



THE UNIVERSITY OF
**WESTERN
AUSTRALIA**

Centre for Public Value University of
Western Australia

Human Services Economic Paper 2
**Why the CPI and WPI are not
Appropriate Bases for Human
Services Funding Indexation**

David Gilchrist & Clare Feenan

First Published: April 2023

A Working
Paper Series on
the Economics of
Human Services

The Working Paper Series on the Economics of Human Services

The Centre for Public Value is a research entity within the UWA Business School at the University of Western Australia. This economics paper is the first in a series of working papers focused on explaining the development, operation, and management of the economics of human services in a mixed economy such that in Australia or New Zealand. The series is funded by the Centre for Public Value.

The Centre for Public Value seeks to contribute to sustainable policy and practice as a foundation for efficient and effective human services systems operating in a mixed economy. Therefore, our research focuses on achieving sustainable outcomes for the human services sectors, governments, and service users.

This working paper series has been designed to provide people with skills outside of economics with explanations and commentary relating to important economics topics that effect the sustainability of the human services sector in a mixed economy. As such, these working papers draw on, and add to, research and commentary undertaken by the Centre for Public Value which is available via our website.¹

If you have any questions or comments, or simply want to find out more, please contact the authors directly.

Summary

This brief paper is intended to share information and insight into the Consumer Price Index (CPI) and Wage Price Index (WPI) in the context of human services funding indexation. The measurements and methods of calculation for the CPI and WPI are outlined in accordance with the national statistical agency, the Australian Bureau of Statistics (ABS).

The use and relevance of these indexes based on their development is examined with respect to the calculation of funding indexation for Australia's human services system. As many Australian states and territories use one or both indexes in state government human services indexation calculations, understanding these indices provides an important insight into the inappropriateness of their use for this purpose. The application of these indices appears reasonable at first glance. However, these two indices are inappropriate to the purpose to which they are applied.

Should readers require additional information, have any queries or comments, please contact the authors directly.

¹ Website here: <https://www.uwa.edu.au/schools/Research/Centre-for-Public-Value/Publications>



Contact Information:

Professor David Gilchrist, Director, Centre for Public Value
University of Western Australia david.gilchrist@uwa.edu.au

Website: <https://www.uwa.edu.au/schools/Research/Centre-for-Public-Value>

Citation Information

Please cite this paper as: Gilchrist, David, J., and Clare T. Feenan. 2023. "Economic Paper 2: Why the CPI and WPI are not Appropriate Bases for Human Services Funding Indexation." Working Paper Series on the Economics of Human Services, Centre for Public Value, UWA Business School, Perth, Australia

ISBN: 978-0-6455967-6-2

Related Papers in this Series:²

Economic Paper 1: What is Indexation?

Economic Paper 4: Job Quality Threats to Human Services Sustainability

Economic Paper 5: What is Sustainability in the context of Human Services?

Other Relevant Papers Prepared by the Centre for Public Value:³

Gilchrist, David, J., and Clare T. Feenan. 2023. Challenging the Framework for Funding Indexation in Australian Human Services: Achieving Sustainability. A report developed by the Centre for Public Value, UWA Business School, Perth, Australia.

Gilchrist, David, J., and Clare T. Feenan. 2023. Human Services and Cost Indexation Methodologies in Australia. A report developed by the Centre for Public Value, UWA Business School, Perth, Australia.

Author Interest Statements

Professor David Gilchrist is Director of the Centre for Public Value at the University of Western Australia. He has received funding from governments, peak bodies and individual organisations for various research projects and consulting support predominantly related to the not-for-profit human services industry, Not-for-profit financial and performance reporting, sustainability and outcomes reporting, and policy and practice related to those areas. He has been a director and chair of a number of human services and policy organisations over past years and is currently chair of two policy-focused not-for-profits operating nationally in the education sector. He was made a Fellow of the Parliament of Western Australia in 2021.

Ms Clare Feenan is Research Manager of Centre for Public Value. She holds a Bachelor of Science (Statistics) from RMIT, Postgraduate Certificate of Business (Economics and Econometrics) from Monash University and is undertaking Master of Economics at University of Western Australia. Clare has extensive business operations and analytical experience including auditing, compliance, and profitability. Clare is passionate about the not-for-profit sector and achieving sustainable operations through data analytics.

² Available at: <https://www.uwa.edu.au/schools/Research/Centre-for-Public-Value>



Quick Guide: Why CPI and WPI are not appropriate for use in calculating indexation

A number of Australian governments use a combination of ABS state WPI and capital city CPI to calculate indexation yearly.

Table 1. State Wage Price Index compared to REAL human services wage expenditure

Wage Price Index (State)		Human Services (Wage Expenditure)
✓	Wage Inflation as cost to business	✓
✗	Mandatory superannuation contribution increases	✓
✓	Represents multiple industries across the state	✗
✗	Minimum wage overrepresented (and increases)	✓
✗	Female dominated workforce	✓
✗	Business paid maternity leave	✓
✗	Workers' compensation payments	✓
✗	Recruitment and retention costs	✓
✗	Penalty rates and allowances	✓
✗	Bonuses and benefits	✓
✗	Training and personal development	✓
✗	NDIS compliance (training and admin costs)	✓
✗	Increases reflected from success of outcome	✓

Table 2. Capital City Consumer Price Index compared to REAL human services expenditure

Consumer Price Index (Capital City)		Human Services (Non-Wage Expenditure)
✓	Outcome: household utility in living standards	✗
✗	Outcome: demand and quality of service provision	✓
✓	Represents capital city average household	✗
✗	Represents state-wide Human Services organisations	✓
✓	Represents optional purchases (alcohol, take away, holidays)	✗
✗	Overrepresentation in essential items (financial services, communication, housing)	✓
✓	Elasticity in discretionary and discretionary spending	✗
✗	Business related purchases (subscriptions, PPE)	✓
✗	Timely response to market goods and prices	✓
✗	New goods and technology	✓
✗	Significant savings or investment component (land, capital goods)	✓
✗	Taxes	✓
✗	Interest Charges	✓
✗	Second hand goods	✓
✓	Subsidised by flexible wealth and debt management	✗



Paper

The Consumer Price Index (CPI) and Wage Price Index (WPI) are calculated to provide insight into economic activity. The Australian Bureau of Statistics (ABS) calculates these indices to create information pertaining to quarterly and annual change, though the ABS has also recently increased their reporting frequency of the CPI to a Monthly Household Spending Indicator due to the fast growth of inflation experienced in 2022.

Both the CPI and WPI are often referenced by governments, economists, academics, and businesses in discussions around the state of the economy, including in relation to economic performance. For instance, the Reserve Bank of Australia (RBA) monitors inflation rates to inform monetary policy, and Fair Work Australia considers the WPI when determining award rates and handing down wages decisions. Individuals and professionals in public and private settings use these indices to inform short-term and long-term decision making. This is appropriate as this is what these indices are for.

However, a number of Australian governments use a combination of CPI and WPI to calculate annual indexation for contracts pertaining to human services provision on the basis that the inflationary effects inherently represented by these indices represent the cost movements impacting the human services sector's operations.

For instance, a government might decide that funding indexation for a particular year is to be calculated based on 20% CPI and 80% WPI. Therefore, if the relevant CPI was 4% and WPI was 6%, the indexation figure would be 5.6% as follows:

$$[0.2 \times 0.04] + [0.8 \times 0.06] = 0.056 \text{ or } 5.6\%$$

We call this a “proxy” for changes in human services costs. That is, governments use CPI/WPI to approximate the changes in the costs of human services delivery even though these indices actually reflect changes in the cost to run a household and some direct employment costs.

They do this because:

- CPI and WPI are calculated by an independent party (the ABS)
- CPI and, less so, WPI are well known and generally understood within the broader community
- Therefore, they are seen as legitimate calculations
- Creating a fit-for-purpose index for human services indexation will cost both governments and human service providers in terms of time and money to collect and analyse the data necessary
- Hence, using an existing proxy such as the CPI or WPI (or a combination of the two) reduces the cost in time and money for both governments and the human services sector
- Therefore, using a composite of CPI and WPI allows for governments and the human services sector to save that time and money and provides apparent legitimacy.

However, there are important reasons as to why this is not appropriate. Specifically, the use of either CPI or WPI individually, or a composite of the two indices, does not represent the costs associated with the provision of human services or the changes in those costs over time. This paper explores this phenomenon by explaining both indices. Suffice to say at this point, getting the indexation calculation wrong increases the risk to human services sustainability and, therefore, the prospects of increased costs to government directly in the form of emergency funding, and indirectly because failure in the provision of human services increases use of services in primary health and other costs.



What is the Consumer Price Index?

The CPI is used in most advanced countries as a measure of inflation related to the costs of running a household. It is also commonly used as a proxy measure for the cost-of-living or cost-of-goods. For instance, when CPI increases, we become concerned that people are likely to be struggling to meet their living costs and that pressure on wages will result.

For decades the CPI has provided an accepted measure of Australia's inflation in relation to household goods and service. The CPI is published in line with the International Money Fund's (IMF) standards for countries participating in international markets. So, it is a legitimate and important index calculation in the context of its purpose.

How is the CPI calculated?

In Australia, the CPI is calculated for each capital city and is weighted to create a national CPI figure. It is calculated by:

- sampling households for data collection on household spending
- monitoring a selected representative sample 'market basket' of products' prices—these products are those that are relevant to running a private household
- sourcing data through web scraping, transactional data, in person visits to stores, or by phone interview and other methods to support price data collection
- reweighting using the Household Expenditure Final Consumption survey (HEFC) annually and the Household Expenditure Survey (HES) every 6 years to gather data on the volume of good purchased
- using retail trade, supermarket scanner, Overseas Arrivals and Departures (OAD) for further reweighting information

That is, to calculate the CPI, the ABS gathers data on products used to run households. This is price data (how much people bought the item for) and quantity data (how many of each basket item was purchased). The quantity data is critical because the price is only one aspect of the issue—if the price goes up, people may choose to buy alternate products or to not spend and save instead. So, CPI helps us to understand both the impact of price increases and the household spending behaviours that then help organisations like the RBA to understand what is happening in the economy.

Generally, household spending behaviours change gradually under normal conditions. However, in high-inflationary environments, consumers respond as quickly as necessary in their spending decisions as a result of changes in their capacity to consume. That is, as prices increase, consumers must make decisions about what changes in their spending they may need to make in line with their priorities—the less money they have, the less options they may have to make alternative decisions because they must purchase certain goods for subsistence.

This phenomenon has been observed in recent years resulting from COVID-19 responses as well as impacts from the War in Ukraine. As consumers behaviours change, the weightings for the CPI changes to reflect the movement in various classes of goods—that is, the types of goods included may change over time as well as the proportion of those goods used in the calculation of the CPI. If these changes had not been captured, the CPI would misrepresent economic change and severely impact the result as well as any decisions informed by it. A good example here may be the increased consumption in terms of internet platform-based subscription entertainment in recent years—people may have changed their consumption habits to subscribe to platforms rather than go to the movies.



It is important to note not only the change, but the nature of the goods which are included in this basket. The limited extent (if at all) to which the CPI basket of goods represents the purchases of a human services organisation is a significant issue.

Appropriate and up-to-date pricing data and expenditure weights ensure the relevance is maintained of the CPI to household economic activity. Significant amounts of data are required to be collected from the household sample as well as the related price data collection in order to capture changes in behaviour over the time period. In the newly introduced monthly CPI, the ABS is able to use rolling expenditure weights depending on the nature of the groupings of goods and efficiently provide more timely information in a fast-paced changing environment. However, the data collection regularity for both the prices of goods and assessment of the proportion of expenditure in the basket also impacts the appropriateness of the index calculation in the context of human services.

In such a large data set the CPI is organised into³:

- 11 groups (e.g. food and beverages)
- 33 subgroups (e.g. bread and cereal products)
- 87 expenditure classes (e.g. breakfast cereals)
- elementary aggregates (approximately 800 in each capital city)

For the technical minded, in terms of the statistical calculation itself, the CPI is calculated using the Lowe (modified Laspeyres) index and any bias is estimated using the Fisher superlative 'ideal' index. The Lowe index uses price and quantity data from a base period and the current period's price observations. That is, how much a previously described basket of goods would cost today. Readers may wish to review our report on Human Services and Cost Indexation Methodologies in Australia in order to develop a greater understanding of this aspect.⁴

What is the Wage Price Index?

The WPI is intended to measure change in the price of labour to employers and is often used in comparisons of wage growth to overall cost growth. It represents the changes in what are termed the price of wages and salaries and holds constant the quality and quantity of hours worked. Hence, it does not represent employment metrics such as underemployment nor does it represent total salary or labour costs. For instance, superannuation cost increases are not included.

The headline measure of the WPI is total hourly rates of pay excluding bonuses. This may be seasonally adjusted or original, and can be disaggregated into public/private sectors, and industries. It is often used by businesses and for organised industry advocacy. As such, the WPI provides insight into wages changes.

How is the WPI calculated?

The WPI is calculated by state and territory and is also weighted for a national figure by:

- biennially reweighting using the Survey of Employee Earnings and Hours (EEH) to allow the selected sample to represent state, sector, and industry
- annually stratifying a sample of employers from the ABS register selecting a stratified sample of jobs on payroll

³ Australian Bureau of Statistics. 2022. "A Guide to the Consumer Price Index: 17th Series".

<https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/guide-consumer-price-index-17th-series/latest-release>

⁴ Gilchrist, D. J. and C. Feenan. 2023. "Human Services and Cost Indexation Methodologies in Australia", a report developed by the Centre for Public Value, UWA Business School, Perth, Australia. Available at: <https://www.uwa.edu.au/schools/Research/Centre-for-Public-Value/Publications>



- undertaking a quarterly online and mail out of questionnaires to collect data on the wages of represented jobs

Which is used to calculate four sub-types of WPI:

- ordinary time hourly rates of pay excluding bonuses
- ordinary time hourly rates of pay including bonuses
- total hourly rates of pay excluding bonuses
- total hourly rates of pay including bonuses

Other labour-associated costs are also not considered here. For instance, the significant recruitment and retention costs associated with maintaining service delivery or the impact of the loss of income resulting from labour shortages in the context of poor job quality and the difficulty in replacing staff are not considered.⁵ Training costs are not considered, nor are changes in superannuation guarantee requirements.

A Laspeyres-type formula is used to calculate the WPI. Again, this is the most commonly used formula by statistical agencies across the world. This index takes quantity and price data from the base year and price data from the current year. Put simply, it measures the amount wages should be now for the work done in a previous time. As quantity and quality of work is held constant, this is a simpler index.

How are these indices meant to be used?

Government economic analysis is the primary application of these indices. However, the CPI and WPI are published by the ABS as part of a broader strategy to maximise the value of publicly collected data for informed decision making.

The ABS provides information on *Use of Price Indexes in Contracts*⁶ and lists a range of issues which should be considered. The ABS neither endorses nor discourages the use of price indices as a tool for analysing prices/charges by governments and businesses. However, the ABS recommends appropriate professional advice should be obtained in such consideration.

Why are CPI and WPI inappropriate as proxies for human services cost increases?

As the CPI is an indicator of household cost change, the sample used for expenditure weighting is households and not service providers and so the purchases examined relate to expenditure that households make. Generally, human services organisations do not consume the same goods as households, and, where they do, not in the same quantity.

Additionally, in the context of human services delivery, household expenditure over-represents purchases such as leisure, alcohol, fashion, and types of education which are all outside of the items purchased by human services providers. Unlike households, human services providers use more professional services such as financial, legal, or marketing services, as well as incurring business costs such as IT and the leasing of office space. Of course, depending on the nature of the human services provided, they will purchase varying quantities of fuel, food, or disability support consumables.

In the context of CPI, costs represented by a household's basket of goods fall into one of two broad categories: "Discretionary Expenses" and "Non-Discretionary Expenses". Discretionary expenses are those that are able to be discontinued if prices become too high. They are expenses that can be done without. In economics, we use the term "elastic goods" to describe them

⁵ See Economics Paper 4: Job Quality Impacts on Human Services in Australia. Available here:

<https://www.uwa.edu.au/schools/Research/Centre-for-Public-Value/Publications>

⁶ Available here <https://www.abs.gov.au/statistics/detailed-methodology-information/information-papers/use-price-indexes-contracts>

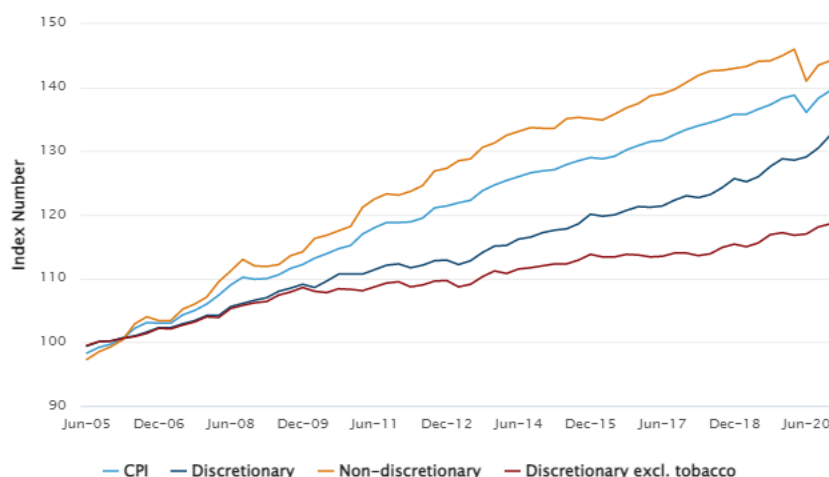


because consumers are able to respond to changes in price by reducing or discontinuing their purchasing of that good. Because consumers can reduce the amounts they purchase, the providers of these goods are typically reluctant to raise prices as their sales —and hence profit — will fall.

On the other hand, non-discretionary expenses are those that consumers must purchase regardless of the price levels (within reason). As such, these goods are termed “in-elastic” and the producers of these goods are less likely to worry about the price they charge because the consumption patterns are unlikely to change.

The CPI figure is a balance of the two types of expenditure which means that the CPI reported is typically higher than the change in discretionary goods’ prices but lower than changes in non-discretionary goods’ prices. This can be seen graphically in figure 1 below. Importantly, human services providers purchase more non-discretionary goods than discretionary goods and so the reported CPI is likely lower than the real cost increase experienced by these organisations when they do consume CPI-relevant goods.

Figure 1. Non-discretionary vs. Discretionary inflation⁷



The WPI measure is indicative of changes in wages and is not a complete representation of all changes in labour costs. The WPI excludes penalty rates and bonuses, as well as changes to superannuation and any other industry specific mandatory labour costs such as training. Other costs which differ across industry include maternity leave and recruitment and training costs impacting female dominated workforces.

Both the CPI and WPI are statistically sound, well maintained, and accurate indices. However, they are highly inappropriate when used to proxy indexation for human services organisations and the consequences of bad indexation are cumulative, year-on-year, and reduce the sustainability of the sector placing governments and vulnerable people at risk.

⁷ Australian Bureau of Statistics. 2022. “Measuring Non-discretionary and Discretionary Inflation”. <https://www.abs.gov.au/articles/measuring-non-discretionary-and-discretionary-inflation>