



Government of **Western Australia**  
Department of **Health**

# Food Access and Cost Survey 2013 Report



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The 2013 Food Access and Cost Survey was funded by the Department of Health, Western Australia (DHWA) and conducted as part of the Environmental Health Directorate Food Unit's Food Monitoring Program.

## Acknowledgements

The project was undertaken as a partnership project between the Public Health and Clinical Services Division (Chronic Disease Prevention and Environmental Health Directorates) and the Food Law, Policy and Communication to Improve Public Health Research into Practice Project at Curtin University. The project team included outsourced officers from the Australian Bureau of Statistics.

This report was prepared by Christina Pollard, Victoria Savage, Tim Landrigan, Amelia Hanbury, and Deborah Kerr. Thanks to Shannon Carter of the Epidemiology Branch for mapping supermarket locations.

Special thanks are extended to the surveyors (particularly Local Government Environmental Health Officers and public health nutritionists) and retailers who participated in this research. Thanks to colleagues who assisted with editing.

## Suggested citation

Pollard, CM, Savage, V., Landrigan, T., Hanbury, A, and Kerr, D. (2015). Food Access and Cost Survey, Department of Health, Perth, Western Australia.

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## Abbreviations

ABS	Australian Bureau of Statistics
ASGC	Australian Standard Geographical Classification
CPI	Consumer Price Index
DHWA	Department of Health, Western Australia
FACS	Food Access and Cost Survey
FaHCSIA	Former Department of Families, Housing, Community Services & Indigenous Affairs
FSANZ	Food Standards Australia New Zealand
IGA	Independent Grocers Alliance
IHFB	Illawarra Healthy Food Basket
LGA	Local Government Area
MBS	Market Basket Survey
NTMB	Northern Territory Market Basket
RA	Remoteness area
SA2	Statistical Area Level 2
SAS	Statistical Analysis System®
SEIFA	Socio-Economic Index for Areas
SLA	Statistical Local Area

## Food Access and Cost Survey Project Team

The 2013 Food Access and Cost Survey Project Team conceived, managed the survey implementation and analysis and prepared the report, see members below:

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## Executive summary

Food has a direct influence on health and the prevention of non-communicable disease. Improving nutrition is a public health priority. Consumption of nutritious, safe and appropriate foods leads to a well-nourished and healthy society. Food security, the ability of individuals, households and communities to acquire appropriate and nutritious food on a regular and reliable basis using socially acceptable means, is determined by people's local 'food supply' and their capacity and resources to 'access and use that food'<sup>1</sup>. The availability and affordability of food is therefore a determinant of food choice.

The Food Access and Cost Survey (FACS) monitors the cost, variety, quality and availability of foods in grocery stores (including remote Aboriginal community stores) in Western Australia (WA). The FACS explores cost as a determinant of food choice and monitors changes in stores and locations.

The 2010 FACS found that access to fresh, good quality, affordable food in WA depended on where people lived. Grocery store location was associated with population density; energy-dense foods were cheaper than less energy-dense foods; food cost substantially more in remote areas; and welfare recipients needed to spend a substantially greater proportion of their income on food than those on an average income. Since 2010, the supermarket retail environment has changed, including: extended trading hours; an increase in reduced price supermarket 'own brand' foods; supermarket price wars; numerous supermarket acquisitions; and community store closings.

The 2013 survey replicated the sampling and methodology of the 2010 survey and was conducted during August and September. One hundred and two trained surveyors, mainly Environmental Health Officers from local government, conducted the survey in 156 stores across the state. The response rate was 99%.

This report presents the cost of a fortnightly **WA FACS Healthy Food Access Basket**<sup>2</sup> and assesses changes in food access, cost, quality and affordability in WA between 2010 and 2013. The cost of this basket provides an indication of cost of adhering to Australian Dietary Guidelines by geographic location.

A second weekly **WA FACS Affordable Healthy Meal Plan**<sup>3</sup> analyses the affordability of food for families on differing incomes.

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<sup>1</sup> Rychetnik et al (2003) Food Security Options Paper. NSW Health.

<sup>2</sup> Based on Harrison et al. MJA 2007; 186: 9–14. See section 6.2.7 for further information.

<sup>3</sup> Based on Keeting et al. ANZJPH 2009; 33(6): 566-72. See section 6.2.8 for further information.

## Key findings

**The average cost of a WA FACS Healthy Food Access Basket increased 2.9% between 2010 and 2013, from \$564.99 in 2010<sup>4</sup> to \$581.27 in 2013.**

### **Food costs substantially more in very remote areas and the gap is increasing.**

Based on the WA FACS 2013 Healthy Food Access Basket:

- Food costs significantly increased with distance from Perth<sup>5</sup>, the major capital city.
- The food price differential between Perth and very remote areas increased 5.3%, with food costing 20.8% more in 2010 to 26.1% more in 2013.
- In 2013, the largest differences in food cost between Perth and remote areas were for fruit (37.9% more), non-core foods (31.0% more) and dairy (30.6% more)<sup>6</sup>.

### **Food stress for welfare recipient and low income earning families.**

Based on the WA FACS 2013 Affordable Healthy Meal Plan:

- Welfare recipients' families and those on a low income need to spend a greater proportion of their disposable income to buy healthy food than families earning an average income.
- Food stress is likely to occur when 25% or more of disposable income is needed to be spent on food.
- In 2013 a couple family on welfare would need to spend 44% of their disposable income to buy the all the foods for a weekly meal plan, a low income family would need to spend 23% and families earning an average income needed to spend only 14%.
- All single parent families were at risk of food stress. Single parents on welfare needed to spend 36% of their disposable income to purchase the weekly meal plan, minimum wage earners needed 25% and those earning an average income needed 24%.

### **The quality of fresh fruit and vegetables was generally good.**

- Most of the 13 varieties of fresh fruit and vegetables assessed against industry quality standard descriptors at point of sale were of good quality.
- Quality of fresh produce was not related to price, particularly in remote areas where the higher prices did not reflect a higher quality.

### **WA grocery stores, particularly independently owned increased.**

- The number of grocery stores identified in WA had increased over the three years, 489 total stores in 2013 compared with 447 in 2010. There were 84 Coles Limited (85 in 2010), 86 Woolworths (84 in 2010) and 280 independent (226 in 2010), (including IGA, Supa-IGA, IGA X-Press, Farmer Jack, Foodworks) and 39 community stores in 2013 compared with 52 identified in 2010.
- The two major supermarket chains, Coles and Woolworths, were predominantly located in population-dense areas and capital cities, while independent grocery stores provided food in more regional and remote areas in WA. However, in very remote areas one main grocery store, usually an Aboriginal community store, was still the main provider.
- More supermarkets' 'own brands' were available in all major grocery chains and were priced consistently lower than company brands.

<sup>4</sup> This is higher than the \$542.19 reported in the 2010 FACS Report; for comparison with the current survey, supermarket 'own brands' were removed - see section 6.2.6 for further information.

<sup>5</sup> Perth is the major city in Western Australia according to SEIFA categorisation - see Figure 5.

<sup>6</sup> The lower price differential of dairy in 2013 compared to 2010 is likely due to the availability and reduced price of supermarket 'own brand' dairy products.

## Conclusion

***“Access to fresh, good quality, nutritious and affordable food in Western Australia is limited by where people live and their income.”***

This is because:

- Food costs substantially more in very remote areas compared with the Perth area, the cost of the WA FACS 2013 Healthy Food Access Basket is 26.1% more.
- The increase in cost between 2010 and 2013 was highest for fresh fruit and vegetables, the foods we are recommended to eat more of to improve health and protect against disease.
- Welfare recipients need to spend a greater proportion of their disposable income on food than those on an average income.
- Grocery store location is associated with population density in WA.
- The quality of selected fresh fruit and vegetables appears to meet industry expectations in most areas in WA. However, fruit and vegetable quality is generally lower in remote communities.
- The price of the WA FACS 2013 Healthy Food Access Basket was more expensive when ‘own brands’ were excluded. As grocery stores with ‘own brands’ are mostly situated in urban and rural areas, this further increases food cost in remote communities.

This report highlights the disparity in food access and affordability based on geographic location, welfare dependency, and minimum income.

- Food cost, quality and availability influence the accessibility and affordability of a nutritious diet in WA.
- The cost of the WA FACS Healthy Food Access Basket increased between 2010 and 2013.
- There is evidence of food stress for welfare recipients and minimum wage earners who would need to pay a greater proportion of their weekly disposable income than those on an average income to eat a nutritious diet.
- Food cost, quality and availability vary by geographical location. People residing in remote areas pay more for food than those living in the Perth.

## Recommendations

The survey findings provide evidence of issues relating to access to healthy food in WA. Listed are possible actions to address this and better understand and monitor the issue.

1. Continue to explore appropriate policy and practice responses to improve food access through partnerships with government agencies, food industry and academia.
2. Collaborate with other jurisdictions to advocate for a nationally consistent approach to monitoring food access and pricing.
3. Potential areas for future research are to:
  - assess the impact of food access and affordability on the health of welfare dependent families, including and assessment of food stress;
  - identify the reasons for high food costs in remote communities and to explore potential solutions; and
  - explore the influences of food pricing on optimal and current food consumption.
4. Future food costing and access surveys should consider the cost of fast or take-away foods compared to grocery food products and strategies to reduce the data collection burden for surveyors.

## 1.0 Introduction

Consumption of nutritious, safe and appropriate foods leads to a well-nourished and healthy society. Poor diet, overweight and obesity are key modifiable risk factors common to most preventable chronic diseases. A healthy food environment is essential to protect individuals and communities from diseases and other public health risks.

The affordability and quality of food have the potential to influence consumers' food choices, their eating behaviour and consequently, their health. 'Food security', the ability of individuals, households and communities to acquire appropriate and nutritious food on a regular and reliable basis using socially acceptable means, is determined by people's local 'food supply' and their capacity and resources to 'access and use that food' (1). Ensuring that a safe, nutritious, affordable food supply is available to all is a challenge, particularly in the geographically remote areas of Western Australia.

Monitoring the environmental determinants of food consumption such as supply, cost, affordability and quality of food can assist in developing evidence informed policies to improve public health.

The Department of Health, Western Australia (DHWA) conducted the 2010 Western Australian Food Access and Cost Survey (WA FACS), specifically focusing on the pricing and quality of foods available from the main food grocery stores throughout the state, including remote Aboriginal community stores. The methodology ensured that the results were representative of food costs throughout the state.

The survey was repeated in 2013. This report outlines the development, implementation and key findings of the 2013 FACS, and compares them to the 2010 findings. The findings provide evidence that can guide policy and practice to support healthy food choices and promote public health.

## 2.0 Background

There is a general belief that Australians are food secure as we have access to a safe, reliable, nutritious and regular food supply (2). There is some acknowledgement that vulnerable population groups are at risk of food insecurity due to socioeconomic circumstance or disability (3, 4). The cost, availability and quality of food significantly influence the nutritional status of individuals (5, 6). Health authorities are concerned about domestic food security and are keen to explore the potential influences of food access, costs and quality on food choice. The external factors (pricing, availability and affordability) influencing food consumption in Australia are relatively undescribed.

### 2.1 Food costing surveys in Australia

Monitoring food prices and affordability of 'healthy' and 'less healthy foods' is needed to inform economic and fiscal policy responses by governments to the increasing burden of non-communicable disease (6). Research highlights the importance of robust food pricing data and encourages a consistent approach to monitoring. A review of current food pricing baskets and the peer reviewed literature was undertaken to inform the 2013 FACS.

Australian market basket surveys have been relatively ad hoc and vary in the range of foods included and the method of analysis.

#### 2.1.1 Australian pricing surveys

The ABS conducts a number of surveys that have some aspect of food pricing. *The Consumer Price Index (CPI)* measures changes in prices in capital cities for selected food items categories, but is not designed for health purposes and the geographical coverage is limited to capital cities (7). Addressing some of the coverage issues of the CPI, A *Regional Price Index (RPI)* was developed by the Department of Regional Development to identify differences in a common basket of goods and services between regional locations in WA and Perth (using CPI commodity groups) (8). The RPI provides insight into the differences in regional consumer costs and provides estimates for the total food commodity group component, but does not publish estimates for individual food categories. The RPI is not designed for health purposes, for example, is not able to answer policy relevant questions such what are the pricing implications for a diet consistent with the National Health and Medical Research Council's (NHMRC) dietary guidelines (3).

The ABS' Household Expenditure Survey (HES) provides summary information on expenditure, income and other characteristics of Australian households (9). The survey measures weekly expenditure patterns of households with various characteristics and offers summative information about the proportion of income spent of food but does not cost individual or specific foods.

#### 2.1.2 State and Territory Government pricing surveys

The Northern Territory and Queensland Governments have conducted a series of regular market basket surveys to monitor food prices and quality. These standard market baskets of healthy food items have been used to assess food costs in remote community stores and how they compare with metropolitan areas. The Northern Territory Market Basket (10-15) and the Queensland Healthy Food Access Basket (16-21) are based on similar food baskets with slight differences to account for the local food supply.

The Victorian Healthy Food Basket (22) was developed by researchers at Monash University in 2007 to monitor and measure the cost of a healthy food basket (22). Further implementation of the Victorian Healthy Food Basket was funded by the Victorian Government and incorporated into the Department of Health Victorian Healthy Eating Enterprise Initiative (23).

Further information on the other state and territory food pricing surveys is detailed in the 2010 FACS Report, which can be accessed by visiting the DHWA website.

### 2.1.3 Other Australian food costing research

There are a number of one-off surveys that build on these Government surveys (22, 24-29). The Illawarra Healthy Food Basket (30-35) measured the cost of 57 foods in five suburbs in the Illawarra region in NSW. A similar survey was undertaken in Adelaide, South Australia to assess food costs, availability and affordability in five local government areas (25). The basket was designed to meet the weekly nutritional requirements of a family of five.

### 2.1.4 What else is needed?

There is no national or standard system that regularly monitors food cost, availability and quality. This type of research would assist to inform policy and practice that impacts health and to answer difficult questions, such as those related to the affordability of nutritious food for welfare dependant families versus those families on an average income (6). Further research is needed to identify the extent of food insecurity in Australia and to explore policy options to address this important problem. This current research, conducted at a state level on a population representative sample of grocery stores, provides answers to some of these questions for WA and suggests an appropriate methodology.

## 2.2 The Western Australian Food Access & Cost Survey 2010

The Western Australian Food Access and Cost Survey 2010 (WA FACS 2010) focused on the food supply aspect of food security, particularly cost, variety, quality and availability. The WA FACS 2010 was conducted in August and September 2010 and a full report can be downloaded from the DHWA website. The key findings from the 2010 FACS are summarised in Table 1.

Table 1. **Key findings from the WA FACS 2010**

1.	Grocery stores location is associated with population density in Western Australia
2.	Energy dense foods are cheaper than less energy dense foods
3.	Food costs substantially more in remote areas
4.	Food stress for welfare recipients as these families needed to spend a greater proportion of their income on food than those on an average income
5.	Access to fresh, good quality, nutritious and affordable food in is limited by where people live

The recommendations from the 2010 FACS are summarised in Table 2 below.

Table 2. **Summary of key recommendations of the WA FACS 2010**

1.	Annual monitoring food access and pricing in Western Australia
2.	A national routine food access and pricing monitoring system to support policy initiatives to promote food security
3.	Formalised partnerships between government agencies, food industry, and appropriate academic institutions to explore food access and pricing influences on health and policy response
4.	Develop a refined objective assessment of quality and availability of fresh food at point of sale
5.	Investigate the feasibility of an electronic food access and pricing monitoring system
6.	Analyse a series of food baskets to represent optimal and current consumption



## 2.3 Response to the WA FACS 2010

Identifying possible contributors to food insecurity in WA is an important first step in taking action to address it. Finding solutions to the problems will cross various sectors as well as health. Since the WA FACS 2010, the DHWA has worked with key stakeholders to respond to its recommendations. Below is a list of some of the outcomes of this work:

- The findings of the WA FACS 2010 were widely disseminated and used to inform and support policy discussions regard food pricing and affordability.
- Publication in peer-reviewed journal – Pollard, CM, Landrigan, T, Ellies, P, Kerr, DA, Lester, M and Goodchild, S. (2014). Geographic factors as determinants of food security: a Western Australian food pricing and quality study. *Asia Pacific Journal of Clinical Nutrition*. 23 (4).
- In response to the WA FACS 2010 findings, a Food Security and Healthy Food in WA workshop was held at Curtin University on 9 February 2012. The workshop report can be accessed on the Food Policy website ([www.foodpolicy.org.au](http://www.foodpolicy.org.au)).
- Advocates for low income families used the results of the WA FACS 2010 to highlight possible assistance for families to achieve a nutritious diet. The West Australian Council of Social Service (WACOSS) released a Cost of Living Report in 2013 (36), which can be accessed through their website ([www.wacoss.org.au](http://www.wacoss.org.au)).
- The DHWA funded the WA FACS 2013 to monitor food access and pricing
- The food quality assessment tool was revised as part of the 2013 survey development.
- Electronic food pricing was explored but was not feasible particularly for quality assessment in 2013.

## 2.4 Aim of the WA FACS 2013

The overall aim of the FACS is to explore cost as a determinant of food choice in WA as part of a monitoring framework for food, nutrition and health. The aim of the grant from the DHWA to fund the WA FACS 2013 was to build on the previous survey to:

- Identify and monitor trends of food security indicators through retail grocery outlets.
- Identify the cost and availability of foods consistent with dietary recommendations.

The specific objectives of the 2013 FACS are to:

- Calculate the cost of a household healthy food access basket consistent with Australian Dietary Guidelines and to compare the affordability by geographic location and socio-economic status.
- Monitor changes in healthy food access basket cost between 2010 and 2013.
- Compare the quality and availability of fresh foods (i.e. fresh fruit and vegetables) by geographic location and socio-economic status.
- Compare the affordability of a healthy food basket (using a weekly meal plan) for families on differing incomes.
- Map the main grocery stores servicing the Western Australian community.
- Explore the influence of supermarket 'own brands' on food pricing.

## 3.0 Methods

### 3.1 Timing of survey:

**Stage 1:** Reviewing, piloting, revision, and production of the 2013 FACS instrument and online training material; identifying and contacting stores to determine the sampling framework; recruitment of stores and surveyors; developing an access database for data entry and analysis (June 2013 – July 2013).

**Stage 2:** Conducting the survey, including tracking surveyors with regular contact and feedback between surveyors, stores and the research team (July 2013 - September 2013).

**Stage 3:** Data entry, checking and analysis, and report writing (October 2013 - April 2013).

Detail on the methodology follows.

### 3.2 Advisory group and mechanisms for collaboration

An Advisory Group was formed in 2010 consisting of experts working in the area of food costing in Australia, public health nutrition policy makers and practitioners. The group was reconvened for the 2013 survey and reviewed the survey instrument and made recommendations for research questions for analysis, dissemination of results and potential for use in policy and practice. Appendix 1 contains a list of the Advisory Group members in 2013. To facilitate the survey revision and implementation of the 2013 survey, the FACS project team met with representatives from all three institutions (Curtin University, DHWA and the ABS).

### 3.3 The Food Access and Costs Survey brand

The FACS brand and logo were commissioned to assist with survey identification, communication and for implementation purposes. The image depicts a food shopping basket with the name of the survey. The logo, shown in Figure 1, was used to brand all merchandise, communications and survey instruments. This was particularly useful for identification of surveyors in store and to communicate findings.

Figure 1. **The Food Access and Cost Survey logo**



### 3.4 The survey instrument

The FACS instrument collects information on: food prices (usual and sale price); food quality (fruit, vegetable and meat); and food availability (usually available but out of stock or not usually available). Allowances were made for alternative package sizes to be recorded if the one requested was not available. For all stores: the store name, date of survey, length of time taken to complete the survey, and surveyor contacts were collected. For remote community stores, the timing and frequency of food delivery and the number of cash registers (an indication of store size) were included.

The 2013 review of the WA FACS 2010 instrument found changes in food product and brand availability as well as changes in the WA retail environment. Based on learnings from the 2010 survey, the layout and design of the instrument was modified to reduce surveyor burden and maintain the quality of the data collection, whilst keeping the surveys comparable.

### 3.5 Foods in the full survey basket

The 2013 full survey basket included foods in the 2010 survey. This section briefly describes the selection of foods included. The WA FACS 2013 full basket foods were selected to:

1. Include foods in existing market baskets to enable comparison across jurisdictions.
2. Capture the main drivers of food choice at point-of-sale:
  - a. Consumer drivers – convenience, quality, health, proportion of income
  - b. Food marketing and promotional strategies – in-store and on packaging
  - c. Food industry drivers – health, environment, sustainability, generic or ‘own’ branding
  - d. Market share – top selling brands and products (from Nielson Convenience Report 2008 and the top selling breakfast cereals and children’s lunch box surveys in 2009 (37–39)
  - e. Reflect public health policy drivers – consistency with NHMRC Australian dietary guideline recommendations (40). Both the foods that are encouraged and those where the recommendation is to limit consumption (energy dense – nutrient poor foods that significantly contributed fat, sugar or salt to the Australian diet)
  - f. Capture difference due to geographic location – including remoteness and local food supply.
3. Enable future analysis to inform policy relevant research questions.

#### 3.5.1 Top market share brands and foods

The foods and brands with high market share in Australia were identified from all 14 categories of the Retail World’s Australasian Grocery Guide 2009 on market share and sales; the Nielson Grocery Report 2008; Convenience Report 2008; and the Nielsen Top Brands Report 2009. To measure the cost of convenience for consumers top market share pre-prepared meals were included. Products from leading food companies were chosen, for example, Continental®, Uncle Toby’s®, Arnott’s®, and McCain’s®. The full basket was piloted in all four grocery store types to check in-store availability. Locally produced foods and brands produced in WA, for example, milk and bread, were also included.

#### 3.5.2 Supermarket ‘own brands’

Supermarket generic or ‘own brands’ were included as potential lower-priced options in the 2010 survey. Piloting in 2013 revealed increased availability and number of ‘own brand’ products in Western Australia: Coles® Supermarkets Australia (Coles), Woolworths® Limited (Woolworths) and Independent Grocers Association® (IGA). The cheapest were the supermarket ‘own brand’ labels, for example, ‘basic’ or ‘smart buy’, followed by the more expensive ‘superior’, which appeared to be slightly cheaper than company owned brands.

### 3.5.3 Convenience foods

Ingredients that would allow for comparison with take-away or quick service restaurant meals were included in the food products: frozen pizza, frozen hamburger, frozen chips, frozen chicken and soft drink. Hot cooked chicken was added in 2013 in an attempt to collect information on ready-to-eat convenience food.

### 3.5.4 The WA FACS 2013 full basket

The 2013 full basket was the same as the 2010 basket with the addition of a wider range of 'own brand' foods in Coles, Woolworths and IGA, but identical in Aboriginal community stores where the increase in 'own brand' availability had not occurred. The final full basket in 2013 contained 430 products covering 205 different foods in all food categories, for example, cereals, dairy, fruit, vegetables, meat and meat alternatives, plus discretionary foods such as biscuits, confectionary, fruit juice, soft drink, oil, butter, sauces and spreads. Appendices 2, 3 and 4 show the types foods included in 2013 survey.

Pricing of multiple brands including supermarket 'own brands' enabled the derivation of a common price for each food. The inclusion of at least three brands is the usual methodology in ABS pricing surveys as it increases the likelihood of at least one price being collected for that type of food in each store. This method also measures availability and variety.

The final instrument was compiled using Microsoft Excel® with complete descriptions of each food, including brand and registered product name, variety and size of the package to price. To further describe each food accurately and to simplify price collection in the field, food product descriptions were obtained through supermarket and individual food company websites and checked during in-store piloting of the instrument at the three main grocery store categories.

## 3.6 Fresh produce quality assessment

The main areas of food safety concern are the storage and handling of fresh fruit and vegetables at point of sale. Specifically that the produce is at an appropriate temperature in display facilities; there is no presence or proximity to ethylene producing produce; and there is protection from light to reduce spoilage for some vegetables (41). Most industry quality assessment of fresh produce at point of display measures: signs of ageing (softness, discolouration, wilting, limpness, skin wrinkling); bruising (bruising, breakage of skin, only portions of fruit edible); and mould (mould present, rotting, fruit inedible). The quality of fruit and vegetables may be described using three main attributes:

1. **Intact:** free of major injury and spoilage
2. **Sound:** not overripe, soft, wilted, free of foreign odours and foreign tastes, free of injury or blemish which is likely to affect keeping quality
3. **Clean:** free of dirt, dust, unacceptable chemical residues and other foreign matter.

Visual assessment at point-of-supply was necessary to measure the quality of fresh fruit and vegetables.

Due to time constraints in store, 13 of the most commonly purchased fruit and vegetables known to exhibit variations in quality were chosen. Written descriptions, specific to each type of produce, of acceptable quality were provided and surveyors indicated whether or not that aspect was present or visible in 75% or more of the produce on display. To reduce observer subjectivity a relatively quick to administer quality assessment tool was developed against minimum industry quality standards, shown in Figure 2.

Figure 2. Sample quality assessment, WA FACS 2013

Apples, red		Yes	No	<b>Variety:</b> <b>Price:</b> <b>Comments:</b>
	Smooth Skin			
	Bruising/doscolouration			
	Skin broken			
	Mould			
	Firm			
	Skin Blemished			
	Clean/dirt free			
	Stored in fridge			

### 3.7 Modifications to reduce surveyor burden

A customised survey collection instrument was prepared for each grocery store chain and community stores to improve recording, data entry in-store and reduce respondent burden. The instruments were piloted in three metropolitan supermarkets; IGA, Woolworths and Coles. Changes in brand availability, product name and packaging sizes and the increased number of supermarket 'own brands' resulted in some final changes to the survey instrument. Fresh produce that was not available in 90% of the stores in the WA FACS 2010 was removed.

Merchandise was produced to facilitate high quality and consistent data entry including: a FACS ball point pen, and lanyard with a surveyor business card for in-store identification. The survey instrument, training materials and all communications included the branding to increase awareness, aid implementation and assist with survey communications.

### 3.8 Approach to supermarkets

An initial approach letter from the DHWA was sent to all grocery chains and stores that were to be included in the survey. The two major grocery chains, Coles and Woolworths, chose to directly inform the stores that were selected in the sample through their Head Office. The IGA included in the sample were individually notified by Metcash, the management company. Store managers of the FoodWorks Supermarket Group Ltd® (Foodworks) and Farmer Jack stores included in the sample were contacted and informed of the survey. Each store manager was provided with details on the FACS survey, dates when the survey was planned and the estimated length of time to complete the survey.

## 4.0 Sampling

As the survey investigated cost as a food choice determinant in Western Australia, the sample of stores selected needed to be representative of WA food grocery stores. Every WA Aboriginal community store was included in the sample as food security is an identified issue for people residing in these areas. The 2013 methodology was consistent with the 2010 survey to enable comparison.

### 4.1 Sampling

Sample selection was undertaken using a similar approach to that in 2010. The 2010 sampling frame was updated using the most recent electronic White Pages<sup>®</sup> and supermarket websites for changes in stores or locations and included Foodworks and Farmer Jack stores. Following this, the 2013 sample of WA food grocery stores was created, the locations identified and geo-coded. This information was mapped by the Epidemiology Branch at the DHWA (See Figure 4 and Figure 5).

Then the socio-economic status using ABS's Socio-Economic Index for Areas (SEIFA) (42) and the remoteness area (RA) of the statistical local area (SLA) in which the supermarket was located were applied and used to stratify the stores, with the exception of very remote areas where all stores were surveyed.

Figure 4 shows that Western Australia is geographically unique in only having one area of the RA category 'major cities of Australia', which includes Perth and extends to Rockingham and Mandurah. For the purpose of this report, all tables will use the standard reporting terminology 'major cities'. However, for ease of interpretation, some figures and text, when comparing geographic locations, will use the term 'Perth' for the 'major cities of Australia' category.

### 4.2 Stratification

SLA was chosen as the geographic selection unit. The suburb in which each supermarket is located was matched to the relevant SLA. Using SLA meant other statistical measures which are available by SLA, such as SEIFA, RA and population figures, could be matched for analysis. For example, the population of the SLA in which each supermarket is located gives an indication of the number of people who potentially shop at that store.

During the 2013 survey it was decided to convert to the new ABS geography standard (ASGS) and use Statistical Area Level 2 (SA2) as the selection geography. This meant more recent ABS data, which is based on ASGS could be used during analysis. At this stage, the sample had already been selected and stores surveyed so there was no re-sampling. A concordance between the old and new geographies was run to align with the new geography. This had no impact on the results.

Data cubes of all WA SLAs, their SEIFA quintile, remoteness area and estimated resident population from the 2011 Census were obtained from the ABS website then combined with the list of all supermarkets. They were then allocated scores for SEIFA and remoteness and this was used to stratify the supermarkets and SLA as in Table 3.



Table 3. WA SLAs and supermarkets by Remoteness Area and SEIFA, WA FACS 2013

SEIFA quintile	Major cities		Inner regional		Outer regional		Remote		Very remote		Total	
	SLAs	Stores	SLAs	Stores	SLAs	Stores	SLAs	Stores	SLAs	Stores	SLAs	Stores
1	0	0	2	3	11	20	2	3	15	7	30	33
2	1	4	4	13	12	16	11	10	3	2	28	45
3	5	48	7	16	11	9	8	11	0	0	31	84
4	8	86	4	5	9	15	7	7	4	5	32	118
5	24	164	3	4	1	0	3	6	0	0	31	174
<b>WA</b>	<b>38</b>	<b>302</b>	<b>20</b>	<b>41</b>	<b>44</b>	<b>60</b>	<b>31</b>	<b>37</b>	<b>22</b>	<b>14</b>	<b>152</b>	<b>454</b>

### 4.3 Sample methodology

At the time of survey, 454 grocery stores and 39 community stores were identified across 152 SLAs in WA. Four stores had ceased operating prior to sampling. Due to time and budget constraints, a representative sample of stores was chosen.

#### 4.3.1 Selection unit

Since the FACS prices were people shop rather than the stores themselves, SLA was used as the selection unit. The sampling aimed to select one store from each chain to be surveyed within each SLA. The cost of each food item in the WA FACS full survey basket was averaged across all supermarkets surveyed in each SLA.

Using SLA as the selection unit, and then selecting one store from each chain in that SLA, enables comparison of the average prices of food by geographic location. If the supermarket was used as the selection unit, then comparisons could only be made of the prices by each supermarket and no reasonable comparisons could be made by geographic location. For example, random selection may have chosen a more expensive store in one suburb and a less expensive store in another suburb, which would result in an unequal comparison. Surveying one store from each chain in the selected SLA, then averaging the prices across these three stores, reduces the likelihood of this occurring.

#### 4.3.2 Sample size and sample allocation

One of the objectives of the survey is to compare the cost and availability of the basket of foods in very remote areas. The 22 very remote SLAs were removed from the population and the remaining sample was allocated among the other 130 SLAs. All supermarkets in very remote SLAs were selected; that is, the very remote strata were fully enumerated.

Using the sample size calculator on the National Statistical Service website (43) a suitable sample size from a population of 130 (with a 10% confidence interval) is 56.

Proportional allocation was used to allocate the sample. The sample was allocated among the strata, in proportion to the stratum sizes, where the stratum size was the number of SLAs in the stratum. The allocation proportion of the total sample size for stratum  $h$  is:  $f_h^* = N_h / N$ .

Where  $N_h$  is the number of SLAs in stratum  $h$  and  $N$  is the total number of SLAs for all strata. Based on this proportion, the target sample size for stratum  $h$  is:  $n_h = f_h^* \times n$

Where  $n$  is the total sample size. So for the total sample of SLAs,  $n = 56$ , the sample size for stratum 5 is  $24/130 \cdot 56 = 10$ , as in Table 4. SAS Enterprise Guide (44) was used to allocate the sample and a dataset containing the sample allocation information was generated. SAS Software rounds target sample sizes to integers and has the restriction that all values of  $n_h$  must be at least 1. This is so at least one unit will be selected from each representative stratum. Since the SLAs in very remote areas were completely enumerated, they were not included in the sample allocation process. Table 4 shows the sample allocation summary for the WA FACS 2013 excluding very remote areas.

Table 4. **Sample allocation, excluding very remote areas, WA FACS 2013**

SEIFA quintile	Major cities	Inner regional	Outer regional	Remote	Total
1	0	1	5	1	7
2	1	2	5	4	12
3	2	3	4	3	12
4	3	2	4	3	12
5	10	1	1	1	13
<b>WA</b>	<b>16</b>	<b>9</b>	<b>19</b>	<b>12</b>	<b>56</b>

## 4.4 Sample selection

### 4.4.1 Selection of SLAs

Population was used as a proxy for the number of people who have access to each supermarket. Population figures from the 2011 Census were obtained from the ABS for each SLA and totalled for each stratum based on SEIFA and RA.

Selection of SLAs was made by systematic random sampling with probability proportional to size. The selection probability for unit  $i$  in stratum  $h$  equals  $n_h Z_{hi}$ , where  $n_h$  is the sample size for stratum  $h$ , and  $Z_{hi}$  is the relative size of unit  $i$  in stratum  $h$ . The relative size equals  $M_{hi}/M_h$ , which is the ratio of the size measure for unit  $i$  in stratum  $h$  ( $M_{hi}$ ) to the total of all size measures for stratum  $h$  ( $M_h$ ).

Systematic random sampling selects units at a fixed interval throughout the stratum after a random start. SAS uses a fractional interval to provide exactly the specified sample size. The interval equals  $M_h/n_h$  for stratified sampling.

Each SLA was ranked alphabetically in each stratum and the population of each SLA was used as the size variable. PROC SURVEYSELECT in SAS Software was used to generate the sample using the sample allocation dataset created in the earlier step described above and the dataset of SLAs.

### 4.4.2 Selection of grocery stores

All the supermarkets in each SLA were ranked alphabetically by store name, which is normally the suburb name. Then the first store for each supermarket chain, including independents was selected to be surveyed. In the event there were no stores from a particular chain in the SLA, then no stores from that chain were selected. Table 5 shows the final number of SLAs randomly selected and the number of stores selected to be surveyed within each SLA. On review of the number and types of supermarkets, the increasing prevalence of independent supermarket chain meant that Foodworks and Farmer Jack were included.

### 4.4.3 Remote Aboriginal community stores

A census survey of the price of foods in all remote community stores had never been collected in WA prior to the WA FACS 2010. One of the main objectives of the survey was to compare prices of food in remote Aboriginal communities with those in Perth. In order to achieve this objective, it was necessary to survey **all** remote Aboriginal community stores. In WA, these stores are all located in remote or very remote areas. Table 5 shows the final number of SLAs and stores selected in the 2013 FACS.

Table 5. Final number of SLAs and stores selected, WA FACS 2013

SEIFA quintile	Major cities		Inner regional		Outer regional		Remote		Very remote		Total	
	SLAs	Stores	SLAs	Stores	SLAs	Stores	SLAs	Stores (a)	SLAs	Stores (a)	SLAs	Stores (a)
1	0	0	1	2	2	5	1	5	5	35	9	47
2	1	2	2	5	4	17	2	9	2	7	11	40
3	2	7	3	6	4	4	2	3	0	0	11	20
4	3	11	2	3	3	7	3	4	3	5	14	30
5	9	30	1	2	0	0	1	3	0	0	11	35
<b>WA</b>	<b>15</b>	<b>50</b>	<b>9</b>	<b>18</b>	<b>13</b>	<b>33</b>	<b>9</b>	<b>24</b>	<b>10</b>	<b>47</b>	<b>56</b>	<b>172</b>

a) Includes remote Aboriginal community stores

When contacted there were 14 stores in the sample who were no longer trading, resulting in a final sample size of 158.

## 5.0 Data collection

### 5.1 Recruitment of surveyors

Environmental Health Officers (EHOs) in their food monitoring role undertook the survey in stores in their local government area. EHOs are familiar with the stores in their area and have a particular interest in food pricing and quality in their local areas. The Principal EHO in each SLA was approached to assist with the survey if the stores in their area were selected in the sample. Several metropolitan and remote LGAs were unable to conduct the survey due to limited availability of staff.

Public Health Units were then approached in regions where an EHO was not available. Public health nutritionists, dietitians and health promotion officers conducted the survey in these areas.

Surveyors undertook training and negotiated survey times directly with stores. Sufficient time was allowed for the survey instrument and materials to arrive by mail, for example, 7 days from Perth to Narrogin (185km) and 14 days to remote areas, such as Ngaanyatjaraku.

Travel time to some of the remote communities and store opening hours influenced data collection, with several stores open for only a few hours a day (and limited days per week). Access to the communities was not always straightforward, for example, a small airplane flight to a community had to arrive on a day when the store was open for a limited time.

### 5.2 Training

Frequently asked questions, based on the 2010 experience, were incorporated into training and the survey instrument. Online training was available to all surveyors to help reduce surveyor burden and increase the quality of data collection. Training was not compulsory as many EHOs were already familiar with in-store audits or had participated in the 2010 data collection. Surveyors were offered the training and emailed the web link upon request. The PowerPoint training took approximately 15 minutes to complete. Half (51 of 102) of the surveyors downloaded the training. It was common for one member of a LGA to download the training and share it with other surveyors in their team. See Figure 3 for sample of store training slides.

Figure 3. **Sample store training slides, WA FACS 2013**



## 6.0 Data analysis

Data analysis was conducted to enable comparison with the 2010 FACS.

### 6.1 Data entry and analysis

Food pricing and quality for each store were entered directly into a custom built Microsoft Access® database which was developed for the FACS. Product nutrition (kilojoules, fat, and sodium) and socio-economic information were linked to store locations post survey. Data were imported directly from the Access® database into Statistical Analysis Software Enterprise Guide (SAS EG) for analysis (44). Quality assurance checks were performed and some data cleaning was undertaken before the final datasets were created to ensure the data were in the correct format, for example, checking that prices, package sizes and weights were entered correctly and imputing prices for missing items. Results were analysed using SAS EG and Microsoft Excel.

### 6.2 Methodology for analysis

The majority of the 2013 analysis was completed using the same methodology as the 2010 report. Where results are not directly comparable to the 2010 survey results it has been stated in the report.

#### 6.2.1 Geographical location

The 2010 analysis used data on a SLA basis using the Australian Standard Geographical Classification (ASGC). However, since 2012, ABS data have not been available for SLA or SLA-based ASGC regions. As a result, the 2013 FACS uses the new ABS Australian Statistical Geography Standard (ASGS) of Statistical Area Level 2 (SA2). Unlike SLAs, SA2s do not necessarily align to Local Government Area boundaries, although the SA2s do closely reflect them. SA2s more closely align to the gazetted suburbs and localities than did SLAs. This does not impact on the ability to compare the 2013 estimates with the 2010 data.

#### 6.2.2 Statistical Areas Level 2 data

Information, in addition to the remoteness category and SEIFA score of each SA2, was obtained from the ABS. This includes estimated resident population (45), Aboriginal population (46) and estimates of personal income (47).

#### 6.2.3 Distance from Perth

Geographic Information System mapping of supermarket locations and Google Maps® was used to estimate the distance and time taken to travel from the Perth CBD, by road, to each store in the sample. Using these estimates, each store was assigned to a category based on how far it is from Perth, as shown in Table 6.

Table 6. **Distance category, WA FACS 2013**

Distance from Perth CBD (kms)	Number of stores	Distance from Perth CBD (hours)	Number of stores
Less than 100	51	Less than 1	47
100 to 999	51	1 to less than 12	54
1000 to 1999	24	12 to less than 24	20
2000 to 2999	32	24 to less than 36	24
3000 or more	-	36 or more	13
Total	158		158

#### 6.2.4 Average prices of foods

For each food item in the survey that had a price collected, the price per 100g or 100ml (referred to as the unit price) was calculated. For those foods where more than one price was collected, the average price and average unit price for that item were also calculated. For example, if prices have been obtained in Supermarket 'X' for four different brands of a 500g packet of spaghetti, then the average price for spaghetti in Supermarket 'X' will be calculated from those four prices. If only one price for a 500g packet of spaghetti has been collected in Supermarket 'Y', then that price will be used for spaghetti in Supermarket 'Y'. This was done for each store.

The average price for each food was then calculated for each SA2. The average unit prices were then used as the basic building block for all other analysis. This was the same method used for the WA FACS 2010 except SLA used in 2010 where SA2 was used in 2013.

#### 6.2.5 Missing prices

As with the 2010 survey, the distance category information (see 6.2.3), was used to impute missing prices for foods. When there was no price for a particular food available for a store, a price was imputed based on the average price from other stores in the same distance category as the store with the missing price.

#### 6.2.6 Influence of supermarket 'own brand' products

The availability of 'own brand' products in metropolitan areas was compared to remote and very remote areas. As outlined in section 3.4, the 2013 survey tool was designed so that the data are comparable to the 2010 dataset. Both surveys contain data on: food prices (usual and sale price); food availability; food quality (fruit, vegetable and meat); nutrition information (kilojoules, fat, sodium); and some socio-economic information linked to store locations.

The most significant difference between the two surveys is the increase in the number and range of products with own brands in the 2013 survey compared to 2010. In 2010 where 'own brand' products were available, only one 'own brand' was collected. Since then, some supermarkets carry two or more 'own brand' products and this trend was represented in the 2013 collection. All 'own brand' products were identified in piloting and specified in the survey instrument. This was done to capture the increasing accessibility of 'own brand' products now available in major supermarket chains.

Due to the potential influence of the increased number of 'own brand' products when comparing the 2013 estimates with those in 2010, the analysis of food costs described in section 7.3 was performed excluding 'own brand' products. The impact supermarket 'own brand' products have on food costs is described in section 7.3.3.



### 6.2.7 Food basket used for 'food costs' analysis (section 7.3)

As with the WA FACS 2010, a subset of foods was selected from the full basket to analyse the price of a healthy food access basket. The foods selected were chosen and calculated based on the foods in Queensland Health's Healthy Food Access Basket (HFAB) (18). Developed in 1998, the main objective of the HFAB was to monitor changes in the cost, availability and variety of food items in urban, rural and remote areas of Queensland. This basket represents the meals required to meet the nutritional needs of a reference family of six (one man and one woman over 19 years old, one woman aged over 61 years, a teenage boy aged 14 years old, a girl aged 8 years old and a boy aged 4 years old) for a period of two weeks (19). The content of the WA FACS 2013 Healthy Food Access Basket is the same as Queensland's HFAB, which is outlined in Appendix 2. The **WA FACS 2013 Healthy Food Access Basket** analysed an average basket cost by SA2. From this it was possible to assess the relationship between price and remoteness across WA and compare the 2013 results to 2010. Food group price comparisons can also be made, for example, fruit, vegetables (and legumes), breads and cereals, dairy, meat and alternatives and non-core foods (such as fats and oils etc.).

### 6.2.8 Food basket used for 'food affordability' analysis (section 7.5)

The weekly food basket developed by Kettings et al. (2009) as a benchmark for economic and social policy analysis to examine the cost of healthy food habits in Australia was used to assess the proportion of income required for food families on different incomes (48). The basket included all food for a seven day meal plan (to meet the nutrition recommendations for a couple family (two 40 year old adults, two children - 12 and 7 years) and a single-parent family (one 40 year old adult, two children - 12 and 7 years). The meal plan was modelled to supply breakfast, lunch, dinner, snacks and extras for all family members to meet their individual nutrition requirements and the recommendations from the Australian Dietary Guidelines and the Australian Guide to Healthy Eating (3). This FACS analysis compares the cost of the meal plan, that is, the WA FACS Affordable Healthy Meal Plan, as a proportion of disposable income for welfare family recipients and families on a low income (36) with those on an average income. Disposable income represents the amount of money available to meet the needs of households and is derived by deducting estimates of personal income tax and the Medicare levy from gross income. Current income and welfare payments were calculated from the Centrelink website. This is the same methodology used to produce the 2010 estimates.

### 6.2.9 Income levels used for 'food affordability' analysis

Estimates of weekly disposable household income (household weighted) were obtained from the Household Income and Income Distribution survey (49). The Australian average income figures were adjusted for inflation using the 2012-2013 Perth CPI All Groups percentage change from the previous year (2.2%) (50) to align with the survey reference period. Weekly welfare payments were estimated using Centrelink's online calculators (51). These estimates were obtained for each of the reference families comprising a two parent family and a single parent family each with two children.

### 6.2.10 Quality of fresh produce

Quality was measured by applying a score to each of the attributes in the quality assessment tool outlined in section 3.6. These scores were added up to give a quality score out of 100 for each fruit or vegetable. The attribute measuring whether or not the produce was stored in the fridge was not included in the quality score; fridge storage was a confounder as it was assessed as good for very remote stores but not good for metropolitan area stores.

### **6.2.11 Nutrition information, average weight and food group classification**

The kilojoule content per 100 grams or 100 millilitres for each food was collected from either the Nutrition Information Panel (NIP) on the product for packaged foods, or obtained using FoodWorks® 7 Pro nutrient analysis package for those foods without a label. FoodWorks® was also used to identify the average weight for fruits and vegetables. This was then used to calculate the price per 100g when produce was sold as individual pieces.

Each food was classified according to food group and sub-group categories consistent with the Australian Total Diet and Foundation Diet (52) modelling to allow for analysis by food categories for example, core foods (meat and alternatives, fruit, vegetables, cereal foods, nuts, green vegetables) and discretionary foods (confectionery etc.). Again, this was the same methodology was used for the WA FACS 2010.

## 7.0 Results

### 7.1 Grocery store locations and food products

The number of grocery stores in WA increased between 2010 to 2013, 489 stores in 2013 compared with 447 in 2010. There were 84 Coles (85 in 2010), 86 Woolworths (84 in 2010) and 280 independent stores (226 in 2010) (including IGA, Supa-IGA®, IGA X-Press®, Farmer Jack, Foodworks), and 39 Aboriginal community stores in 2013 compared with 52 identified in 2010.

The two major supermarket chains, Coles and Woolworths, were predominantly located in population-dense areas and capital cities while independent grocery stores provided food in more regional and remote areas in WA, see Figure 4 and Figure 5. However, in very remote areas one main grocery store, usually an Aboriginal community store, was still the main provider.

There was an increase in the range of supermarkets' 'own brand' products in the FACS full survey basket in all major grocery chains between 2010 and 2013. These supermarket branded foods were priced consistently lower than company brands.

### 7.2 Response rate and surveyor statistics

The response rate for the 2013 FACS was 99% with data received from 156 of the 158 stores selected. The response rate was higher than in 2010. One hundred and two surveyors conducted the survey in 156 grocery stores. Surveyors were mainly EHOs (n=69), public health nutritionists/dietitians (n=16) or other DHWA employees (n=17). EHOs surveyed 63% of stores, dietitians/nutritionists surveyed 22% and others surveyed 15%. Many surveyors did multiple stores, ranging from 1 to 13 in the remote areas.

On average it took 4.2 hours to conduct the survey, with times ranging from 45 minutes to 10 hours. Time variations are due to the store size or whether or not pricing labels were on food which would require individual price scanning. Community stores took an average of 2.5 hours to complete due to fewer foods to choose from.

Figure 4. Supermarket locations, Western Australia, WA FACS 2013

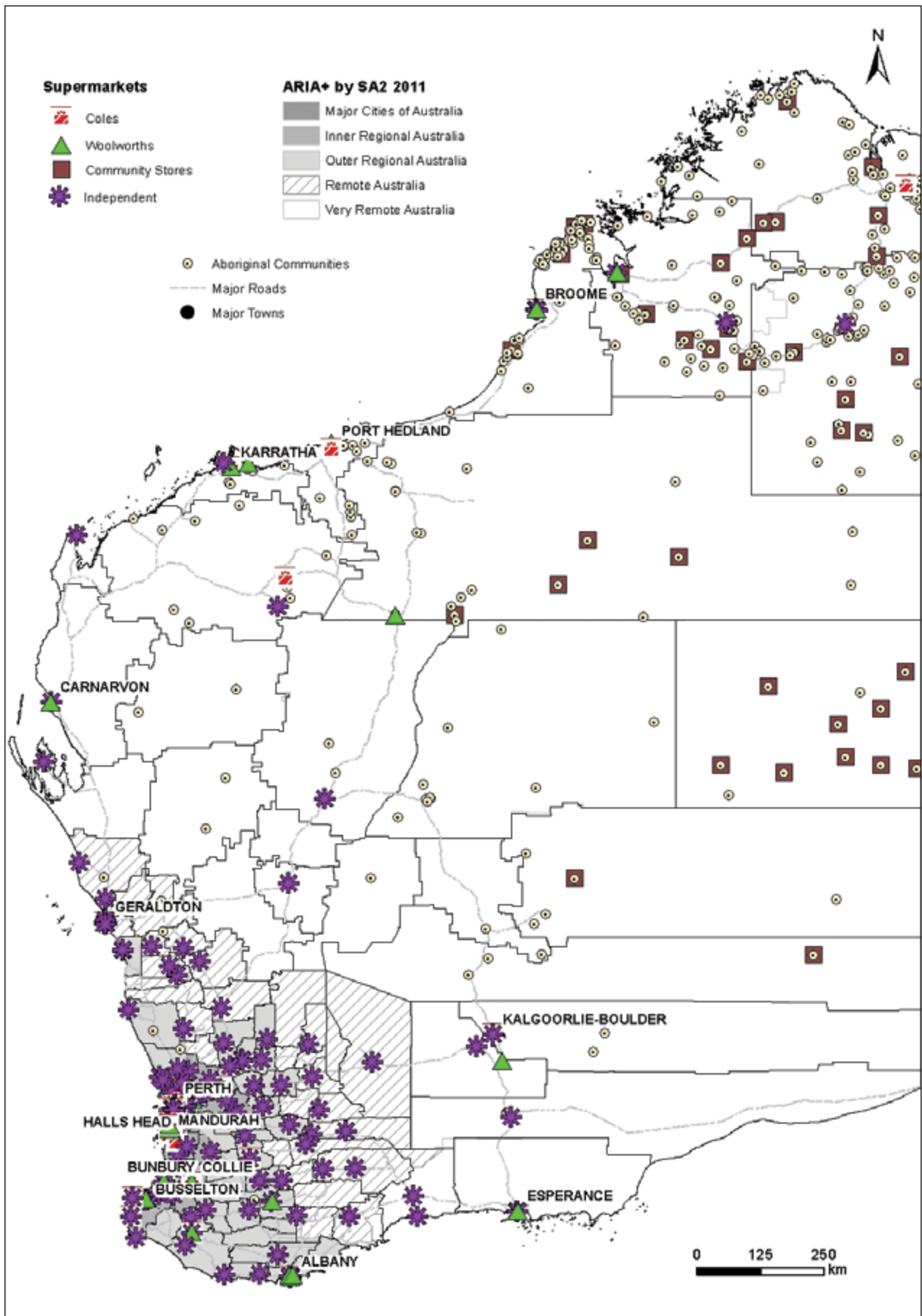
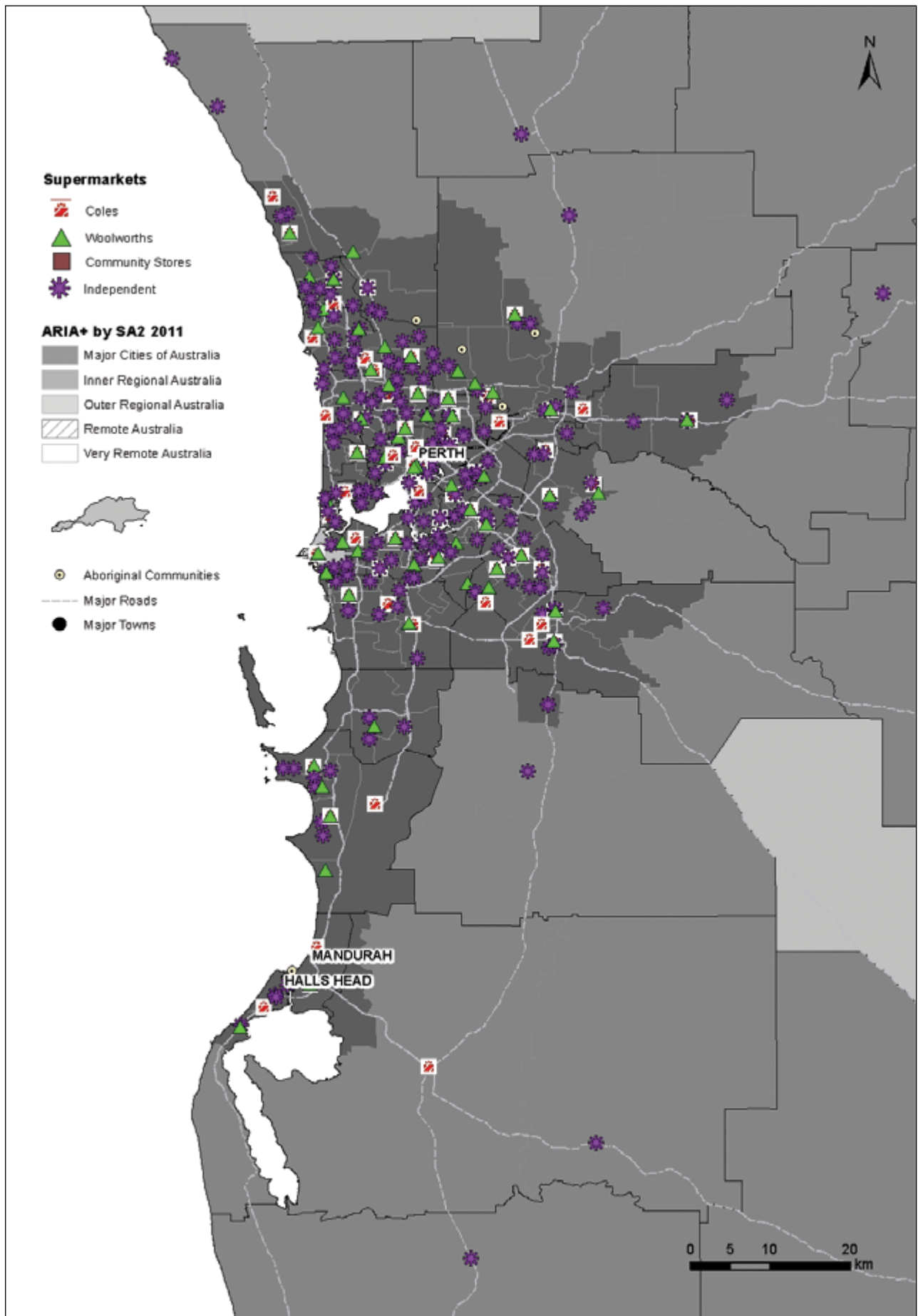


Figure 5. Supermarket locations, Perth metropolitan area, WA FACS 2013



## 7.3 Food costs

### 7.3.1 WA FACS Healthy Food Access Basket costs

On average, the cost of the WA FACS Healthy Food Access Basket increased from \$564.99 in 2010<sup>7</sup> to \$581.27 per fortnight in 2013, a 2.9% increase.

This increase is consistent with the CPI for food and non-alcoholic beverages between September 2010 and September 2013 which was 3.4% for Perth and 4.6% for all capital cities.

The costs of the WA FACS Healthy Food Access Basket significantly increased with distance from Perth, the major city in WA. The food price differential between Perth and very remote areas increased by 5.3% over the three years – from 20.8% more in very remote areas in 2010, to 26.1% more in 2013.

Estimates of the cost of the WA FACS Healthy Food Access Basket basic food groups are shown in Table 7 and graphically in Figure 6. In 2013, the largest differences in food cost across remoteness areas were for fruit (37.9%) and non-core foods (31.0%), but dairy experienced a reduction in the cost disparity across remoteness areas (31.7% in 2010 compared to 30.6% in 2013). Dairy foods decreased in price due to supermarket price-reduction wars in Western Australia, for example, 'own brand' milk was \$1/ litre in 2013, less than in 2010.

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<sup>7</sup> This is higher than the \$542.19 reported in the 2010 WA FACS Report, as for comparison with the current survey, supermarket 'own brands' were removed- see section 6.2.6 for further information.

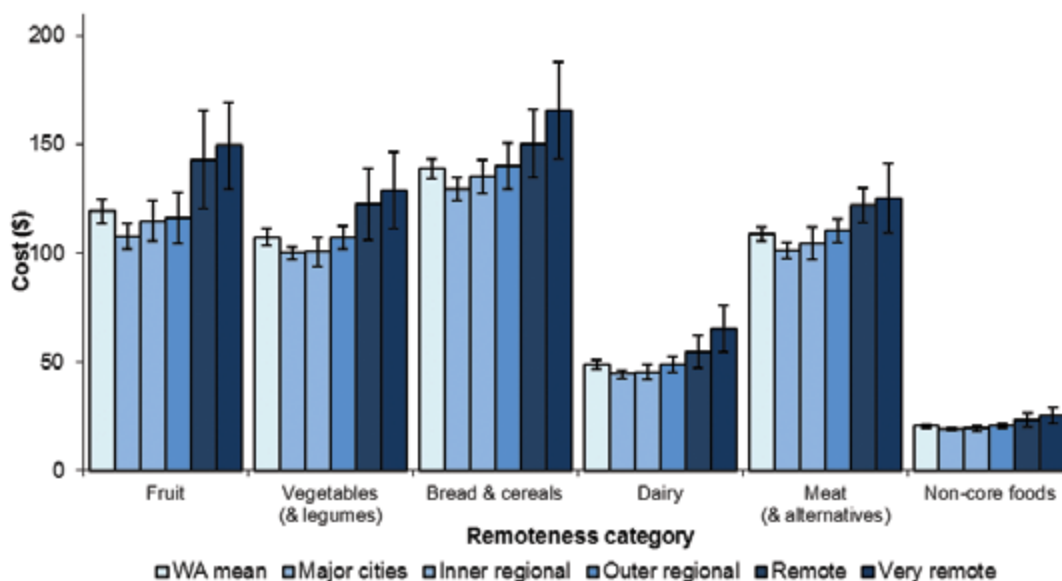


Table 7. Mean cost of WA FACS Healthy Food Access Basket basic food groups by remoteness in 2013 and comparison with increases in 2010.

Food group	Western Australia		Major cities		Inner regional		Outer regional		Remote		Very remote		2013 Increase from major cities to very remote		2010 Increase from major cities to very remote	
	\$ (CI)	\$ (CI)	\$ (CI)	\$ (CI)	\$ (CI)	\$ (CI)	\$ (CI)	\$ (CI)	\$ (CI)	\$ (CI)	%	%	Kendall's Tau p-value*	%	%	
Fruit	120.49 (114.99-125.99)	109.18 (103.53-114.83)	116.18 (106.77-125.59)	117.89 (106.35-129.43)	141.89 (120.32-163.46)	150.51 (129.32-171.7)	37.9							<0.0001	31.8	
Vegetables (and legumes)	111.69 (108.09-115.29)	105.37 (102.13-108.61)	105.78 (99.97-111.59)	110.24 (105-115.48)	125.01 (109.59-140.43)	132.49 (114.57-150.41)	25.7							0.0001	26.1	
Bread and cereals	161.71 (158.07-165.35)	155.87 (152.34-159.4)	158.5 (152.32-164.68)	160.94 (150.44-171.44)	166.47 (154.31-178.63)	185.64 (170.46-200.82)	19.1							0.0002	15.3	
Dairy	55.28 (53.66-56.9)	52.25 (51.1-53.4)	52.08 (49.89-54.27)	53.9 (50.84-56.96)	60.71 (55.55-65.87)	68.25 (61.35-75.15)	30.6							<0.0001	31.7	
Meat (and alternatives)	109.43 (106.37-112.49)	102.41 (98.83-105.99)	105.9 (98.55-113.25)	111.02 (106.1-115.94)	122.59 (115.51-129.67)	124.02 (110.04-138)	21.1							<0.0001	7.1	
Non-core foods	22.68 (21.95-23.41)	21.1 (20.48-21.72)	21.27 (20.26-22.28)	22.95 (21.96-23.94)	25.18 (22.41-27.95)	27.65 (23.97-31.33)	31.0							<0.0001	27.6	
Total basket	581.27 (566.1-596.44)	546.17 (537.18-555.16)	559.71 (540.65-578.77)	576.95 (549.31-604.59)	641.85 (585.46-698.24)	688.57 (619.28-757.86)	26.1							<0.0001	20.8	

\* changes by geographic location are significant

Figure 6. **The mean cost of WA FACS Healthy Food Access Basket food groups by remoteness, WA, FACS 2013**



### 7.3.2 Change in WA FACS Healthy Food Access Basket costs since 2010

Table 8 shows the change in the mean cost of the WA FACS Healthy Food Access Basket food groups since 2010. In WA, the largest proportional increase between 2010 and 2013 was for breads and cereals (6.2%), fruit and vegetables (5.9%), while meat (and alternatives) had the largest proportional decrease (-4.5%). The largest proportional increases in the mean cost of the WA Healthy Food Access Basket by remoteness category between for 2010 and 2013 was in outer regional (10.0%) and remote areas (8.8%).

The mean cost of the WA FACS Healthy Food Access Basket in Perth increased by 2.5% or \$13.42 between 2010 and 2013, a slower rate than in very remote areas which increased 7.0% or \$44.92. In Perth, the fall in the cost of meat (and alternatives) between the two surveys was significant (-9.0% or -\$10.14) compared to remote areas where the cost increased contributing to a smaller increase in Perth's total food costs.

Table 8. Change in mean cost of WA FACS Healthy Food Access Basket food groups since 2010, % and \$

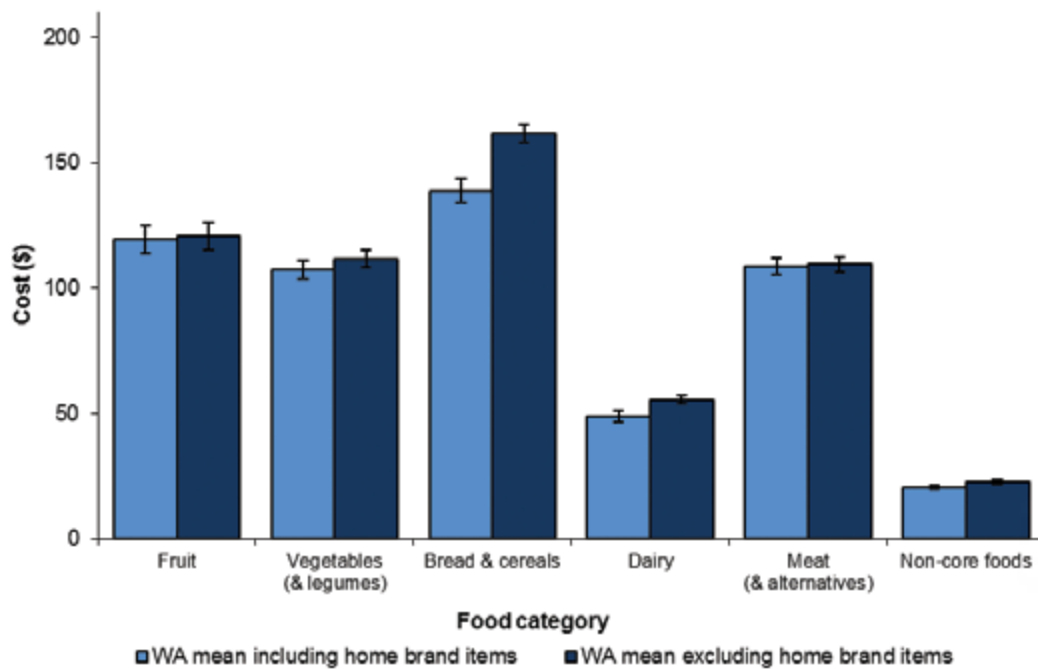
Food group	WA % (\$)	Major cities % (\$)	Inner regional % (\$)	Outer regional % (\$)	Remote % (\$)	Very remote % (\$)
Fruit	5.9	5.2	11.4	17.6	14.7	10.1
	(6.70)	(5.40)	(11.90)	(17.65)	(18.15)	(13.76)
Vegetables (and legumes)	4.7	6.4	5.5	10.7	13.2	6.1
	(5.02)	(6.34)	(5.47)	(10.68)	(14.60)	(7.57)
Bread and cereals	6.2	6.4	5.9	15.3	5.6	9.9
	(9.39)	(9.40)	(8.85)	(21.38)	(8.83)	(16.79)
Dairy	1.9	5.5	6.7	4.9	7.8	4.6
	(1.05)	(2.72)	(3.26)	(2.54)	(4.39)	(3.00)
Meat (and alternatives)	-4.5	-9.0	-3.7	-0.9	4.8	2.9
	(-5.20)	(-10.14)	(-4.05)	(-1.02)	(5.56)	(3.44)
Non-core foods	-2.9	-1.4	-1.6	6.2	0.8	1.3
	(-0.67)	(-0.29)	(-0.34)	(1.33)	(0.19)	(0.35)
Total healthy foods	2.9%	2.5%	4.7%	10.0%	8.8%	7.0%
	(\$16.28)	(\$13.42)	(\$25.09)	(\$52.57)	(\$51.72)	(\$44.92)

### 7.3.3 Impact of supermarket 'own brands' on food cost

As explained in section 6.2.6, the food cost analysis above excluded 'own brand' products to remove any influence that the difference in the number of 'own brands' collected between 2010 and 2013 could have when comparing estimates. However, analysis was also conducted to understand the impact that 'own brand' products have on overall food cost in 2013.

Analysis with and without supermarket 'own brands' shows that the increased availability of reduced price supermarket 'own brand' foods in 2013 has decreased the total cost of the WA Healthy Food Access Basket. Figure 7 compares the 2013 WA mean cost for each food group in the WA Healthy Food Access Basket, including and excluding supermarket 'own brands'. The largest difference in price is seen in breads and cereals (16.5% higher) and dairy (13.1% higher) due to the increased availability and reduced price of 'own brands' in these categories.

Figure 7. The mean cost of WA FACS Healthy Food Access Basket basic food groups, including and excluding 'own brand' items, 2013



## 7.4 Availability of 'own brands'

Table 9 shows the number of foods in the WA FACS Healthy Food Access Basket that were available as supermarket 'own brands' across remoteness areas. There are fewer 'own brands' available in remote and very remote areas. The effect of the introduction of lower price 'own brands' on food costs is not likely to be seen in remote areas.

In comparing the availability of 'own brand' products in grocery store types in WA in 2013, the concentration of 'own brand' products was measured by identifying the number of products in each store type that had at least one 'own brand' available. The comparison found that very remote areas had less than half that of the Perth average per store type, shown in Table 9.

Table 9. Average number of items (per store) where at least one 'own brand' was available, WA FACS 2013

By remoteness area	Average number of 'own brand' items available (per store)	By chain	Average number of 'own brand' items available (per store)
Major cities	54	Chain 1	72
Inner regional	55	Chain 2	69
Outer regional	47	Chain 3	33
Remote	34	Community Stores	13
Very remote	22		

## 7.5 Food affordability

Food stress exists when families need to spend 25% or more of their disposable income on food (29, 34). Families experiencing financial stress may buy less food, less nutritious food or go without. Overall, welfare recipients' families need to spend a greater proportion of their disposable income to purchase healthy food than families earning an average income.

The proportion of disposable income needed to purchase a weekly healthy meal plan<sup>8</sup> in 2013 was 44% for a couple family on welfare, 23% for low income families, and 14% for those on an average income. For the single parent family, the proportion of income needed to purchase the food was 36% on welfare, 25% on a low income and 24% for a single parent family on an average income. See Table 10 and Figure 8.

When comparing the changes in food affordability between 2010 and 2013 it should be noted that analysis was conducted using the average price of all brands (including 'own brands'). The increase in the availability of 'own brands' across all foods in 2013 compared with 2010, along with increases in income, has resulted in a slight decline in the proportion of income spent on food across all groups.

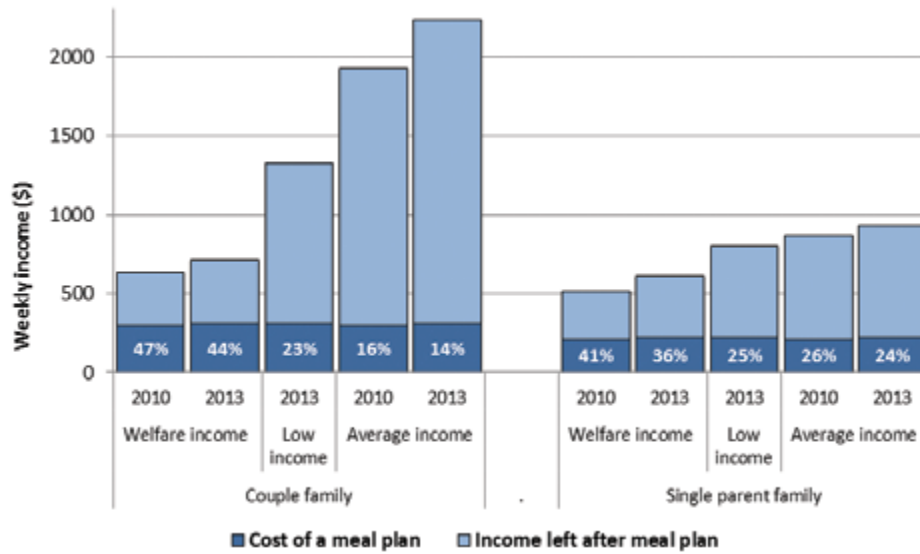
Table 10. **Weekly cost of an affordable healthy meal plan and income left after meal plan is purchased, WA mean (using average item price of all brands in each store)**

	Couple family			Single parent family		
	Welfare income \$	Low income* \$	Average income \$	Welfare income (parenting allowance) \$	Low income* \$	Average income \$
<b>Cost of affordable meal plan</b>	309.17	309.17	309.17	219.77	219.77	219.77
<b>Income</b>	710.11	1,322.13	2230.00	605.91	889.70	932.06
<b>Income left after meal plan</b>	400.94	1,013.00	1920.83	386.14	580.53	712.29
<b>Proportion of income required to purchase meal plan 2013</b>	<b>44%</b>	<b>23%</b>	<b>14%</b>	<b>36%</b>	<b>25%</b>	<b>24%</b>
<b>Proportion of income required to purchase meal plan in 2010</b>	<b>47%</b>	<b>-</b>	<b>16%</b>	<b>41%</b>	<b>-</b>	<b>26%</b>

\* Definition from Western Australian Council of Social Services Cost of Living report (36)

<sup>8</sup> As described in Section 6.2.8 Food basket used for affordability analysis

Figure 8. **Proportion of income required to purchase an affordable healthy meal plan, 2010 and 2013**



## 7.6 Food availability

The availability of foods in the WA FACS 2013 full survey basket in community stores and the supermarket chains is reported in Appendix 4. As with the 2010 results, the major supermarket chains had a higher level of availability of foods with community stores the lowest.

The lack of availability of foods in community stores may be due to the timing of the survey and deliveries, lack of space, perishability of produce or consumer demand (for example some stores do not carry certain products simply because they do not sell).

Figure 9 and Figure 10 display the average number of fruit and vegetable varieties from the full FACS survey basket that were available per store (by remoteness area and by chain); as the varieties of fruit and vegetables were collected in 2010 and 2013, a comparison of availability between the years was made. Overall, the average number of fruit and vegetable varieties that were available in stores has increased since 2010; however, the numbers of varieties available is still less in the more remote areas of WA.



Figure 9. Availability of fruit and vegetable varieties by remoteness, WA FACS full survey basket 2010 and 2013

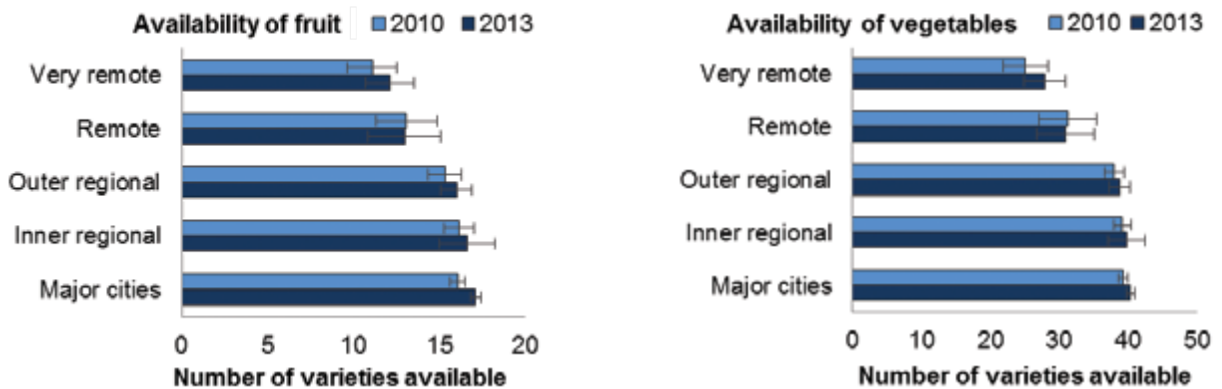
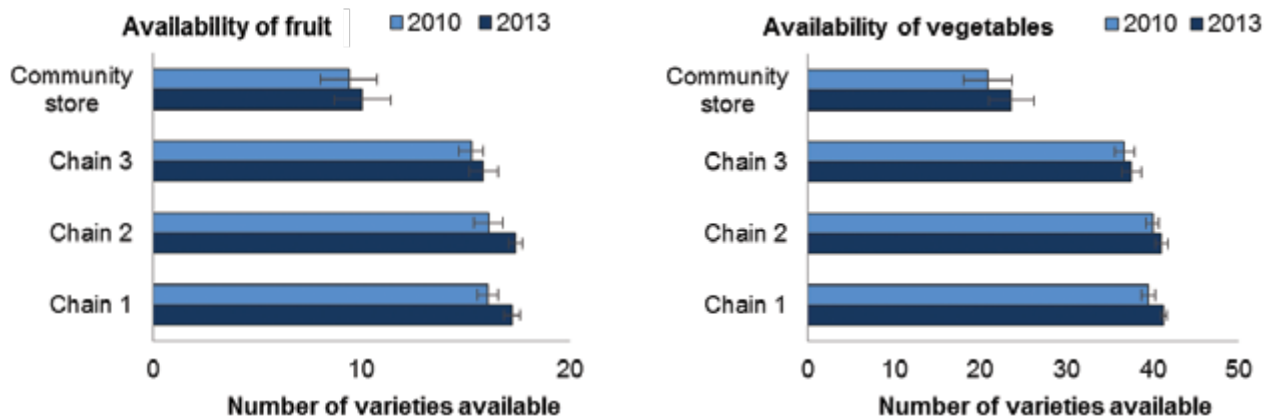
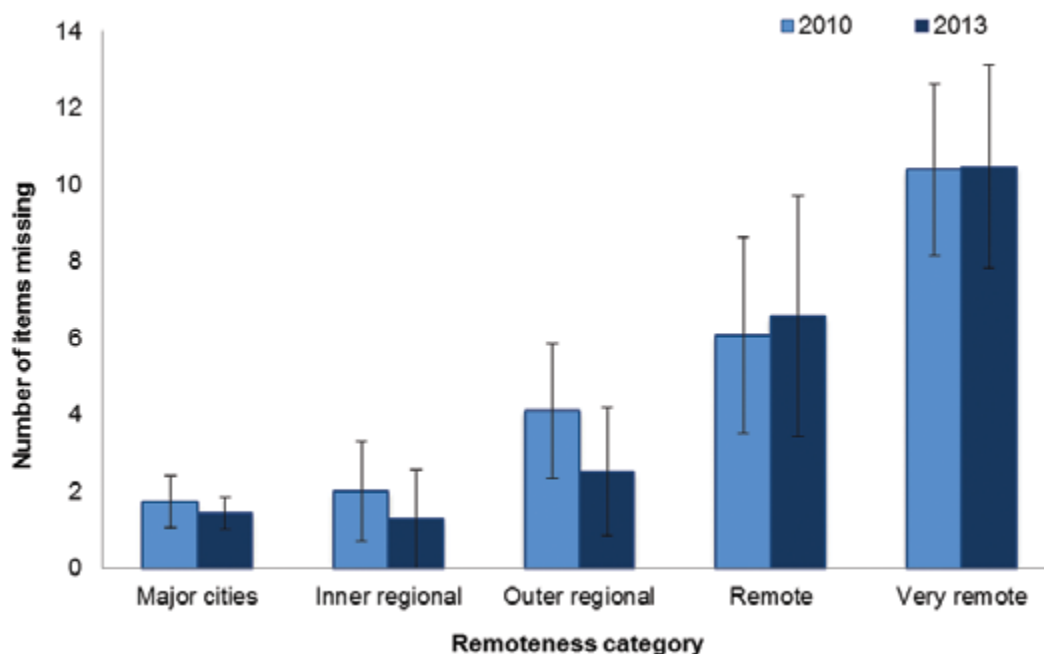


Figure 10. Availability of fruit and vegetable varieties by chain, WA FACS full survey basket 2010 and 2013



The number of items missing from the WA FACS full survey basket (Appendix 4) was greater in very remote areas compared to Perth, shown in Figure 11. In Perth, inner regional, and outer regional WA the number of missing items decreased between 2010 and 2013. Stores in remote areas experienced an increase in the average number of items that were not available and very remote areas remained stable.

Figure 11. **Number of missing WA FACS full survey basket items by remoteness area, 2010 and 2013.**



## 7.7 Quality of fruit and vegetables

In 2013, the mean quality rating in WA for fresh produce assessed against industry standards ranged from 78% to 95%, see Figure 12. The mean quality for fresh produce varied with geographical distance from Perth, see Table 11. For most produce, the mean quality in stores in the major cities areas was higher than in remote or very remote stores. There were exceptions; the mean quality rating for lettuce, onion, oranges and potatoes was higher in very remote areas than in Perth.

Table 11. **Mean quality score for produce by remoteness category, WA FACS 2013**

Produce	Major cities	Inner regional	Outer regional	Remote	Very remote
Apples green	97.3	96.0	95.2	91.7	95.8
Apples red	92.9	92.1	89.7	88.3	92.0
Bananas	89.6	94.1	85.4	81.7	78.0
Broccoli	94.9	95.1	96.0	92.9	90.5
Carrots	96.0	96.8	96.0	93.5	93.7
Celery	90.4	93.8	88.6	82.7	77.4
Green beans	85.8	78.3	77.8	69.2	79.2
Lettuce	85.4	81.3	89.6	72.7	87.9
Onions brown	81.8	95.1	84.0	94.6	91.4
Oranges	84.9	86.9	84.9	83.1	91.3
Pears	90.2	90.4	83.0	88.2	89.7
Potatoes	91.1	94.9	95.0	89.1	93.1
Tomatoes	91.1	99.3	95.5	90.9	87.5

Overall, the WA mean quality scores were higher in 2013 for more produce items, compared to 2010 (Figure 12); however, when each individual item was compared by remoteness category (Figure 13 and Figure 14) no obvious pattern was seen when comparing the 2013 results to the 2010 results.

Figure 12. **WA mean quality scores by produce, WA FACS 2010 and 2013**

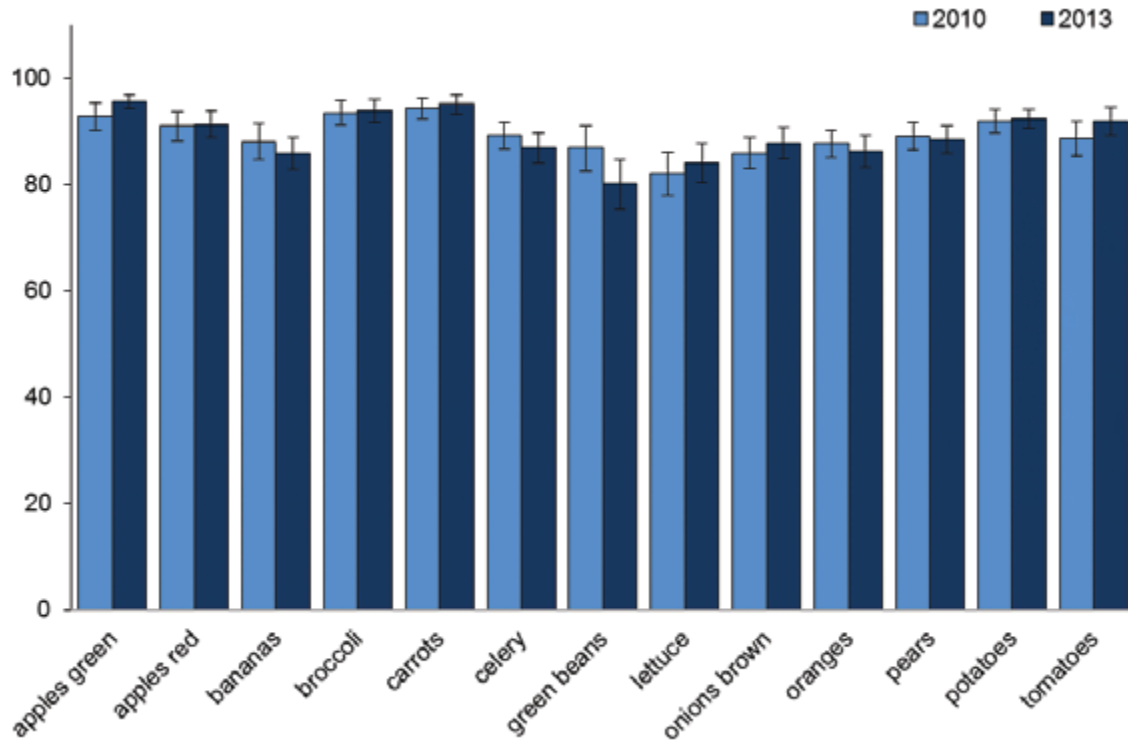


Figure 13. Mean quality score for fruit by remoteness category, WA FACS 2010 and 2013

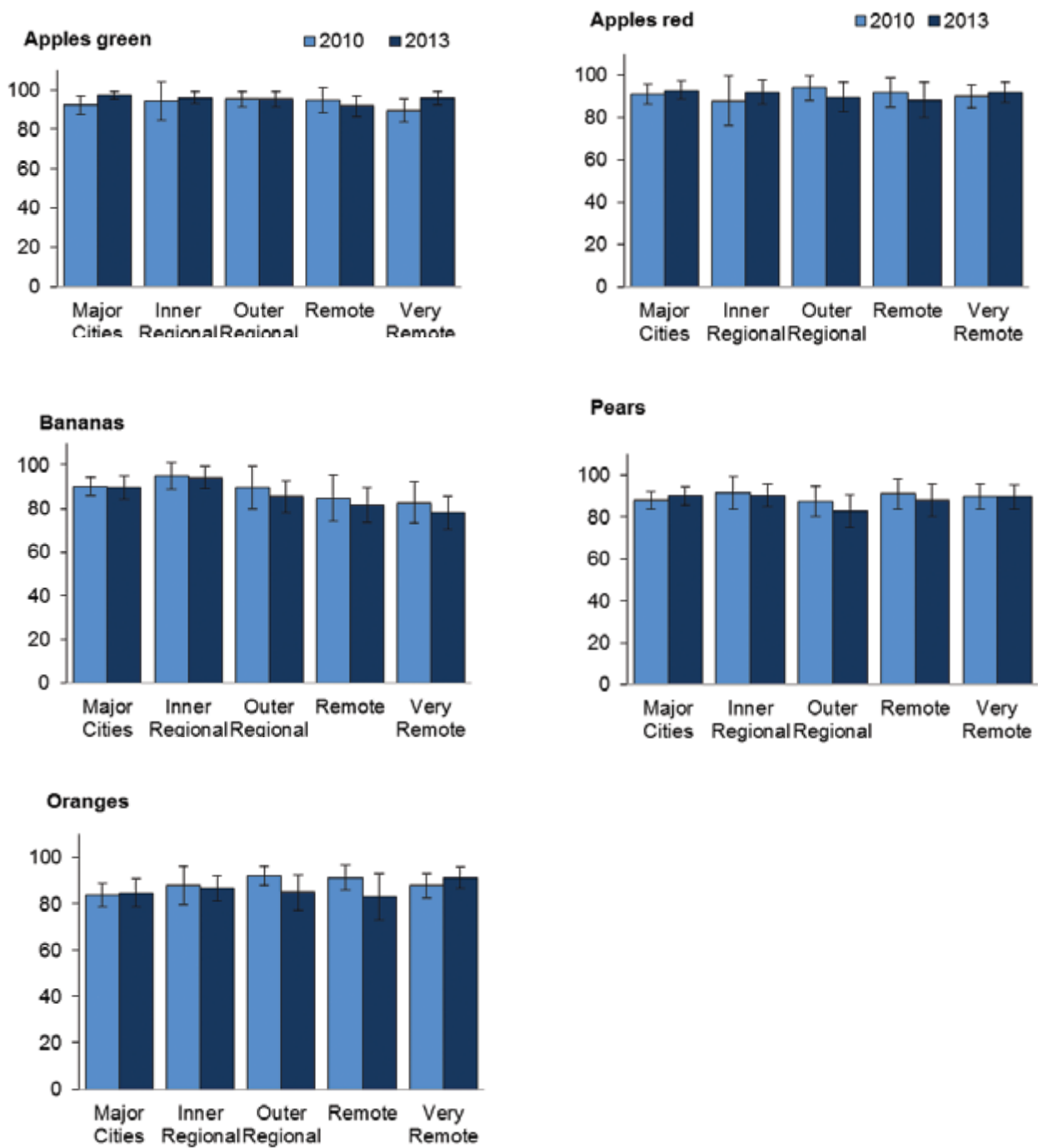
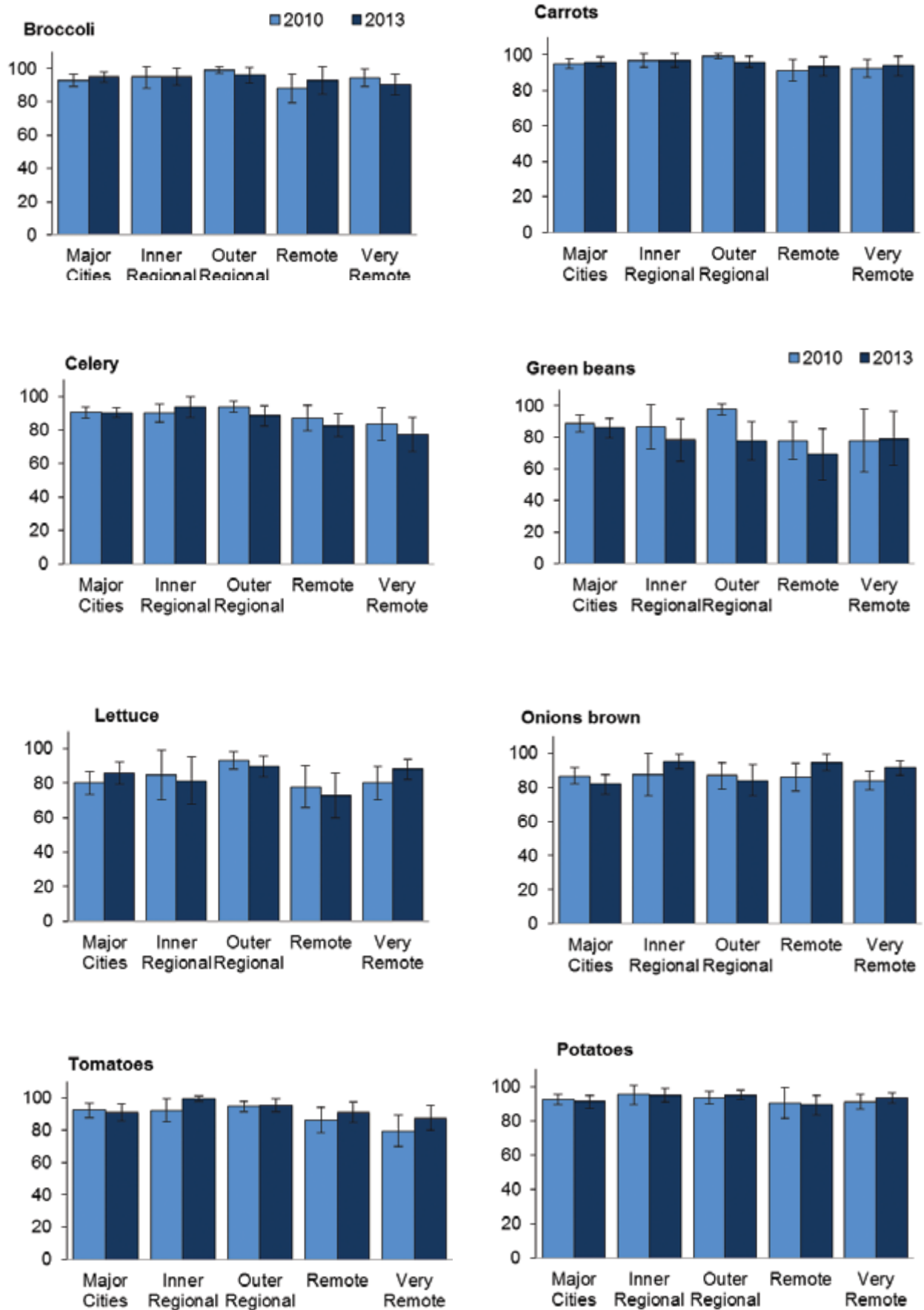


Figure 14. Mean quality score for vegetables by remoteness category, WA FACS 2010 and 2013



## 7.8 Food delivery frequency to community stores

Table 12 below shows how often community stores receive deliveries. In 2013, the largest proportion of community stores (41%) had fortnightly deliveries. The number of stores with deliveries more frequent than fortnightly has increased slightly since 2010.

Table 12. **Frequency of community store deliveries**

<b>Frequency of delivery</b>	<b>Number of stores 2010</b>	<b>Number of stores 2013</b>
<b>More than once per week</b>	3	3
<b>Once per week</b>	12	14
<b>Fortnightly</b>	18	16
<b>Less frequently than fortnightly</b>	3	3
<b>Not stated</b>	-	3
<b>Total</b>	<b>36</b>	<b>39</b>



## 8.0 Strengths and limitations of the survey

The WA FACS 2013 overcomes some of the limitations of population wide food access and pricing surveys in Australia as the sampling methodology represents each type of geographical location (major cities, inner regional, outer regional, remote and very remote) of all grocery store chains in WA. The findings are generalizable to WA particularly those relating to the influence of geographic location as WA has a unique land mass and population distribution.

A limitation is that the FACS only measures food access and pricing in the main grocery stores and therefore does not represent the cost of food from all retail sources, for example, growers markets, local stores, or take-away chains.

## 9.0 Conclusions

### 9.1 Changes in food costs between 2010 and 2013

Between 2010 and 2013, the cost of the WA Healthy Food Access Basket increased by \$16.28 (2.9%). This increase is consistent with the CPI for food and non-alcoholic beverages between September 2010 and September 2013, which was 3.4% for Perth and 4.6% for all capital cities. Fruit had the largest proportional mean cost increase (4.9%) which was also consistent with CPI estimates. There are significant differences in food cost and availability based on geographical location.

### 9.2 The main finding of the WA FACS 2013

***“Access to fresh, good quality, nutritious and affordable food in Western Australia is limited by where people live and their income.”***

This is because:

- Food cost substantially more in very remote areas compared with the Perth metropolitan area. The cost of a WA healthy food access basket was 5.3% more in very remote areas between 2010 and 2013.
- The increase in cost between 2010 and 2013 is highest for fresh fruit and vegetables, the foods we are recommended to eat more of to improve health and protect against disease.
- Welfare recipients need to spend a greater proportion of their disposable income on food than those on an average income.
- Grocery store location is associated with population density in WA.
- The quality of selected fresh fruit and vegetables appears to meet industry expectations in most areas in WA. However, fruit and vegetable quality is generally lower in remote communities.
- The price of the WA Healthy Food Access Basket was more expensive when ‘own brands’ were excluded. As grocery stores with ‘own brands’ are mostly situated in urban and rural areas, this further increases food cost in remote communities.

### 9.3 The quality of fresh produce

The quality of fruit and vegetables varied by geographic location. In general, the more perishable fruit and vegetable items, for example, bananas, celery, green beans and tomatoes, scored lower in more remote areas compared to Perth and inner regional. This is not surprising given that the delivery frequency of community stores in very remote areas was most often fortnightly (see section 7.8) and it would be unlikely that these produce items would last the delivery period without perishing. Less perishable produce for example, apples, oranges and potatoes, tended to maintain reasonable quality scores across remoteness areas.

Food transportation in WA encompasses enormous distances and difficult terrain adding to freight costs in remote areas. Transportation is often given as an explanation for the higher prices charged to consumers. These higher costs also mean that Aboriginal community stores may opt to have produce delivered less frequently. To maintain quality of fresh produce, correct handling and temperature during transport is important. Numerous factors affect the quality of fresh fruit and vegetables relating to the supply chain management of produce, particularly transport, storage and handling.

## 9.4 Recommendations from the findings

The survey findings provide evidence of issues relating to access to healthy food in WA. Possible actions to address this, and better understand and monitor the issue, include:

1. Continue to explore appropriate policy and practice responses to improve food access through partnerships with government agencies, food industry and academia.
2. Collaborate with other jurisdictions to advocate for a nationally consistent approach to monitoring food access and pricing.
3. Potential areas for future research are to:
  - assess the impact of food access and affordability on the health of welfare dependent families, including and assessment of food stress;
  - identify the reasons for high food costs in remote communities and to explore potential solutions; and
  - explore the influences of food pricing on optimal and current food consumption.
4. Future food costing and access surveys should consider the cost of fast or take-away foods compared to grocery food products and strategies to reduce the data collection burden for surveyors.

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## Appendices

### Appendix 1. Advisory Group Members

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## Appendix 2. The Queensland Healthy Food Access Basket, 2004

The Queensland Healthy Food Access Basket was used to analyse the food costs by geographic location in the 2010 and 2013 WA FACS. The table below shows the types and amounts of foods for a reference family over a two-week period. For further information see the source: Harrison et al. MJA 2007; 186: 9–14 pg 10.

### NUTRITION AND OBESITY — RESEARCH

**1 The 2004 Healthy Food Access Basket (HFAB) — foods and quantities for a "reference family"\* over a 2-week period**

Basket item	Unit size	Total amount in HFAB	Basket item	Unit size	Total amount in HFAB
<b>Dairy group</b>			<b>Bread and cereals group</b>		
Fresh full-cream milk	2 L	8 L	White bread	680 g	6800 g
Fresh reduced-fat milk	1 L	1 L	Wholemeal bread	680 g	6800 g
Powdered full-cream milk	1 kg	1 kg	White flour	2 kg	2.5 kg
Powdered skim milk	1 kg	1 kg	Wholemeal flour	1 kg	2.5 kg
Long-life full-cream milk	1 L	4 L	Weetbix	750 g	1500 g
Cheese	500 g	500 g	Rolled oats	1 kg	750 g
<b>Fruit, vegetables and legumes group</b>			White rice	1 kg	5 kg
Apples	1 kg	6 kg	Tinned spaghetti	420–425 g	1275 g
Oranges	1 kg	11 kg	Instant noodles	85 g	1020 g
Bananas	1 kg	5 kg	Sao biscuits	250 g	1 kg
Tinned fruit salad in natural juice	400–450 g	3520 g	<b>Meat and meat alternatives group</b>		
Orange juice (100%)	2 L	4 L	Tinned corned beef	340 g	340 g
Tomatoes	1 kg	5 kg	Tinned meat and onion/vegetables	400–425 g	820 g
Potatoes	1 kg	10 kg	Beef mince	1 kg	1 kg
Pumpkin	1 kg	1.5 kg	Rump steak	1 kg	1 kg
Cabbage	half	1.5 kg	Frozen chicken	size 14	2 kg
Lettuce	whole	1.5	Tinned smoked oysters	85–105 g	170 g
Carrots	1 kg	2 kg	Large eggs (min 50 g)	700 g	1320 g
Onions	1 kg	2 kg	Sausages	1 kg	1 kg
Frozen vegetables	500 g	2.5 kg	Tinned ham	450 g	1 kg
Tinned peas	420–440 g	880 g	<b>Non-core foods</b>		
Tinned baked beans	420–425 g	1700 g	Unsaturated margarine	500 g	1500 g
Tinned beetroot	425–450 g	450 g	White sugar	2 kg	3 kg
			Canola oil	750 mL	750 mL

\* Consisting of a man (> 19 years), a woman (> 19 years), an older woman (> 61 years), a teenage boy (14 years), a girl (8 years) and a boy (4 years). •

## Appendix 3. Foods collected in the WA FACS 2013 full survey basket

Item and description	Item and description
<b>Dairy</b>	<b>Rice, pasta &amp; meals</b>
Milk, full cream	White rice, long grain
Milk, reduced fat (2%)	Brown rice
Flavoured milk	Fast (microwaveable) rice
Cheese, cheddar	Spaghetti, dry
Cheese, cheddar, 25% to 30% reduced fat	Spaghetti, wholemeal
Cheese, cream, light	Pasta Sauce
Cheese slices	Parmesan cheese
Ricotta	Stir Fry & Simmer Sauce
Dip, tzatziki	Taco complete dinner kit (inc. sauce)
Yoghurt, flavoured, low fat	Instant (2 minute) noodles, beef
Yoghurt, natural, low fat	Instant Pasta & Sauce – Alfredo
Yoghurt, flavoured, low fat, individual and convenience packs	Packet cup soup, chicken noodle
Margarine, canola	<b>Flour &amp; sugar</b>
Butter	Sugar, white
Butter, reduced salt	Sugar, brown
Butter blend	Plain flour, white
Butter blend, reduced salt	Plain flour, wholemeal
Custard, vanilla	Baking powder
<b>Bread etc.</b>	Cornflour
White sandwich loaf, sliced	Cake mix, chocolate
Wholemeal sandwich loaf, sliced	<b>Hot beverages</b>
Multigrain sandwich loaf, sliced	Coffee, instant
Fibre enriched sandwich loaf, sliced	Tea bags
Crumpets, round	Milk flavouring
English muffins, wholemeal	<b>Frozen foods</b>
Pita bread, white	Fish, crumbed
Bread rolls, multigrain	Healthy meal (beef lasagne)
<b>Breakfast cereals etc.</b>	Peas
Rolled Oats	Spinach
Wheat biscuits	Mixed vegetables (at least 3 veg varieties)
Other cereals	Steam fresh mixed vegetables
Lunch Box Snacks	Potato chips, straight cut

Item and description	Item and description
<b>Longlife &amp; powdered milk</b>	<b>Frozen foods (cont.)</b>
Milk Longlife/UHT, full cream	Pizza, family size (ham & pineapple)
Milk, Longlife/UHT, reduced fat (2%)	Meat pies
Soy milk, reduced fat	Ice cream, low fat
Milk, powdered, full cream	Desserts
Item and description	<b>Canned fruit</b>
<b>Canned vegetables</b>	Apple, pie filling
Beans, 3, 4 or 5 bean mix	Fruit salad, in natural juice
Beans, red kidney beans	Peaches, in natural juice
Beetroot, sliced	<b>Refrigerated foods</b>
Chick peas	Orange Juice, 100%
Corn, kernels	Shaved premium leg ham (97% fat free)
Peas, garden or green (not baby)	Prepared pasta - ravioli beef
Tomatoes (chopped or diced)	Eggs, cage (58g), dozen
<b>Canned meals &amp; meats</b>	<b>Biscuits &amp; Snacks</b>
Baked beans, in tomato sauce	Arnott's
Spaghetti, in tomato sauce	Nabisco
Corned beef	Chips
Meat & vegetables	Nuts
Salmon, pink	<b>Confectionary</b>
Tuna, in springwater, large can	Chocolate bar
Tuna, flavoured, snack size can	Chocolate block, milk
<b>Oil, Condiments etc.</b>	Chewing gum
Canola oil	Lollies
Olive oil	<b>Infant formula</b>
Sunflower oil	Newborn, up to 6 months (Step 1)
Cooking spray	Follow on, 6 to 12 months (Step 2)
Soy sauce	Toddler, 12 to 36 months (Step 3)
Tomato sauce, bottle (not squeeze)	<b>Cold 'takeaway' drinks</b>
Mayonnaise, fat free	Energy drinks
Spices and dried herbs	Soft drinks
Cayenne pepper	Bottled water
Cinnamon, ground	Sports drinks
Paprika, ground	<b>Hot 'takeaway' food</b>
Parsley, flakes	Hot food counter – cooked chicken

Item and description	Item and description
<b>Oil, Condiments etc. (cont.)</b>	<b>Other</b>
Thyme, leaves	Cigarettes and tobacco
Continental Vegetable stock (powder)	<b>Nuts</b>
<b>Spreads</b>	Almonds
Honey, clear (in jar)	Peanuts
Peanut butter	<b>Meat, chicken &amp; fish</b>
Peanut butter (no added salt)	Lamb
Jam, strawberry	Mince Beef
Other spreads	Rump steak
<b>Drinks</b>	Pork
Orange Juice, 100%	Sausages
Fruit drink	Veal
Juice, lunch box	Kangaroo
Cordial, lime (makes 2L/1 litre concentrate)	Chicken
Diet cordial	White fish
Soft drinks	
Soft drinks, diet	
Soft drinks, bulk	
<b>Fresh fruit</b>	
Apples	
Bananas	
Grapefruit, Red/Pink	
Kiwi fruit	
Lemons	
Mandarins	
Melon	
Oranges	
Pears, green	
Pineapple, topless	
<b>Fresh vegetables</b>	
Asparagus, spears	
Avocado	
Broccoli, bunch	
Cabbage, common	
Capsicum	

Item and description	Item and description
<b>Fresh vegetables (cont.)</b>	<b>Fresh vegetables (cont.)</b>
Carrots, regular	Parsley, fresh bunch
Cauliflower, whole	Potatoes
Celery, bunch	Potatoes
Cucumber, green	Pumpkin
Eggplant	Silverbeet
Garlic, single bulb	Soup pack, vegetable
Green beans, loose	Spinach
Leek	Sweet potato
Lettuce	Tomatoes
Mushrooms, button	Zucchini
Onions	

#### Appendix 4. WA FACS 2013 full survey basket food availability by chain: number of stores where food item was not available

Total diet food group	Food	Community store (n=39)	Chain 1 (n=27)	Chain 2 (n=29)	Chain 3 (n=61)	Total all stores (n=156)
<b>Cereals - refined</b>	BBQ Shapes	12	1	0	2	15
	Coco Pops	25	0	0	5	30
	Corn Flakes	15	0	0	5	20
	Crumpets	37	1	0	15	53
	Fast (Microwaveable) Rice	32	0	0	2	34
	Instant Noodles	13	0	0	3	16
	Noodle Bowl	29	2	0	11	42
	Other Cereals	16	0	0	0	16
	Pita Bread, White	35	6	4	44	89
	Plain Flour, White	4	0	0	0	4
	Ritz Cracker Original	35	1	0	19	55
	Sao Biscuits	18	5	9	10	42
	Spaghetti	8	0	0	0	8
	White Sandwich Loaf, Sliced	11	0	0	1	12
	Wholemeal Sandwich Loaf, Sliced	12	0	0	6	18
	<b>Cereals - wholegrain</b>	Brown Rice	21	1	0	8
English Muffins, Wholemeal		38	8	1	19	66
Fibre Enriched Sandwich Loaf, Sliced		30	0	1	12	43
Multigrain Sandwich Loaf, Sliced		18	0	0	5	23
Plain Flour, Wholemeal		36	0	0	19	55
Rolled Oats		6	0	0	0	6
Spaghetti, Wholemeal		34	2	7	13	56
Wheat Biscuits		2	0	0	0	2
White Rice		8	0	0	0	8
<b>Dairy - higher fat</b>	Cheese Full Fat Cheddar	10	0	0	1	11
	Dip Tzatziki	36	0	3	32	71
	Parmesan Cheese	26	0	1	8	35
	Yoghurt, Natural	37	1	1	29	68
<b>Dairy - lower fat</b>	Flavoured Milk	23	1	1	8	33
	Fresh Reduced Fat Milk	30	0	0	1	31
	Milk Longlife Reduced Fat	21	0	0	2	23
	Powdered Skim Milk	29	0	1	10	40
	Ricotta	39	2	6	27	74
	Yoghurt Flavoured Low Fat	33	0	0	2	35



Total diet food group	Food	Community store (n=39)	Chain 1 (n=27)	Chain 2 (n=29)	Chain 3 (n=61)	Total all stores (n=156)
<b>Dairy - lower fat (cont.)</b>	Yoghurt Flavoured Low Fat Small	28	0	0	3	31
<b>Dairy - medium fat</b>	Cheese Reduced Fat Cheddar	34	0	0	12	46
	Cheese Slices	7	0	0	1	8
	Cheese, Cream, Light	29	1	0	7	37
	Custard, Vanilla	26	0	0	18	44
	Fresh Full Cream Milk	18	0	0	2	20
	Milk Longlife Full Cream	3	0	0	0	3
	Powdered Full Cream Milk	2	0	0	3	5
	Soy Milk Reduced Fat	25	0	0	4	29
<b>Discretionary - cereals - refined</b>	Milk Arrowroot	21	0	1	2	24
	Oreo	30	0	1	6	37
	Spicy Fruit Roll	35	21	5	26	87
	Tim Tam Original	18	2	0	3	23
<b>Discretionary - condiments</b>	Baking Powder	4	1	0	5	10
	Cayenne Pepper	35	1	1	32	69
	Cinnamon, Ground	29	0	0	30	59
	Coffee Instant	3	0	0	0	3
	Cornflour	15	1	0	4	20
	Paprika Ground	31	0	0	28	59
	Parsley Flakes	36	1	0	27	64
	Thyme Leaves	33	0	0	32	65
	Vegetable Stock	29	8	16	25	78
<b>Discretionary - confectionery</b>	Chewing Gum	18	1	0	5	24
	Chocolate Bar	9	0	0	0	9
	Chocolate Block, Milk	13	0	0	1	14
	Lollies	12	0	0	0	12
	Lunch Box Snacks	21	0	0	3	24
	Nutella	10	1	0	8	19
<b>Discretionary - fat</b>	Canola Oil	11	0	0	1	12
<b>Discretionary - fried</b>	Frozen Fish Crumbed	17	0	0	4	21
<b>Discretionary - fruit drink</b>	Fruit Drink	32	1	1	10	44
<b>Discretionary - juice drink</b>	Juice, Lunch Box	23	0	0	2	25
<b>Discretionary - meat</b>	Sausages	8	0	0	5	13
	Sliced Ham	27	1	0	7	35

Total diet food group	Food	Community store (n=39)	Chain 1 (n=27)	Chain 2 (n=29)	Chain 3 (n=61)	Total all stores (n=156)
<b>Discretionary - prepared meal</b>	Frozen Healthy Meal Beef Lasagne	25	1	0	6	32
	Frozen Meat Pies	22	0	0	1	23
	Frozen Pizza	14	0	0	6	20
	Hot Roast Chicken	37	1	2	18	58
	Instant Pasta & Sauce – Alfredo	16	3	3	6	28
	Packet Cup Soup, Chicken Noodle	13	1	0	5	19
	Prepared Pasta - Ravioli Beef	38	1	0	17	56
	Taco Complete Dinner Kit (Inc. Sauce)	31	1	2	8	42
<b>Discretionary - saturated fat</b>	Butter	22	0	0	4	26
	Butter Blend	18	0	0	6	24
	Butter Blend, Reduced Salt	36	2	1	17	56
	Butter, Reduced Salt	37	0	1	15	53
	Olive Oil	24	0	0	6	30
	Sunflower Oil	31	0	0	9	40
<b>Discretionary -</b>	Mayonnaise, Fat Free sauces	24	0	0	1	25
	Pasta Sauce	6	0	0	2	8
	Soy Sauce	5	0	0	0	5
<b>Discretionary - sauces</b>	Stir Fry & Simmer Sauce	29	1	2	9	41
	Tomato Sauce	18	0	0	4	22
<b>Discretionary - savoury snacks</b>	Canned Corned Beef	3	2	0	6	11
	Canned Spaghetti	2	0	0	0	2
	Dorito's Cheese Supreme	20	0	0	4	24
	Frozen Chips	21	0	0	6	27
	Smiths Crinkle Original	10	1	0	1	12
<b>Discretionary - soft drink</b>	Cordial, Lime	9	0	0	4	13
	Diet Cordial, Lime	32	16	4	24	76
	Diet Soft Drink	12	0	0	0	12
	Energy Drinks	32	0	3	9	44
	Soft Drink	12	0	0	0	12
	Soft Drink Bulk	28	0	0	2	30
	Soft Drink Takeaway	15	1	0	2	18
	Sports Drink	12	0	2	1	15
<b>Discretionary - spreads</b>	Honey	6	0	0	3	9
	Jam Strawberry	5	0	0	0	5
	Vegemite	9	0	0	0	9

Total diet food group	Food	Community store (n=39)	Chain 1 (n=27)	Chain 2 (n=29)	Chain 3 (n=61)	Total all stores (n=156)
<b>Discretionary - sweets</b>	Brown Sugar	12	0	0	1	13
	Cake Mix, Chocolate	12	0	0	1	13
	Ice Cream, Vanilla, Low Fat	32	0	0	10	42
	Milk Flavouring	8	0	0	1	9
	Nanna's Apple Pie (Family Size)	30	2	1	8	41
	Sara Lee Strawberry Cheesecake	25	6	1	18	50
	White Sugar	8	0	0	0	8
<b>Discretionary - tea</b>	Tea Bags	1	0	0	0	1
<b>Discretionary - unsaturated fat</b>	Cooking Spray	21	0	0	2	23
	Margarine, Canola	8	1	0	1	10
<b>Fruit</b>	Apples Green	17	0	0	1	18
	Apples Red	3	0	0	1	4
	Bananas	13	1	0	3	17
	Canned Apple Pie Filling	32	2	4	7	45
	Canned Fruit Salad	12	0	0	1	13
	Canned Peaches	14	0	0	2	16
	Canned Pineapple Slices	8	0	0	0	8
	Grapefruit	31	6	3	21	61
	Kiwi Fruit	20	0	0	3	23
	Lemons	10	1	0	4	15
	Mandarins	12	0	1	3	16
	Melon Honeydew	33	4	2	27	66
	Melon Rockmelon	19	0	2	10	31
	Melon Watermelon Seedless	22	3	3	19	47
	Orange Juice, 100%	13	0	0	2	15
	Oranges	5	0	0	2	7
	Pears	15	0	0	3	18
	Pineapple	31	4	2	21	58
<b>Meat &amp; alternatives - fish</b>	Canned Pink Salmon	21	0	0	3	24
	Canned Tuna Large	9	0	0	2	11
	Canned Tuna Small	4	0	0	0	4
	White Fish	33	5	10	38	86
<b>Meat &amp; alternatives - other</b>	Canned Meat And Vegetables	2	4	0	3	9
	Eggs	6	1	0	18	25
	Nuts	18	2	3	10	33
	Peanut Butter	7	0	0	1	8

Total diet food group	Food	Community store (n=39)	Chain 1 (n=27)	Chain 2 (n=29)	Chain 3 (n=61)	Total all stores (n=156)
<b>Meat &amp; alternatives - other (cont.)</b>	Peanut Butter (No Added Salt)	37	1	0	20	58
<b>Meat &amp; alternatives - poultry</b>	Chicken Drumsticks	23	0	2	16	41
	Chicken Fillets	17	1	0	4	22
	Whole Chicken	17	0	0	11	28
<b>Meat &amp; alternatives - red meat</b>	Beef Mince Lean	36	0	1	20	57
	Beef Mince Medium	30	0	1	29	60
	Beef Mince Regular	14	0	1	8	23
	Kangaroo	17	4	4	45	70
	Lamb Chops	18	2	1	6	27
	Leg Of Lamb	21	1	1	17	40
	Pork Chops	23	1	0	9	33
	Rump Steak Regular	17	0	0	4	21
	Veal	38	15	7	51	111
<b>Nuts and seeds</b>	Almonds	32	0	0	12	44
	Peanuts	33	2	1	14	50
<b>Other</b>	Follow On, 6 To 12 Months (Step 2)	23	0	0	4	27
	Newborn, Up To 6 Months (Step 1)	15	0	0	3	18
	Toddler, 12 To 36 Months (Step 3)	30	1	0	10	41
<b>Vegetables - brassica</b>	Broccoli	13	0	1	0	14
<b>Vegetables - cruciferous</b>	Cabbage	5	0	1	1	7
	Cauliflower	13	0	0	7	20
<b>Vegetables - green</b>	Canned Peas	12	1	0	1	14
	Frozen Mixed Vegetables	8	0	0	3	11
	Frozen Peas	10	0	0	2	12
	Frozen Spinach	34	4	0	33	71
	Green Beans	29	0	0	14	43
	Lettuce Cos	32	0	1	17	50
	Lettuce Iceberg	7	0	1	2	10
	Lettuce Loose	34	1	2	13	50
	Silverbeet	29	1	3	17	50
	Soup Pack Vegetable	13	5	3	13	34
	Spinach	30	1	2	14	47

Total diet food group	Food	Community store (n=39)	Chain 1 (n=27)	Chain 2 (n=29)	Chain 3 (n=61)	Total all stores (n=156)
<b>Vegetables - legumes</b>	Canned Baked Beans	0	0	0	0	0
	Canned Bean Mix	11	0	0	3	14
	Canned Chick Peas	27	0	0	7	34
	Canned Red Kidney Beans	14	0	0	0	14
<b>Vegetables - mixed</b>	Steam Fresh Mixed Vegetables	22	0	0	11	33
<b>Vegetables - orange</b>	Carrots	1	0	0	0	1
	Pumpkin	8	0	0	1	9
<b>Vegetables - other</b>	Asparagus	35	0	2	13	50
	Avocado	12	1	0	3	16
	Canned Sliced Beetroot	2	0	0	0	2
	Canned Tomatoes	10	0	0	2	12
	Capsicum Green	7	0	0	0	7
	Capsicum Red	10	1	0	0	11
	Celery	16	0	1	2	19
	Cucumber	16	0	1	4	21
	Eggplant	33	3	3	17	56
	Garlic	12	3	0	2	17
	Leek	34	0	1	5	40
	Mushrooms	17	1	0	2	20
	Onions	1	0	0	0	1
	Parsley Fresh	34	0	1	20	55
	Tomatoes	3	0	1	0	4
	Tomatoes Cherry	23	0	2	13	38
	Tomatoes Grape	36	0	2	15	53
	Tomatoes Roma	36	0	3	20	59
	Zucchini	17	1	0	3	21
<b>Vegetables - starchy</b>	Canned Corn Kernels	4	0	0	0	4
	Potatoes	6	0	0	2	8
	Sweet Potato	14	1	0	2	17
<b>Water</b>	Bottled Water	9	0	1	7	17

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