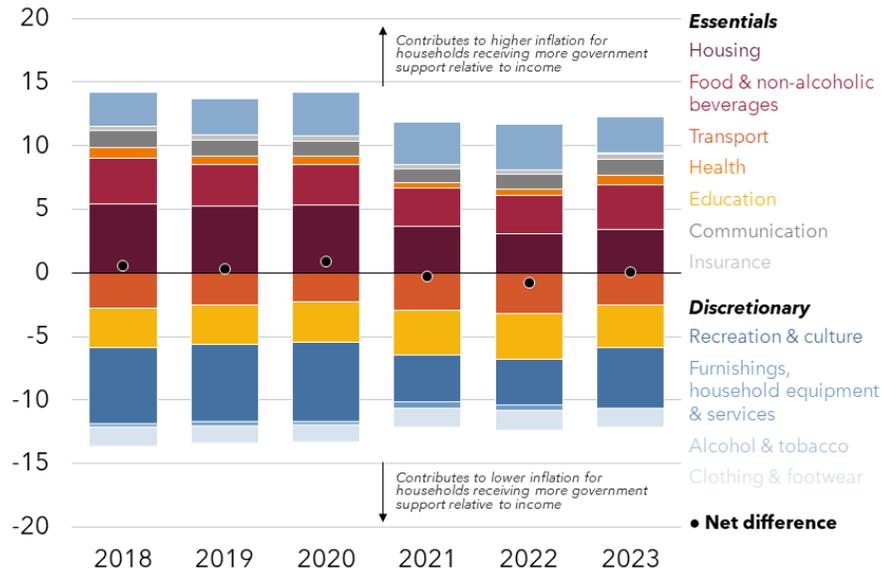
Difference in contributions to inflation between households in the lowest and highest net worth quintiles, percentage points



Note: Differences in index point contributions are for the year ended September, and annualised for 2023 (see Appendix A for details).
Sources: Grattan Institute analysis of ABS (2017a, 2017b, 2018a, 2018b, 2019b, 2020, 2021, 2022a, and 2023a).

Figure B.7: Food and housing costs push inflation higher for those more reliant on government payments

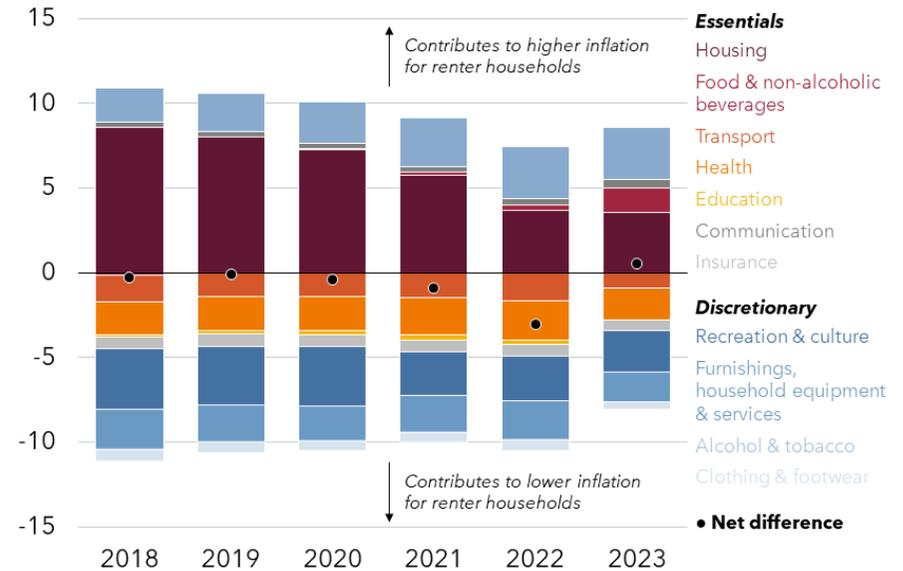
Difference in contributions to inflation between households for whom government payments make up more than 90 per cent, compared with less than 1 per cent, of gross household income, percentage points



Note: Differences in index point contributions are for the year ended September, and annualised for 2023 (see Appendix A for details).
Sources: Grattan Institute analysis of ABS (2017a, 2017b, 2018a, 2018b, 2019b, 2020, 2021, 2022a, and 2023a).

Figure B.8: Housing costs are a major and consistent driver of higher inflation for renters, but the difference has shrunk recently because of high construction costs for owner-occupiers

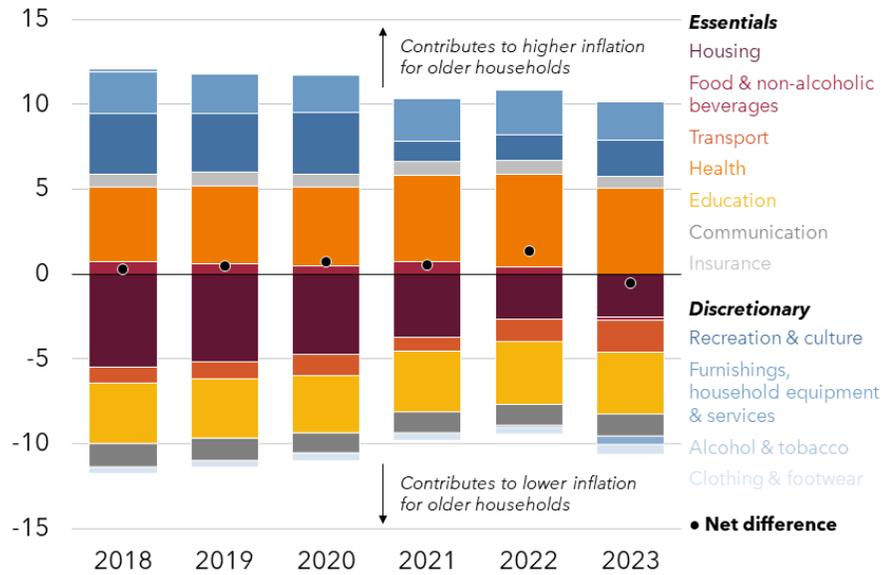
Difference in contributions to inflation between private renter and owner (with mortgage) households, percentage points



Note: Differences in index point contributions are for the year ended September, and annualised for 2023 (see Appendix A for details).
Sources: Grattan Institute analysis of ABS (2017a, 2017b, 2018a, 2018b, 2019b, 2020, 2021, 2022a, and 2023a).

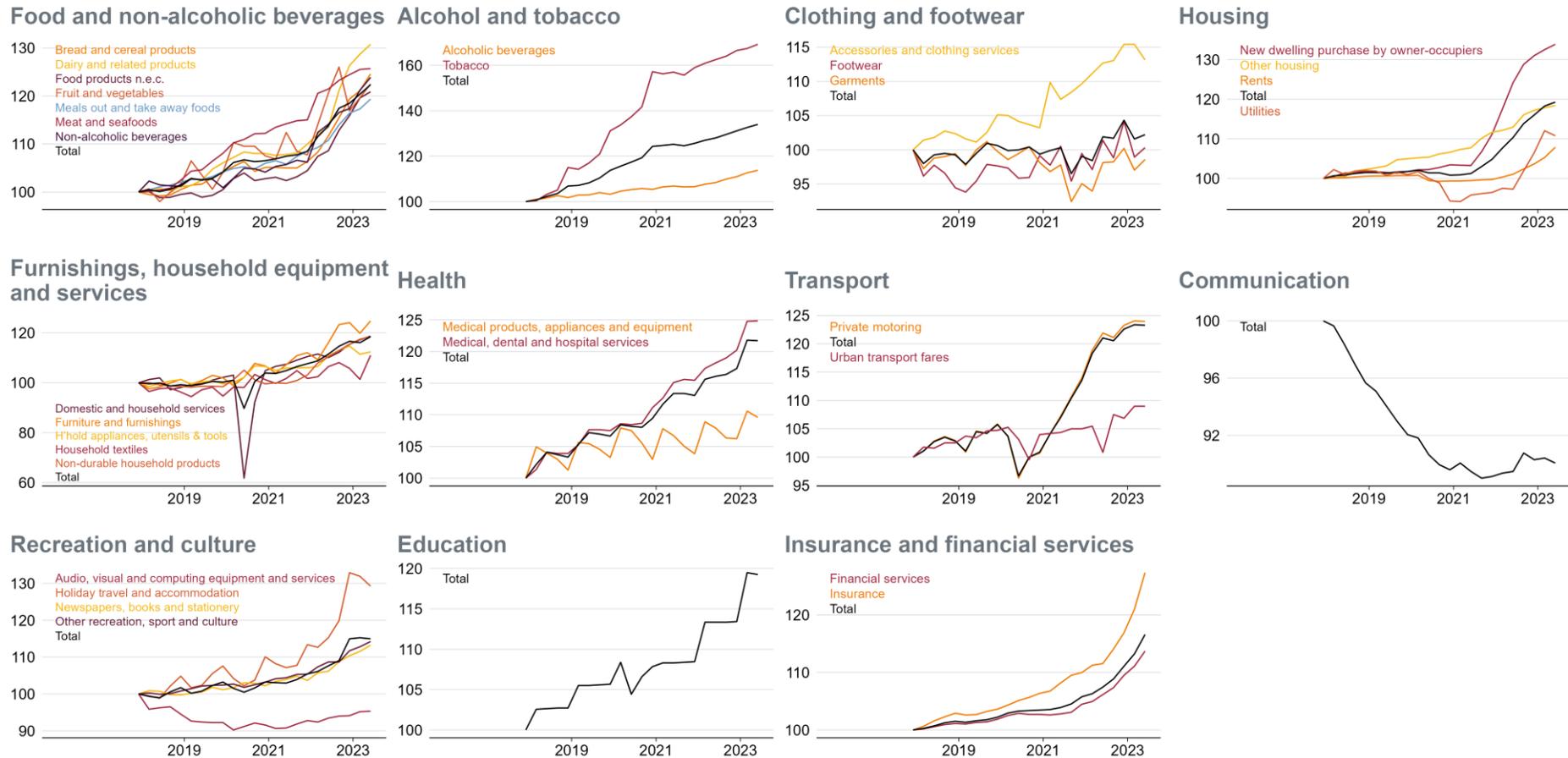
Figure B.9: Health spending is a major and consistent source of inflation difference between older and younger households

Difference in contributions to inflation between households with a reference person aged 55-64 and aged 15-24, percentage points



Note: Differences in index point contributions are for the year ended September, and annualised for 2023 (see Appendix A for details).
Sources: Grattan Institute analysis of ABS (2017a, 2017b, 2018a, 2018b, 2019b, 2020, 2021, 2022a, and 2023a).

Appendix C: Inflation across CPI sub-groups (December 2017 = 100)



Source: ABS (2023a).

Bibliography

- ABS (2017a). *Household Expenditure Survey, Australia: Summary of Results* (2015-16 financial year). Released on 13 September. Australian Bureau of Statistics.
<https://www.abs.gov.au/statistics/economy/finance/household-expenditure-survey-australia-summary-results/latest-release>.
- (2017b). *Consumer Price Index: 17th series weighting pattern*. Released 6 November. Australian Bureau of Statistics.
<https://www.abs.gov.au/statistics/research/consumer-price-index-17th-series-weighting-pattern>.
- (2017c). *Introduction of the 17th Series Australian Consumer Price Index*.
<https://www.abs.gov.au/statistics/research/introduction-17th-series-australian-consumer-price-index>.
- (2018a). *Consumer Price Index: Correspondence with 2015-16 Household Expenditure Classification, Australia* (2017). Released 31 January. Australian Bureau of Statistics.
<https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/consumer-price-index-correspondence-2015-16-household-expenditure-classification-australia/latest-release>.
- (2018b). *Information Paper: Introduction of the Consumer Price Index Weight Update, 2018*. Released 12 December. Australian Bureau of Statistics.
<https://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/6470.0.55.002Main+Features12018>.
- (2019a). *Consumer Price Index: Concepts, Sources and Methods*. Australian Bureau of Statistics.
<https://www.abs.gov.au/statistics/detailed-methodology-information/concepts-sources-methods/consumer-price-index-concepts-sources-and-methods/2018>.
- (2019b). *Information Paper: Introduction of the Consumer Price Index Weight Update, 2019*. Released 18 December. Australian Bureau of Statistics.
<https://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/CDB46FAB09557D47CA258360000D6857>.
- (2020). *The 2020 annual re-weight of the Australian Consumer Price Index*. Released 16 December. Australian Bureau of Statistics.
<https://www.abs.gov.au/statistics/research/2020-annual-re-weight-australian-consumer-price-index>.
- (2021). *Annual weight update of the CPI and Living Cost Indexes (2021)*. Released on 17 December. Australian Bureau of Statistics.
<https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/annual-weight-update-cpi-and-living-cost-indexes/2021>.
- (2022a). *Annual weight update of the CPI and Living Cost Indexes (2022)*. Released on 20 December. Australian Bureau of Statistics.
<https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/annual-weight-update-cpi-and-living-cost-indexes/dec-2022>.
- (2022b). *Australian National Accounts: Distribution of Household Income, Consumption and Wealth* (2021-22 financial year). Released on 13 December.
<https://www.abs.gov.au/statistics/economy/national-accounts/australian-national-accounts-distribution-household-income-consumption-and-wealth/latest-release>.
- (2023a). *Consumer Price Index, Australia* (June quarter). Released on 26 July. Australian Bureau of Statistics.
<https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/consumer-price-index-australia/latest-release>.
- (2023b). *Wage Price Index, Australia* (June quarter). Released on 15 August. Australian Bureau of Statistics.
<https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/wage-price-index-australia/latest-release>.
- (2023c). *Selected Living Cost Indexes, Australia* (June quarter). Released on 2 August. Australian Bureau of Statistics.
<https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/selected-living-cost-indexes-australia/latest-release>.

- (2023d). *Consumer Price Index FAQs*. Accessed 20 September. <https://www.abs.gov.au/websitedbs/d3310114.nsf/home/Consumer+Price+Index+FAQs#Anchor8>.
- Argente, D. and Lee, M. (2020). “Cost of Living Inequality During the Great Recession”. *Journal of the European Economic Association* 19:2, pp. 913–952. <https://doi.org/10.1093/jeea/jvaa018>.
- Beckers, B., Hambur, J., and Williams, T. (2023). “Estimating the Relative Contributions of Supply and Demand Drivers to Inflation in Australia”. *RBA Bulletin*, June. <https://www.rba.gov.au/publications/bulletin/2023/jun/estimating-the-relative-contributions-of-supply-and-demand-drivers-to-inflation-in-australia.html>.
- Biddle, N. and Gray, M. (2023). *Hangovers and hard landings: Financial wellbeing and the impact of the COVID19 and inflationary crises, August 2023*. ANU Centre for Social Research and Methods. https://csrm.cass.anu.edu.au/sites/default/files/docs/2023/8/August_2023_Tracking_paper.pdf.
- Brainard, L. (2022). *Variation in the Inflation Experiences of Households*. Remarks to the Spring 2022 Institute Research Conference, Opportunity and Inclusive Growth Institute, Federal Reserve Bank of Minneapolis, Minneapolis. 5 April. <https://www.federalreserve.gov/newsevents/speech/brainard20220405a.htm>.
- Charalampakis et al (2022). Charalampakis, E., Fagandini, B., Henkel, L., and Osbat, C. “The impact of the recent rise in inflation on low-income households”. *ECB Economic Bulletin*, Issue 7/2022. https://www.ecb.europa.eu/pub/economic-bulletin/focus/2022/html/ecb.ebbox202207_04~a89ec1a6fe.en.html.
- Coates, B. and Ballantyne, A. (2022). *No one left behind: Why Australia should lock in full employment*. Grattan Institute. <https://grattan.edu.au/report/no-one-left-behind-why-australia-should-lock-in-full-employment/>.
- Deloitte (2023). *Food fight: Consumers confront inflation with frugality*. 23 February. <https://www2.deloitte.com/xe/en/insights/industry/retail-distribution/consumer-behavior-trends-state-of-the-consumer-tracker/rising-food-prices-inflation.html>.
- Gros, D. and Shamsfakhr, F. (2023). *Inflation and inequality: Energy and food versus rents*. Monetary Dialogue Papers, June. European Parliament. [https://www.europarl.europa.eu/thinktank/en/document/IPOL_IDA\(2023\)747845](https://www.europarl.europa.eu/thinktank/en/document/IPOL_IDA(2023)747845).
- Hanmer, F. and Marquardt, M. (2023). “New Insights into the Rental Market”. *RBA Bulletin*, June. Reserve Bank of Australia. <https://www.rba.gov.au/publications/bulletin/2023/jun/new-insights-into-the-rental-market.html>.
- Hobijn, B. and Lagakos, D. (2005). “Inflation Inequality in the United States”. *Review of Income and Wealth* 51:4, pp. 581–606. <https://doi.org/10.1111/j.1475-4991.2005.00170.x>.
- Interim Economic Inclusion Advisory Committee (2023), *2023–24 Report to the Australian Government*. <https://ministers.treasury.gov.au/sites/ministers.treasury.gov.au/files/2023-04/eiac-report.pdf>.
- Jacobs et al (2014). Jacobs, D., Perera, D., and Williams, T. “Inflation and the Cost of Living”. *RBA Bulletin*, March. Reserve Bank of Australia. <https://www.rba.gov.au/publications/bulletin/2014/mar/4.html>.
- Jaravel, X. (2019). “The Unequal Gains from Product Innovations: Evidence from the U.S. Retail Sector”, *Quarterly Journal of Economics* 134:2, pp. 715–783. <https://doi.org/10.1093/qje/qjy031>.
- (2021). “Inflation Inequality: Measurement, Causes, and Policy Implications”, *Annual Review of Economics* 13, pp. 599–629. <https://doi.org/10.1146/annurev-economics-091520-082042>.
- Kaplan, G. and Schulhofer-Wohl, S. (2017). “Inflation at the household level”, *Journal of Monetary Economics* 91, pp. 19–38. <http://dx.doi.org/10.1016/j.jmoneco.2017.08.002>.

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- Klick, J. and Stockburger, A. (2021). *Experimental CPI for lower and higher income households*. BLS Working Paper 537,. U.S. Bureau of Labor Statistics. <https://www.rba.gov.au/speeches/2022/sp-gov-2022-09-08.html>.
- Lokshin et al (2023). Lokshin, M., Sajaia, Z., and Torre, I. "Who Suffers the Most from the Cost-of-Living Crisis?". Policy Research Working Paper 10377. World Bank Group. <https://openknowledge.worldbank.org/server/api/core/bitstreams/90ebfbf1-1a56-4ea1-8749-599bf3dd4599/content>.
- Lowe, P. (2022a). *Inflation and the Monetary Policy Framework*. Speech to the Anika Foundation, Sydney. 8 September. <https://www.rba.gov.au/speeches/2022/sp-gov-2022-09-08.html>.
- (2022b). *Price Stability, the Supply Side and Prosperity*. CEDA Annual Dinner Address, Melbourne. 22 November. <https://www.rba.gov.au/speeches/2022/sp-gov-2022-11-22.html>.
- (2023a). Opening Statement to the House of Representatives Standing Committee on Economics, Canberra. 17 February. <https://www.rba.gov.au/speeches/2023/sp-gov-2023-02-17.html>.
- (2023b). *Inflation and Recent Economic Data*. Keynote Address to the Financial Review Business Summit 2023, Sydney. 8 March 2023. Reserve Bank of Australia. <https://www.rba.gov.au/speeches/2023/sp-gov-2023-03-08.html>.
- (2023c). *Statement by Philip Lowe, Governor: Monetary Policy Decision*. 5 September. Reserve Bank of Australia. <https://www.rba.gov.au/media-releases/2023/mr-23-23.html>.
- McGranahan, L. and Paulson, A. (2005). *Constructing the Chicago Fed Income Based Economic Index – Consumer Price Index: Inflation Experiences by Demographic Group: 1983-2005*. Federal Reserve Bank of Chicago WP 2005-20. <https://www.chicagofed.org/publications/working-papers/2005/2005-20>.
- Phillips, B. (2022). "Inflation isn't what they say it is – for many of us, it is much lower". *The Conversation*. 4 August 2022. <https://theconversation.com/inflation-isnt-what-they-say-it-is-for-many-of-us-it-is-much-lower-187973>.
- Phillips, B. and Joseph, C. (2022). *ANU Regional Living Cost Index*. CSRM Research Note 3/22. ANU Centre for Social Research and Methods. https://csrcm.cass.anu.edu.au/sites/default/files/docs/2022/8/ANU_Regional_LCI_BP_FINAL.pdf.
- RBA (2023a), *Statement on Monetary Policy*. August. Reserve Bank of Australia. <https://www.rba.gov.au/publications/smp/2023/aug/>.
- *Inflation Target*. Accessed on 20 September 2023. Reserve Bank of Australia. <https://www.rba.gov.au/inflation/inflation-target.html>.
- Van Kints, M. and Breunig, R (2021), "Inflation Variability Across Australian Households: Implications for Inequality and Indexation Policy". *Economic Record* 97:316, pp. 1–23. <https://doi.org/10.1111/1475-4932.12575>.
- Yuen, K. and Rozenbes, D. (2022). Experimental estimates of a Consumer Price Index for low-paid employee households. , Fair Work Commission Research Report 1/2022, February. <https://www.fwc.gov.au/documents/wage-reviews/2021-22/correspondence/lowpaidcpi.pdf>.
- Zorbas et al (2020). Zorbas, C., Eyles, H., Orellana, L., Peeters, A., Ni Mhurchu, C., Riesenber, D., and Backholer, K. "Do purchases of price promoted and generic branded foods and beverages vary according to food category and income level? Evidence from a consumer research panel". *Appetite* 144. <https://doi.org/10.1016/j.appet.2019.104481>.