Survey methodology

Introduction

BITRE previously undertook a spatially-based survey of prices and costs aimed at gaining insight into how costs vary across Australia as a whole, from capital cities to the very remote areas, and attempted to assess the reasons behind this variation.

The study took the consumer's perspective, with a focus on the cost of buying goods and services at a location, rather than the cost of supplying them. The concept of 'cost' is a multi-faceted one. In terms of spatial differences, cost encompasses price, quality and choice/availability. The primary emphasis was on price differences between areas. The link between the observed price set and the overall cost to the consumer is bridged by applying weighting derived from the ABS's Household Expenditure Survey (HES) (ABS 2006b).

For the purpose of addressing non-price costs (quality, choice) associated with remoteness, a qualitative element was included in the survey. This involved discussions with retailers, education providers (predominantly principals and deputy/vice principals) and health providers. Where this data informs our understanding of retail demand, supply and pricing; for example with issues such as travel to larger centres for goods not available locally or specific costs associated with remote supply chains, the results are used to guide our thinking regarding interpretation of the quantitative data. They are not factored directly into the creation of the indices.

Selection of survey sites

The survey looked at specific areas. Since the objective was to understand the causes of spatial variation in price, a list of possible drivers of variation was created before the fieldwork began. These include: distance, population, competition, income, local produce, state, transport costs, age structure, industry structure, tourism, cultural factors and store type. More possible drivers of geographic price variation were noted and considered as the fieldwork progressed and the researchers talked to retailers in the field about their perceptions. In this process, wealth, the levels of income support and disadvantage were considered as potential drivers, but in the event were not found to be significant in their own right, and were closely related to drivers identified in the original list (wealth with age, income support and disadvantage with income).

The main aim of the fieldwork was to collect price data for enough locations in Australia that the patterns and drivers of spatial price variation could be understood. Budget constraints meant that only a limited number of sites could be surveyed. It was therefore important that

the sites selected reflect the nation as a whole. To the extent that they were known, the original list of drivers was used to help determine the locations to be surveyed. Some, such as state, population and distance from capitals were recognised explicitly. Others such as competition, income and industry structure were considered by ensuring that specific region types were included—coastal areas, wheat belt towns, remote pastoral regions, mining towns and so on. The final locations were determined using this list tempered by the practical constraints of efficient use of staff resources in trip planning.

A map of the locations is presented in Map B.1 and the locations by state are listed in Table B.1. The coverage is reasonably comprehensive. Some regions are not fully covered, but are considered by similar regions in other parts of the country. A notable omission is the Pilbara region, but it was considered that the characteristics were picked up in other remote mining regions and that inclusion of the Pilbara and the Kimberley would have biased the study even more toward Western Australia.

Map B.1   Towns sampled in the cost of living study

Source: BITRE.

Table B.1   Towns sampled in the cost of remoteness study by State and Territory

Queensland	South Australia	New South Wales	Victoria	Western Australia	Tasmania	Northern Territory	Australian Capital Territory
Brisbane	Adelaide	Sydney	Melbourne	Perth	Hobart	Darwin	Belconnen
Atherton	Ceduna	Temora	Port Fairy	Merredin	Currie (King Is)	Harts Range	
Croydon	Kingston SE	Ardlethan	Hamilton	Margaret River	St Helens	Adelaide River	
Georgetown	Meningie	Barellan	Warracknabeal	Coonana	Scottsdale	Papunya	
Mareeba	Streaky Bay	Griffith	St Arnaud	Kalgoorlie	Smithton	Pine Creek	
Ravenshoe	Naracoorte	Albury	Birchip	Manjimup	George Town	Alice Springs	
Cairns	Wudinna	Tumbarumba	Bendigo	Bunbury	Launceston	Katherine	
Biloela	Cummins	Tumut	Echuca	Norseman	Strahan	Jilkminggan	
Hervey Bay	Millicent	Byron Bay	Daylesford	Esperance	Burnie	Ngukurr	
Bundaberg	Mt Gambier	Grafton	Orbost	Busselton	Swansea	Jabiru	
Moura	Port Lincoln	Coffs Harbour	Omeo	Geraldton	Oatlands	Batchelor	
Emerald	Coober Pedy	Nambucca Heads	Bairnsdale	Three Springs	Dover	Nhulunbuy	
Gladstone	Roxby Downs	Port Macquarie	Traralgon	Moora		Coolalinga*	
Rockhampton	Woomera	Wellington	Wonthaggi	Broome			
Quilpie	Port Augusta	Dunedoo	Swan Hill	Derby			
Winton	Whyalla	Coonamble	Cohuna	Fitzroy Crossing			
Charleville	Kingscote	Warren		Narrogin			
Longreach	Victor Harbour	Dubbo		Katanning			
Barcaldine	Lameroo	Newcastle		Gnowangerup			
Mitchell	Elizabeth*			Halls Creek			
Aramac				Wamun			
Surat				Albany			
Roma				Jerramungup			
				Wyndham			
				Lake Grace			
				Kalumburu			
				Kununurra			
				Quairading			
				Northam			

* Note: Elizabeth and Coolalinga are part of Adelaide and the wider Darwin area respectively.

Table B.2   Australian town populations and proportions sampled

Town size (2006 population)	Number of towns in Australia (a)	Number of towns surveyed in this study	Towns surveyed as percentage of size category
Less than 500	611	20	3
500 to 999	425	21	5
1,000 to 2,499	354	18	5
2,500 to 4,999	164	21	13
5,000 to 9,999	86	12	14
10,000 to 19,999	55	10	18
20,000 to 49,999	33	15	45
50,000 to 99,999	13	6	46
100,000 to 499,999	9	3	33
More than 500,000	5	5	100
Total	1755	131	7

Note: (a) 'towns' classed as defined in ABS 2006a Urban Centres and Localities. As this includes towns with populations under 200, the total is slightly higher than in table A.1, which excludes those towns.

Source: BITRE analysis.

Table B.3   Sample towns by state and territory

State	Number of locations surveyed
New South Wales	19
Victoria	14
Queensland	23
South Australia	20 (a)
Western Australia	29
Tasmania	12
Northern Territory	13
Australian Capital Territory	1
Total	131

Note: (a) In addition to the standard approach of surveying one mid-range area to represent each capital city (in the case of Adelaide, Marion), Elizabeth in Adelaide was also surveyed and treated as a separate location.

Source: BITRE analysis.

Cursory inspection of Map B.1 could suggest that the sample is biased toward regional and remote locations. However, closer analysis of the populations of the sample and total Australian towns in Table B.2 indicates that, on the contrary, small regional settlements are significantly underrepresented and towns and cities above 2500 people are overrepresented. The real picture is made more complex by a lack of information regarding the number of small towns that actually have a significant retail presence—especially where they are near a larger centre. It is reasonable to expect that many of the 611 towns with a population of less than 500 people would have only minimal shopping facilities.

Table B.3 shows the location by state and territory. Western Australia has the largest number of towns surveyed, and New South Wales and Victoria are underrepresented, at least on a

population basis. However a significant number of centres were surveyed in each state and we are confident the survey is truly national.

The list of items to be priced

A standard list of items was created to use in the price collection fieldwork. In constructing the list, there were two main issues: what items to include, and the relative importance of each.

Comparisons of the cost of goods and services between regions are often made using the 'basket' method. A group of items are priced in two or more regions, and then the total cost of the 'basket' of goods is used to gauge the price difference between these areas. The difficulty with this approach is that what items are included is open to dispute. The list of items may reflect one person's tastes but be completely irrelevant to others. Further by simply adding up the overall cost of the basket, the price of some items (the ones with the biggest nominal price) are given more prominence than others. Simply adding the basket in effect weights the items in the basket on the basis of their price of the item, which itself is partially a function of the amount purchased: consider the relative importance of cereals if the basket list specifies a jumbo pack rather than a small pack.

Clearly using the total cost of an arbitrary basket is a simplistic approach that is too influenced by the product composition. The approach can be modified to give wider validity by including items purchased by the average consumer in the proportions that they are purchased by the population as whole. Obviously a strict application of this method would require us to price every type of good in every size available. However a compromise can be made by grouping like goods together, comparing the prices of typical members of the group and weighting the group as a whole on the basis of their contribution to the whole household budget. This approach effectively defines the value of the groups of goods in the 'basket' on the basis of the average consumption of the community.

To be accurate, the price differences of the sampled goods from each group must be representative of the differences in the prices of the whole group. In spatial applications it has the added advantage of allowing comparisons between groups of items even if some items are not available. For example the price of cheese as a group can be compared between two places on the basis of the available brands and packages, as long as some identical lines can be priced.

It is also worth noting here that what the average consumer buys differs from location to location and that therefore there are questions regarding the appropriate spending pattern to use. For example, if we were to compare two regions, should the basket of goods represent the spending patterns in region A, or region B? Or should it be an average of what people buy in both regions? The approach can make a difference to the outcome of the index, and hence our perception of how the cost of living compares between these places. However, the question of which spending pattern to use is not easy to resolve and depends largely on the perspective of the data user and/or the region they are in: obviously the relative importance in the basket of thongs and gum boots differs between coastal and alpine regions.

Given indices are for general use across regions and to give them the most relevance to the greatest number of people, the same, average, weights were used across all regions. The typical

Australian household pattern of spending was used to weight the price groups, as determined by the Household Expenditure Survey (HES).

The Household Expenditure Survey and the BITRE baskets

The HES is conducted by the ABS every 5 years, and collects information about the spending habits of Australian households. BITRE used the 2003–04 HES, which was the latest at the time of the BITRE survey. The output includes tables by state on the average weekly household expenditure within categories of spending. The main focus of the survey is goods and services, on which the average Australian household spends $892.83 per week.

The categories used are relatively small. An excerpt from the HES at Table B.4 shows the definition of some subgroups in the food category. These were used as the base groupings for weighting BITRE indices (some of these subgroups were amalgamated). The relative values in the final two columns showing the dollar expenditure and percentage of total household expenditure were used for weighting.

Table B.4   HES estimated expenditure on food categories

HES No.	Product Group	$	Per cent
030101	Bread	5.91	0.66
030102	Flour	0.2	0.02
030103	Cakes, biscuits, puddings and related products	6.42	0.72
030104	Cereals and pasta	3.53	0.40
030200	Meat (excluding fish and seafood) nfd	1.37	0.15
030201	Processed meat (including ham, bacon and sausages)	7.07	0.79
030202	Beef and veal	4.13	0.46
030203	Mutton and lamb	2.1	0.24
030204	Pork (excluding bacon and ham)	1.11	0.12
030205	Poultry	3.95	0.44
030206	Game	0.01	0.00
030207	Offal	0.21	0.02
030299	Other meat (excluding fish and seafood)	0.07	0.01
030300	Fish and seafood nfd	0.06	0.01
030301	Fish and seafood	3.79	0.42
30401	Eggs and egg products	1.06	0.12
30501	Dairy products	11.27	1.26
30601	Edible oils and fats	1.39	0.16
30700	Fruit and nuts nfd	0.05	0.01
30701	Fresh fruit	7.55	0.85
30702	Canned, frozen and bottled fruit	0.75	0.08
30703	Dried fruit and nuts	1.42	0.16

(continued)

HES No.	Product Group	$	Per cent
30800	Vegetables nfd	0.04	0.00
30801	Fresh vegetables	8.34	0.93
30802	Frozen vegetables	0.98	0.11
30899	Other vegetables	1.25	0.14
30901	Sugar	0.33	0.04
30902	Syrups, honey, jams, jellies and desserts	0.95	0.11
30903	Confectionery	9.7	1.09
30904	Spices, herbs, sauces, spreads, and other food add	3.43	0.38
30905	Canned spaghetti and baked beans	0.32	0.04
30906	Packaged prepared meals	3.53	0.40
31000	Non-alcoholic beverages nfd	0.73	0.08
31001	Soft drinks and packaged waters	5.05	0.57
31002	Fruit and vegetable juice	2.57	0.29
31003	Tea and coffee	1.97	0.22
31004	Food drinks	1.54	0.17
31005	Cordials and unpackaged milk based beverages	0.67	0.08
31101	Meals out and fast foods	42.1	4.72
39901	Other food and non-alcoholic beverages	0.22	0.02

Source: ABS Household Expenditure Survey 2003–04, Cat. 6530.0.

In order to determine the relative prices for each of the categories, prices were collected for items from within the above categories.

Items on the pricing list

Conceptually, there are two options for determining what sort of items should be priced: to try to estimate the 'typical' cost, or to find the cheapest item to fulfil basic specifications. The first will emphasise the most popular brands, the second the cheapest items, probably house brands. The former reflects Australia-wide spending preferences. The latter is also valid because it provides a comparison of the minimum cost required to live in different towns. This project opted for the 'typical items' approach on the basis that it reflects more accurately the reality of what is actually purchased.

The list of items was developed with the aim of capturing price differences for as many HES categories as possible, which could eventually be summed up (using the appropriate weights) into indices for each town. These indices may focus on groceries, hardware, electrical goods or other categories which may be able to be used to create an overall cost of living index.

For the grocery list, items were chosen on the basis of brands with the highest market share, as listed in Retail World's Australasian Grocery Guide (Retail World 2005). The items on the grocery list were therefore very specific, and referred to an exact product (for example 'Kellogg's cornflakes 525g'), except for fresh produce ('carrots loose per kg') and house brand goods ('house brand cream 600ml').

The non-grocery parts of the list contained some generic items (such as hamburgers, drinks at a pub and fuel) and some branded items (Dunlop tyres, Barbie dolls, Dulux paint).

Theory suggests that when conducting spatial price comparisons, all aspects of the product should be identical, so the price only captures location-based differences, and not any additional differences due to variations in quality (Halstead 1989). However, some of the towns to be compared had a very limited range of goods. For instance, say a town only has a particular type of fridge available for purchase. In these cases we constructed the price comparison by comparing the price of the fridge with an identical model in a capital city. This creates some conceptual issues regarding the costs to the consumer of a lack of choice, but is the only practical way of creating a price comparison[52]. However for some goods—especially where the brand loyalty was judged to be low, a 'cheapest available' item was included. Generally these categories were populated by generic or house brands, but in some instances the absence of these lines led to them being filled by regular brand lines. This more flexible specification was also a practical consideration. Products with an exact specification are much harder to find in smaller towns, allowing no price comparison at all.

Initially, the list included 274 grocery items (including non-food grocery items such as tobacco and cleaning products), and another 142 items to cover other common goods and services, ranging from clothing and electrical goods to petrol and housing. This list was expanded and refined as the appropriateness of the items was tested in the fieldwork.

Prior to the fieldwork proper, the list was tested at several towns within a few hours of Canberra, and another five locations in Victoria, including Melbourne. Preliminary indices were constructed on the basis of the results. This established the rigour of the process before the Australia-wide fieldwork commenced.

Fieldwork

The fieldwork was conducted between July 2005 and December 2006, an 18 month period which followed some trial use of techniques and equipment. Fieldwork was undertaken on a state by state basis. While ideally prices would have been collected across Australia simultaneously, this was not possible due to resourcing limitations.

Where possible, all the towns within a state were priced within a month of each other. Each location was allotted one day of price collection time, except for the capital cities, which were allotted two days, due to their size and the need to collect data items that matched all other centres. The price collection was carried out by pairs of researchers, typically covering four to five locations per trip. All researchers were BITRE staff, which meant that they could be trained in detail. This ensured a more consistent level of data collection.

Although legally, prices are regarded as public property and can be collected without issue, in this survey price collectors approached the store owner or senior staff and asked permission to collect data. This included a written assurance that the data was being collected for research and would not be used in way that could identify individual stores. For this reason, the raw data will continue to be held by the Bureau and is not available for release to other researchers. The

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[52] The consumer where choice is limited is disadvantaged since they do not have the option of choosing an item that better suits their needs and budget. It is not possible to estimate the extent of this cost to the consumer, let alone incorporate it into the price index. We have therefore compared prices of what is available, but built an availability index to capture costs associated with relative lack of choices.

advantage of approaching the stores was that this often facilitated conversations between the store principals and the researchers. This often provided researchers with an insight into the perceived commercial realities faced by individual stores. This is reflected in the discussion and interpretation of results in this paper which are consistent with these discussions.

The data collectors aimed to record prices in three supermarkets per town, where they were present. Due to time limitations, sometimes only one or two supermarkets were surveyed where three or more were present.

The time limit placed on the data collection did have some effect on the proportion of items sampled. For example, an entire small town could be covered in the allotted time: every store with items on the list could be surveyed. In the larger towns, however, only a sample of the total population of stores could be surveyed.

Distortions in the price data were minimised by the data collectors using their judgement and common sense in seeking out the lowest prices. Larger stores and chain stores were often targeted first as experience showed that these stores most often had the lowest prices. Less time was spent in smaller, boutique establishments, especially if an initial check revealed a generally higher price level. However time constraints inevitably lead to some anomalies. For example, if two towns each had a Kmart and a Big W, experience suggests us to expect very similar (but not identical) prices. However, if in the first town only the Kmart was surveyed and in the second town only the Big W was surveyed, there would be some minor differences attributable to the methodology.

This issue has to some extent been overcome due to the number of items on the survey list and the number of towns surveyed. The nature of the output also mediates this, since the focus of the project is on broad trends that can be extrapolated to other towns across Australia, rather than focusing on price differences recorded between different towns within the sample.

Initially, BITRE researchers tried to record the size of each supermarket. As information was not available on turnover or floor space for each store, the number of checkouts was recorded. However, this data was not used in the analysis, as it was not believed to be an accurate measurement of size. Moreover, store type (whether a major chain or an independent) and the size of the local population were considered to be more relevant factors in pricing than store size, which also appeared dependent on these factors.

Due to the difficulty in finding items on the list in smaller localities, replacement items were occasionally priced and subsequently collected in at least one capital city to enable a price comparison. This substitution technique was applied in a way that kept the substitute item as similar as possible to the original item. The rationale for this was so that the price differential of the substitute item would be similar to the price differential of the list item. For instance, if the listed item was not available, an alternative size of the same brand was priced in preference to pricing the same size item of a different brand. In this way substitute items were chosen that as closely as possible mimicked the price behaviour of the one on the list.

While most of the data was collected through the fieldwork, some information was collected afterwards, such as electricity and insurance prices. The cost of hardware items was collected as part of the fieldwork, but the Rawlinson's construction cost guide was used to supplement this information and create price differentials of building costs in different areas (Rawlinsons 2007).

Due to the 18 month period over which data was collected, the CPI was used to adjust all prices to a June 2006 level. Appropriate CPI categories were used for each category of collected data, for instance, quarterly changes in the 'food' CPI index was used to adjust the grocery prices.

Alterations to the HES for the BITRE list for the cost of living index

Although the study focused on only part of the whole cost of living package, it is useful to note that the BITRE cost of living index differs from the HES in a number of ways. This reflects the facts that the HES was not designed to compare the cost of living across regions, but merely records how people are spending their money week to week. Therefore it was necessary to make some alterations to the contents and weightings of the HES list so that it could be used in the study.

Deleted Categories

Holidays – The expenditure takes place in an undefined location, and therefore the cost cannot be measured spatially with reference to a usual location.

Education – The cost of education as it pertains to remoteness is based much more on quality, choice and availability than on price, so the inclusion of price differentials relating to education would be misleading.

Parking fees – While we typically expect parking in larger population centres (particularly capital cities) to be expensive in the central business district and shopping centres, the cost will vary considerably within a location, which means that finding a representative price for a city is problematic. There is also the added impossibility of creating a price ratio when one of the prices is zero.

Road tolls – Road tolls are limited to particular metropolitan areas, therefore price differences for them in a study which examines costs Australia-wide would not be very useful.

Public transport fares – To measure public transport fares requires a standard item to be compared. Public transport within a location could potentially be compared between the larger centres, if a standard 'trip' could be established. However, the more relevant cost of public transport for remote areas (particularly for very small towns) is travel to other locations. In these cases, there is no way to measure the cost of a 'standard' trip.

Other fare and freight charges – This includes taxi fares, non-holiday airfares and removal charges. These items (particularly the first two) suffer from the same problem as public transport fares—that is, the difficulty of establishing a standard item to price. Initially, BITRE attempted to measure taxi fares using the flagfall and per-kilometre rate. However, as with the public transport fares the differences in use by location made it conceptually difficult to compare.

Housing

Although only used in a cursory fashion, the cost of living fieldwork included an assessment of house prices. It was necessary to make some alterations to the housing component of the HES list in order for housing expenditure to be applicable to the cost of living. It is not necessary to spell out the details of these adjustments here other than to note that they attempt to draw an accurate value from the list of rental, principal and interest payments and opportunity costs made explicitly or implicitly by households in relation to housing. Once this is done the cost of housing is a much more significant portion of the cost of living.

Prices with no spatial variation

Some items within the HES have no spatial variation—that is, their prices do not change with location. Therefore, within the BITRE basket, these were given the value of 1 in all locations, so that the price ratio for these items between any two given towns was 1:1.

These items were necessary inclusions, because if only items with differences in price were included, the differences in price overall between towns would be overstated. They comprised about 17 per cent of the BITRE basket. This approach of including 'flat' prices has also been done in other studies (Halstead 1989).

The main categories with no spatial component were interest on loans, postal charges, telephone charges, prescription medicine, motor vehicle purchases, driving lessons, gambling, some recreation items such as day trips and pay TV charges, fees, fines and cash gifts.

While motor vehicles could be priced in different locations, new motor vehicles tended to have standard prices (before dealer negotiation). Additionally, the expense of a new vehicle means that consumers are willing to travel further to buy it, since the cost of travel is a tiny fraction of the price, and the purchase infrequent.

Constructing the indices

After the data was assembled and cleaned of obvious errors, indices were constructed for stores and for towns.

Store indices

Each price was converted to an index on the basis of its relative size compared to the capital city average baseline. The base (100) is the unweighted average of the cheapest price observation in each capital city for each item. Indices for each price in each store were calculated based on the degree of variation from this reference point. The index value for each of the subgroups was then calculated as a simple average of all the items belonging to that sub-group. Subgroups were then combined by weighting them on the basis of their relative contribution to the BITRE list (effectively HES). Indices for groceries or other groups were constructed by combining the appropriate sub-groups.

Town-based indices

The construction of these indices raised some awkward conceptual issues. Within a town there were typically a number of recorded prices for the same item. The difficult issue is how these should best be combined. Two options were considered—using the lowest price observation, or averaging all of the observations.

Averaging the observations was initially considered conceptually appealing, but its application raised some obvious practical difficulties. The most difficult to resolve is how the competing prices should be combined – for example, common sense suggests that a price collected at a large supermarket servicing thousands of customers should be given more weight than a price for the same item at a small corner store in the same town. Unfortunately there was no apparent basis for weighting these different prices in the absence of accurate sales data. It soon became clear therefore that there was no satisfactory way of resolving this problem; especially in larger towns where time constraints on collectors meant that prices in some stores were not collected at all.

A relatively simple alternative is to simply use the lowest price recorded in town for any particular item. This is simple to calculate, and can be used with some confidence, since it represents a real offer price for an item in that town. There are two obvious drawbacks: the lowest price may be in a store that has been missed where a complete Census was not possible; and secondly, it assumes that there are no transaction costs.

In practice, the 'missed price' issue is not as large a problem as might be imagined, particularly when dealing with groceries. Preliminary analysis confirmed that the two chains (Woolworths and Coles) tended to be larger and significantly cheaper than independent grocery stores in the majority of towns. They also invariably had similar prices across the full range of goods. Therefore it is reasonable to assume that if one of these stores were included in the sample, the sample would contain the cheapest price in town or at least a price very close to it. The sample in each town was structured to ensure that if either Coles or Woolworths were present in a town, then at least one of them would be included in the sample. Here it is worth noting that the 'lowest price' option is less likely to provide sampling variation than an averaging method: consider the average of a Woolworths and an independent compared to a Woolworths and a Coles, in cases where all three stores are available but only two were sampled.

The 'lowest price' strategy ignores the transaction costs that would be involved in visiting all stores to get the prices nominated for the town. This is likely to mean that the real cost to a consumer in a town with more than one store will be slightly higher than the index might indicate compared to a town where there is a single store. It is not thought that this difference is likely to be significant.

Variable definitions

The analysis is based on a cross-sectional dataset with the data points set at June 2006. The analysis is a snapshot of the distribution of grocery price indices at one point in time.

The dependent variable for the model is the grocery index. The number of observations used is 129. Two of the 131 locations (Coonana and King Island) were not used in the regression due to an inability to access distance data for these towns.

Independent variables are selected on the basis of broad relevance to economic theory, best fit (highest R-squared), significance of contribution, robustness of the resulting model and absence of mathematical problems. The most significant (driving) variables found are: population, distance to the nearest Woolworths or Coles store, whether there is one or more stores in town and the presence or absence of a community store in the locality.

Dependent drivers

Population

Population is based on the year 2006. Most regions populations are identified using the Australian Bureau of Statistics (ABS) Urban Centres and Localities (UCL). A number of regions are available from the State Suburb Code (SSC) from the Quickstats 2006 Census. Other regions with alternate population estimates are:

- Caloundra – Local Government Area
- Yunderup – UCL North and South
- Croydon – Statistical Local Area (SLA).

Distance to the nearest major chain store in kilometres

The greater the distance from larger markets the higher the cost to customers to access those markets. For localities with Woolworth or Coles stores present this variable equals zero. Distance has been derived from BITRE analysis of Geoscience Australian Road Map based on kilometres to the centre of the town.

Local competition

A dummy variable was formulated and used in the model in order to test for the impact of another store in the local market on the level of grocery prices. If there is another grocery store in a locality the local competition dummy variable equalled 'zero', otherwise the dummy variable equalled 'one'. This variable represented the impact of local competition on the grocery price level.

Community store

Places visited during the collection of data include seven small and remote discrete Indigenous communities with operating grocery retailers. The measured grocery index in those localities was noticeably higher than in larger and less remote localities, which usually also offer greater diversity of supply.

A variable is included in the model for these localities, with a value of 'one' for localities with community store operating and 'zero' otherwise.

Scope of the grocery index

The grocery index was constructed by limiting the BITRE basket to only those items predominantly found in grocery stores. This includes all food (except for the takeaway/ restaurant food), tobacco, and a range of other non-food groceries, including cleaning products, over-the-counter medicines (such as paracetamol), personal care items and so on. Excluded from the grocery list were items which can often be found in a grocery store but were not 'typical' groceries in the sense that they are often bought in other locations. These items are small consumer goods such as stationery, toys, socks and garden products. These were still priced in grocery stores where they were available, but they were not considered to form part of the typical grocery trolley, and hence were left out of the grocery index.

Alcohol was priced in grocery stores where it was available. This was also excluded from the grocery index as not all states allow it to be sold in supermarkets.