

# The 2000 Healthy Food Access Basket (HFAB) Survey



Queensland Government  
Queensland Health

# The Healthy Food Access Basket Survey 2000

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## Abbreviations and Acronyms

ARIA	Accessibility/Remoteness Index of Australia
CPI	Consumer Price Index
DATSIPD	Department of Aboriginal and Torres Strait Islander Policy and Development
HFAB	Healthy Food Access Basket
PHS	Public Health Services
QPHF	Queensland Public Health Forum
SIGNAL	The Strategic Inter-Government Nutrition Alliance

## Executive Summary

The 2000 Healthy Food Access Basket (HFAB) survey is a cross-sectional survey of the costs and availability of basic food items, healthy food choices and tobacco and take-away food items. The survey was carried out in 92 selected stores in locations with varying degrees of accessibility/remoteness across Queensland. This report also compares paired data from the 1998 and 2000 surveys.

There is evidence that the 'cost of living', including the cost of basic foods, is higher in remote and rural areas. This difference in the cost of basic foods has also been confirmed by previous HFAB surveys, and similar studies in Tasmania, Western Australia, South Australia and the Northern Territory.

However, this is the first time that costs have been mentioned in terms of remoteness/accessibility as measured by Accessibility/Remoteness Index of Australia (ARIA) category.

Higher costs of basic foods in rural and remote areas cause great concern due to the potential negative nutrition and health consequences. Those living in non-metropolitan areas experience higher mortality rates than those in metropolitan areas, 15% higher for men and 9% higher for women in 1996.

The results of the 2000 survey confirm that people in rural and remote areas do pay more for basic healthy food than those living in urban and metropolitan regions. In contrast to expectations, fruit and vegetables were less affected by remoteness/accessibility than other food groups, with the price of meat and meat alternatives, and dairy food groups being the most affected. There was a greater inequality in the cost of vegetables in north Queensland than other parts of the state. The cost of tobacco and take-away food items was less affected by remoteness/accessibility than other items. Basic food items were less available in the more remote stores, as were fresh vegetables and fruits and better nutritional choices. Over the last two years, relative improvements in food prices have been seen in stores in the *very remote* ARIA category, with prices increasing less than the Consumer Price Index for food (CPI).

However for *very remote* locations, the overall HFAB cost remains on average 31% higher than in stores in the *highly accessible* ARIA category (with one location recording a price that was 56% greater). Aside from the price differential, concerning findings are the number of basic food items which may not be available for purchase at any given time (approximately 12% of HFAB food items in *very remote* and 9% in *remote* stores). In addition, stores in these locations had the lowest variety of fresh vegetables and fruit and a limited range of better nutritional choices available at the time of the survey.

Regular food supply monitoring can contribute to surveillance systems and advocacy efforts. Healthy food is essential to good health and access to healthy food is often taken for granted by those who live in cities or large towns, but is not always easy to achieve in remote locations. There is now increasing recognition of the challenges faced by small retail outlets selling perishable food products in small or isolated communities. Most of the factors that determine the food supply at the end point of purchase in any one location lie outside the health sector and require commitment and partnerships across a range of sectors to address the identified problems.

However, food security remains a key concern for public health nutrition in terms of the capacity of individuals, families and communities to secure a diet consistent with dietary guidelines and recommendations. Where there are important barriers to making healthy food choices it is the role of the health sector to identify these and raise awareness to stimulate appropriate action. This may include policy initiatives to target particularly vulnerable areas or population groups and initiatives and interventions in relation to specific foods or types of retail outlets. The recommendations of this report should assist in the development of strategies to address disparity of price of foods and diet-related health status in remote and rural locations in Queensland.

## Recommendations

1. This study confirms that disparity exists in access to basic healthy food in terms of cost and availability, between metropolitan areas and remote and rural areas in Queensland. Disparity in food cost underpins disparity in health status. Addressing this issue requires the collaboration of several stakeholders including government and those who play a role in food production, distribution and retailing. It is recommended that Public Health Services develop a communication strategy to target key stakeholders and promote further action.
2. Experience has demonstrated that an improved supply of healthy food will lead to improved sales. Strategies to improve storage and display conditions for fresh produce in remote stores should be identified and implemented. These strategies could include support to upgrade infrastructure as well as the skills and knowledge of staff. This process could be informed by the experience of the Queensland Department of Aboriginal and Torres Strait Islander Policy and Development Retail Stores Unit. The fresh industry representative groups (eg. Queensland Fruit and Vegetable Growers, Australian Horticultural Industry) and retailer organisations may be interested in participating in such an initiative.
3. Initiatives to improve access to healthy food should be matched by strategies to promote healthy food choices in remote and rural areas, to ensure that improved supply is met by consumer demand. Queensland Health has the opportunity to lead in this respect by participation in the planned national promotion of vegetables and fruit, which will support food supply and promotion initiatives. In addition, community level programs and health promotion initiatives such as Health Promoting Schools, Lighten Up to a healthy lifestyle, Healthy Weight Program and FoodCent\$ can contribute to food selection skills and encourage preference for healthy food.
4. Food supply monitoring can provide the basis for advocacy by assisting in highlighting disadvantaged areas to government and intersectoral partners who have the ability to influence the food supply. Ongoing monitoring of access to basic healthy food should occur at a national level and also continue statewide within Queensland.

## Healthy Food Access Basket Survey

### What is the Healthy Food Access Basket (HFAB) 2000 Survey?

The 2000 HFAB survey aims to monitor the price and variety of basic food items and healthy food choices in urban, rural and remote areas of Queensland. The HFAB includes a variety of basic foods that meet nutrition requirements and recommendations. It does not include expensive or “hard to get” foods. Figure 1 shows the content of the basket and Table 1 gives further details of the food types and amounts included in the HFAB. (Further information is available under ‘Methods’ on page 19.)

The initial HFAB survey<sup>1</sup> was piloted in north Queensland in early 1997 before a Statewide survey in 1998.<sup>2</sup> The current survey conducted in 2000 included stores from a sample of locations across Queensland based on the new Accessibility/Remoteness Index of Australia (ARIA).<sup>3</sup> There are five levels in the ARIA framework: *highly accessible*, *accessible*, *moderately accessible*, *remote* and *very remote*. ARIA locations in Queensland are identified in Figure 2. This classification system defines remoteness in terms of geographical location and access to services. In some remote locations, road access is not possible during the wet season and communities rely on alternative systems of transport that can be more expensive than road transport. The timing of this survey (April to June 2000) means that prices reported here reflect the wet season situation in some locations, as roads which are inaccessible during the wet season often do not reopen until June. While this may affect price comparisons unfavourably, remote communities are in this situation for periods of between three and six months each year.

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<sup>1</sup> Leonard D. The Healthy Food Access Basket Summary Report October 1997. Cairns: Queensland Health, Tropical Public Health Unit; 1997.

<sup>2</sup> Leonard D, Groos A, Dunn S. 1998 Healthy Food Access Basket Report. Cairns: Queensland Health, Tropical Public Health Unit; 1999.

<sup>3</sup> Department of Health and Aged Care and The University of Adelaide. Measuring Remoteness: Accessibility/Remoteness Index of Australia. Adelaide: University of Adelaide; 1999.

Figure 1: The Healthy Food Access Basket 2000 Content

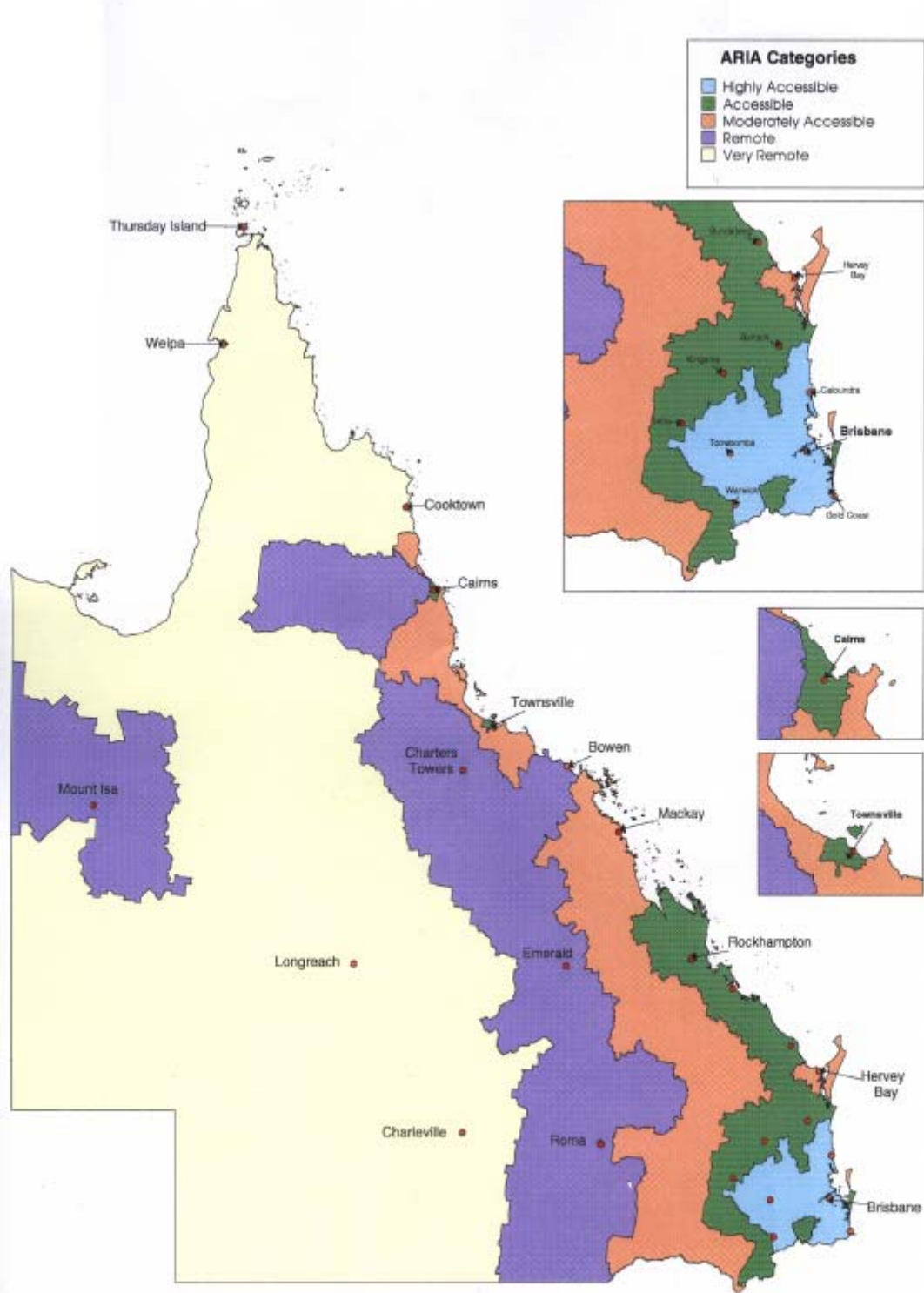


**Table 1: The Healthy Food Access Basket 2000 – Foods And Quantities**

Basket Item	Unit size surveyed	Total amount in HFAB	Basket Item	Unit Size Surveyed	Total amount in HFAB
<i>Cereal Group</i>			<i>Meat/ Meat Alternatives Group</i>		
loaves of white bread	680g	6800g	tinned corned beef	340g	340g
loaves of wholemeal bread	680g	6800g	tinned meat & onion/vegetables	400g-425g	820g
white flour	2kg	2.5kg	beef mince	1kg	1 kg
wholemeal flour	1kg	2.5kg	rump steak	1kg	1 kg
Weet-bix	750g	1500g	frozen chicken	size 11	2 kg
rolled oats	1kg	750g	tinned smoked oysters	85g-105g	170g
white rice	1kg	5kg	large eggs (min 50g)	660g	1320g
tinned spaghetti	420g-425g	1275g	sausages	1kg	1 kg
instant noodles	85g	1020g	tinned ham	450g	1 kg
Sao biscuits	250g	1kg	<i>Dairy Group</i>		
<i>Fruit, Vegetable &amp; Legume Group</i>			fresh full cream milk	2L	8L
apples	1kg	6 kg	fresh, reduced fat milk	1L	1L
oranges	1kg	11 kg	powdered milk, whole	1kg	1kg
bananas	1kg	5 kg	powdered skim milk	1kg	1kg
tinned fruit salad, in natural juice	400g-450g	3520g	long life milk	1L	4L
orange juice (100%)	2L	4L	cheese	500g	2kg
tomatoes	1kg	5 kg	<i>Non-Core Foods</i>		
potatoes	1kg	10 kg	unsaturated margarine	500g	1500g
pumpkin	1kg	1.5 kg	white sugar	2kg	3 kg
cabbage	half	1.5kg	canola oil	750ml	750ml
lettuce	whole	1.5			
carrots	1kg	2 kg			
onions	1kg	2 kg			
frozen vegetables	500g	2.5 kg			
tinned peas	420g-440g	880g			
tinned baked beans	420g-425g	1700g			
tinned beetroot	425g-450g	450g			

g = grams; kg = kilogram; L = litre;

Figure 2: ARIA Distribution in Queensland



## The Tobacco and Take-Away Food Items

In addition to the HFAB, tobacco and commonly purchased high fat/high sugar take-away food items were included (Table 2). These items were costed in the same stores as the HFAB (or a nearby store if the survey store did not sell these items) to enable a comparison of the price increases of unhealthy products in relation to remoteness. Where there was a choice available, the price of the cheapest alternative was recorded except for the cigarettes where a particular brand was surveyed.

**Table 2: The Tobacco and Take-away Food Items**

Food Items		Non-food Items	
cola drink	1 x 375ml	tobacco	1 x 50g
meat-pie	1 x 190g	cigarettes	pack of 25

## Availability

Access to healthy foods can also be measured by the availability of different varieties of products at the time of the survey. The availability of 15 of the most commonly consumed vegetables and fruits was surveyed in each store (Table 3). Food items considered to be better nutritional choices were also surveyed for their availability in all stores (Table 4). (See methods section for more details on page 20.)

**Table 3: The Fruit and Vegetable Variety Checklist**

Fruit	Vegetables
apple	potato
banana	tomato
rockmelon	onion
peach	lettuce
pear	pumpkin
pineapple	cabbage
grapes	cauliflower
strawberry	green beans
orange	carrot
watermelon	broccoli
other stone fruit	sweet potato
other citrus fruit	capsicum
mango	mushroom
paw paw	sweet corn
kiwi fruit	cucumber

**Table 4: The Better Nutritional Choices Availability Checklist**

<b>Food Item</b>	<b>Food Item</b>
baked beans	100% orange juice
wholemeal bread	diet cordial
dried fruit	diet soft drink
dry biscuits, low fat	lean meat
tinned fruit, in natural juice	other dried legumes e.g. lentils, split peas
monounsaturated oil like canola or olive	poly/mono-unsaturated margarine
fresh reduced fat milk	red kidney beans
yoghurt	tinned bean mix
bottled water	

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low fat dry biscuits include biscuits which have less than 10g of fat per 100g.

lean meat: determined by visual inspection of the meat.; lean meat has hardly any visible white fat.

## Background

### What is Healthy Food?

A healthy diet is fundamental to the maintenance of good health and well being. Food provides the energy (fuel) and nutrients our bodies need and protects us against disease. The Australian Guide to Healthy Eating<sup>4</sup> is the national food selection guide designed to help Australians choose a healthy diet. The Australian Guide to Healthy Eating encourages the consumption of a variety of foods from each of the five food groups in proportions necessary to promote good health, and reduce the risk of diet-related diseases.

The Five Food Groups Are:

- Bread, cereals, rice, pasta, noodles
- Vegetables, legumes
- Fruit
- Milk, yoghurt, cheese
- Meat, fish, poultry, eggs, nuts, legumes
- Extra foods – these foods are not essential to provide the nutrients the body needs but they may contribute to the overall enjoyment of eating, and should be eaten sometimes, or in small amounts. In the HFAB these foods include oil, margarine, sugar.

**Table 5: Nutritional Characteristics of the Five Food Groups**

FOOD GROUP NAME	BREAD, CEREALS, RICE, PASTA, NOODLES	VEGETABLES, LEGUMES	FRUIT	MILK, YOGHURT, CHEESE	LEAN MEAT, FISH, POULTRY, EGGS, NUTS, LEGUMES
Main distinguishing nutrients	Carbohydrate	Vitamins and phytochemicals including vitamin A and carotenes	Vitamins, especially vitamin C	Calcium, protein	Protein, iron, zinc
Other significant dietary components	Energy, protein, fat, fibre, magnesium, zinc, riboflavin, niacin equivalents, folate and sodium.	Carbohydrate, fibre, magnesium, iron, vitamin C, folate and potassium.	Carbohydrate, fibre, and folate	Energy, fat, cholesterol, carbohydrate, magnesium, zinc, riboflavin, vitamin B12, sodium and potassium	Fat, cholesterol, niacin equivalents and vitamin B12

<sup>4</sup> Kellet E, Smith A, Schmerlaib Y. The Australian guide to healthy eating. Canberra: Commonwealth Department of Health and Family services; 1998. Can be obtained from the following website: <http://www.health.gov.au/pubhlth/strateg/food/guide/index.htm>

To eat a healthy diet, the 'Australian Guide to Healthy Eating' recommends:

1. Eat enough food from each of the five food groups every day
2. Choose different varieties of foods from within each of the five food groups from day to day, week to week and at different times of the year.
3. Eat plenty of plant foods (bread, cereal, rice, pasta, noodles, vegetables, legumes and fruit); moderate amounts of animal foods (milk, yoghurt, cheese, meat, fish, poultry, eggs); and small amounts of the extra foods (margarines and oils).
4. Drink plenty of water.

### **What do we mean by 'Access' to Healthy Food?**

A range of factors can determine access. Some influences are the cost of food, family income, education, food preferences, quality and variety of the food available. Cost is very important, especially for people who feed a large family and/or are on a limited income. In addition, a reduced availability of healthy food options in a store, limits access and choice even when money is not a barrier.

Food insecurity often results when there is poor access to healthy foods. Food insecurity is the inability to access a sufficient quantity and quality of food to meet the nutritional requirements for health and unrestricted growth and development of all individuals at all times<sup>5</sup>. Food insecurity can lead to severe health consequences especially in those populations that are already disadvantaged due to ill health and low income.

Regional and metropolitan areas in Queensland usually offer access to a wide range of high quality healthy food at affordable prices. However, access to an affordable range of good quality food may be compromised in rural and remote areas and for some subgroups of the population disadvantaged by low income or limited access to transport.

ARIA categories have been used to group towns in Australia into five levels of remoteness/accessibility, based on their physical location and access to main roads and centres (Figure 2). The results of this survey have been presented to reflect differences between stores from different ARIA categories and therefore the effect of remoteness/accessibility on the availability and cost of basic healthy food.

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<sup>5</sup> McComb J, Webb K, Marks G. What do we mean by "Food Access" and "Food Supply". Food Chain 2000 Mar;1: 3-4.

## Why is Access an Issue of Concern?

There is evidence that the 'cost of living', including the cost of basic foods, is higher in remote and rural areas<sup>6</sup>. Higher costs of basic foods in rural and remote areas are of great concern due to the potential negative nutrition and health consequences. Those living in non-metropolitan areas experience higher mortality rates than those in metropolitan areas, 15% higher for men and 9% higher for women.<sup>7</sup>

Dietary factors have been shown to be an important risk factor for 56% of all deaths in Australia.<sup>8</sup> Major diet-related risk factors contributing to the overall Australian burden of disease and injury in 1996 include obesity (4.3%), inadequate consumption of fruit and vegetables (2.7%) and high serum cholesterol (2.6%). However, the net impact of total nutrition on burden of disease is likely to be much higher and was not determined in this recent study.<sup>9</sup> In 1992-3, diet related disease accounted for approximately 14% of the annual Queensland hospital budget.<sup>10</sup> Aboriginal and Torres Strait Islander people continue to suffer a much greater burden of ill health and chronic disease than other Australians, particularly for those conditions related to poor nutrition.<sup>11</sup>

Eat Well Australia, the draft National Public Health Nutrition strategy,<sup>12</sup> recognises that good food is essential for good health. The strategy deals with food supply and food security as priority issues, particularly in rural and remote areas including Aboriginal and Torres Strait Islander communities. A fundamental aim of the Australian Food and Nutrition Policy<sup>13</sup> is to "identify barriers to the availability, accessibility and cost of nutritious foods for communities with a socioeconomic or geographic disadvantage" and provide a "view to action to overcome these barriers".

In brief, the inequality in access to basic healthy food is similar to differences in health status. Increasing access to the food which people need to stay healthy is a prerequisite for improved health of remote and rural populations. This study provides a measure of access to healthy food that will enable the assessment of the current situation and provide the basis for future actions.

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<sup>6</sup> Government Statisticians Office. Index of Retail Prices in Regional Centers. Queensland: Government Statisticians Office

<sup>7</sup> Australian Institute of Health and Welfare. Australia's Health. Canberra: AIHW; 1996.

<sup>8</sup> Crowley S, Antioch K, Carter R, Waters A, Conway L, Mathers C. The cost of diet-related disease in Australia. Canberra: Australian Institute of Health and Welfare; 1992.

<sup>9</sup> Mathers C, Vos T, Stevenson C. The Burden of Disease and Injury in Australia. Canberra: Australian Institute of Health and Welfare; 1999.

<sup>10</sup> Queensland Health, Health Information Centre. Health of Queenslanders : status report. Brisbane: Queensland Health; 1996

<sup>11</sup> National Health and Medical Research Council. Nutrition in Aboriginal and Torres Strait Islander peoples : an information paper. Canberra: NHMRC; 2000.

<sup>12</sup> Commonwealth Department of Health and Aged Care. Eat Well Australia: Draft National Public Health Nutrition Strategy and National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan, Canberra: Australian Government Publishing Services; 2001, <http://www.dhs.vic.gov.au/nphp/signal>

<sup>13</sup> Commonwealth Department of Health, Housing and Community Services. Food and Nutrition Policy. Canberra: Australian Government Publishing Services; 1992

## Results from previous surveys in Queensland and other states

Food supply and access to a wide variety of good quality food is a very important issue in Australia and has been investigated in previous surveys. Studies in Queensland, Tasmania, Western Australia and the Northern Territory have shown that the cost of healthy food is higher in rural areas than in large metropolitan centres.<sup>1,2,14,15,16,17</sup> This is the first time however that the costs in Queensland have been presented in terms of remoteness/accessibility as measured by ARIA category.

Although quality has not been measured in the current 2000 HFAB survey, a recent survey in South Australia found that the quality of fresh vegetables and fruit decreased with reductions in the frequency of fresh produce deliveries.<sup>16</sup> Due to location and limited access, rural and remote stores receive deliveries from once every few days to once a fortnight. The difference in time between deliveries and subsequent quality may be related to the storage facilities available, storage and handling practices, transport and the quality of produce before transport from the wholesaler. The variety of fresh vegetables and fruit were also found to decrease with increasing remoteness, socio-economic disadvantage, number of days since a stock delivery and in smaller populations.<sup>17</sup>

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<sup>14</sup> Bowcock R. 1998 Kimberley market basket survey. Derby: Kimberley Public Health; 1999

<sup>15</sup> Price R, McComb J, Grieve H, Graham E. Surveys of food availability, quality and price in rural and remote communities of the Alice Springs and Barkley District: April & May 1998. Darwin: Northern Territory Health Services; 1998

<sup>16</sup> Beaumont S, Tasmanian food price, availability and quality survey. Hobart: Community Nutrition Unit, Tasmanian Department of Community and health Services; 1998.

<sup>17</sup> Needeniya J, Smith A, Carter P. Food supply in rural South Australia: A survey on food cost, quality and variety. Adelaide: Department of Human Services; 2000.

## Methods

### Selection of Stores

There is no database of stores throughout Queensland from which to randomly select stores, and local knowledge was required to identify stores to be included in the survey. In each ARIA category, the largest food store in the largest town(s) in each Queensland Health Service District was selected. Over sampling in the very remote ARIA category occurred because local health services requested specific locations to be included. Where possible, the stores previously surveyed in 1998 were approached to participate in 2000 to foster the development of working relationships between store-owners/managers, health workers, community health staff and public health nutritionists. About half of the stores included in the *very remote* category for this HFAB survey have been participating in specific food supply projects supported by Queensland public health nutritionists.<sup>18,19</sup> The largest and/or most popular stores were selected so that the costs reflect those paid by most of the community. A total of 95 stores were selected.

The grocery stores selected varied from large supermarket chains to small independently owned community stores. Store managers of both large chain and independent stores were invited to participate by letter. For the two major supermarket chains involved in the survey, permission was initially sought through their respective state office. Store managers and state offices were advised during which time period (April/May 2000) the survey would be conducted but not the day or time. A total of 92 stores agreed to participate.

### The Foods in the HFAB

The range and types of food included in the HFAB were selected to represent commonly available and popular foods, rather than the nutritional ideal. As the original development of the HFAB survey was in the tropical north, many food items reflect popular foods in these communities. Some foods were chosen on the basis of their specific nutritional contributions (Table 1).

Model B of the Core Foods Group<sup>20</sup> was used as the nutrient/dietary basis for HFAB. Model B represents “better choices” but not the “ideal choices” from a nutrition perspective. It contains 50% wholegrain, 50% non-wholegrain cereals, 75% fat-trimmed cooked meats, vegetables, fruit and reduced fat milk.

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<sup>18</sup> Clarey N, Groos A, Leonard D, Peel B. The components of a successful nutrition strategy for Aboriginal community stores in Queensland. Australian Tropical Health Nutrition conference. 1999 June; Brisbane, Australia.

<sup>19</sup> Stubbs C, Groos A, Riley M. Food West: Supply and consumption of fruit and vegetables in remote Queensland communities. Proceedings of the 19th National Dietitian Association of Australia conference; 2000 May 19-21; Canberra, Australia

<sup>20</sup> National Health and Medical Research Council. Recommended Dietary Intakes for use in Australia. Canberra: NHMRC; 1991.

The total amount of food in the HFAB meets the nutritional requirements of a family of six people for two weeks and provides 70% of dietary requirements<sup>21</sup> for all nutrients except energy. Energy rich 'non-core' foods (margarine, oil and sugar) were added to bring the energy content to 95% of the requirements. The family consists of:

- An adult male (over 19 years)
- An adult female (over 19 years)
- An older woman (over 61 years)
- A teenage boy (aged 14 years)
- A girl (aged 8 years)
- A boy (aged 4 years).

This family was created so that a wide range of age groups could be considered.

Two commonly available take-away foods and two tobacco items were also selected to enable comparison across ARIA categories (Table 2).

### **Conducting the Survey**

Public health nutritionists and local health staff completed the survey (Appendix 2) with assistance from store managers. Information collected in each location included:

- the prices of the food items in the Healthy Food Access Basket
- missing items
- the prices of the tobacco and take-away food items
- the packet size of the items priced
- the availability of fresh produce items (vegetables and fruit) and better nutritional choice items.
- the temperature and humidity of the fresh produce display cabinet and/or areas
- details of vegetable and fruit supplies and transport routes

### **Selection of Brands and Sizes**

Many of the items included in the HFAB are available in several different brands and sizes. The price of the cheapest brand available for the specified size was recorded. The reduced price of sale items was not recorded. If an item was not available in the specified size, the price of the next smallest size was recorded. Generic brand items (such as Black and Gold, Savings etc) were excluded, as many small independent or remote stores do not have the advantage of purchasing these brands and equal comparisons across ARIA categories was sought. Where stock was unavailable the item was recorded as missing.

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<sup>21</sup> National Health and Medical Research Council. Recommended Dietary Intakes for use in Australia. Canberra: NHMRC; 1991.

Where the store surveyed only stocked frozen meat, fresh meat prices were obtained from the local butcher. If the tobacco and take-away food items were not available from the store surveyed, prices were obtained from the nearest take-away store or vending machine.

## **Vegetable and Fruit Variety and Availability**

The range of choices available for consumers was checked against a list of the thirty most commonly available and consumed fresh vegetables and fruit (Table 3). The checklist was based on information from the Coles Fruit and Vegetable Index<sup>22</sup>, Queensland fruit and vegetable growers, apparent consumption data<sup>23</sup> and the National Nutrition Survey<sup>24</sup>.

## **Better Nutritional Choices**

Based on the Dietary Guidelines for Australians<sup>25</sup> a checklist of food items was developed in consultation with Queensland public health nutritionists to represent 'better nutritional choices' in addition to and including some of the basic food items in the HFAB (Table 4).

## **Analysing the Survey Information**

The costs of the items were converted into the price for the total amount of that food in the HFAB. Costs were added to form three baskets, for all items in the HFAB, the fruit, vegetables and legumes in the HFAB and the HFAB excluding fruit, vegetables and legumes. These different combinations of HFAB items allow a greater understanding of which types of foods are the most affected by remoteness. The HFAB costs were also divided into 6 food groups based on the core food groups:<sup>20</sup>

- breads and cereals
- fruit
- vegetables and legumes
- meat and meat alternatives
- dairy
- non-core foods (margarine, oil and sugar)

The average price for each of the baskets and food groups were then calculated for the whole state and each ARIA category. Where stores had items missing, the average price for that item in the same ARIA category was used as the default price. The mean costs of baskets and food groups for each ARIA category were analysed statistically and graphed.

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<sup>22</sup> Coles Supermarkets. Coles Fruit and Vegetable Index. Melbourne: Coles Supermarkets; 1999

<sup>23</sup> The Australian Bureau of Statistics. Apparent Consumption of Food stuffs, Australia. Canberra: ABS; 1992-1993.

<sup>24</sup> Australian Bureau of Statistics. National Nutrition Survey: Foods Eaten. Canberra: ABS; 1995

<sup>25</sup> National Health and Medical Research Council. Dietary Guidelines for Australians. Canberra: Australian Government Publishing service; 1992.

The mean number of items missing, varieties of fruit, vegetables and better nutritional choices for each ARIA category were also analysed and graphed.

To accurately compare the cost of the baskets in 1998 to 2000, some items (ham and cabbage) in the HFAB had to be excluded because they were not surveyed using similar methods in both years. Only the same pairs of stores surveyed in both 1998 and 2000 were compared.

### **Feedback of Results to Store Managers**

An individual feedback report outlining survey results was forwarded to each participating store owner and/or manager and supermarket chain head office where relevant. Feedback was designed to assist store managers in their efforts to improve food quality, availability and access. Aside from cost details, the feedback focused on fresh fruit and vegetable variety and display conditions (temperature, humidity and major quality concerns) as well as the availability of better nutritional choices. Although consumer demand is clearly an important factor, stocking the better nutritional choices requires little change in ordering, transport or display practices (eg fresh reduced fat milk versus full cream, tinned fruit in natural juice versus syrup, wholemeal versus white bread). Information on ideal storage conditions for fresh produce was also provided to store managers in an attempt to reduce shrinkage and help improve shelf life and quality (Appendix 1). Through the feedback, store managers were provided with the opportunity to assess business practices and competitiveness and were also offered additional support in improving food availability, variety and quality.

### **Changes to the HFAB Survey from the 1998 Survey**

Since the HFAB survey in 1998 several changes to the methodology and basket content have been made.

The changes are summarised below:

- The subjective vegetable and fruit quality score was excluded.
- Different product sizes were surveyed. eg. a range of tin sizes to choose from instead of only one, smaller packets of frozen vegetables, margarine, sugar, wholemeal flour, oats, rice and orange juice.
- Tinned ham was surveyed instead of fresh ham because it was found to be more widely available throughout Queensland.
- A half cabbage price was used instead of a per Kg price as cabbage is not usually sold by weight. (Surveyors were asked to record weight of cabbage)
- "Special" prices were used inconsistently in 1998 and data collection has been clarified to ensure they are not recorded for the 2000 survey.
- Local butchers could be used for meat prices if the only meat available in the store was frozen.

The sampling method used to select the stores included in the 2000 survey has also been modified to give a representative sample of stores from the five ARIA categories in Queensland with some over sampling of locations of particular interest. The ARIA classification system had not been developed in 1998 and stores for that Statewide survey were selected on the basis of convenience, interest and the availability of local staff to assist with data collection. To control for some of these differences, only the costs in those stores surveyed in both 1998 and 2000 were compared.

Inconsistencies due to changing some of the survey item product sizes however may have had an effect on the cost of the items due to economies of scale and brands available in that size. For example, the package size of rice was changed from a 5 kg to 1 kg. Purchasing a product in smaller quantities is more expensive than buying in bulk. Product size may also determine the brands available to choose from. However, every effort was made to select the most readily available options and thus try to avoid disadvantaging smaller and remote stores that stock a limited range of items.

## Results

### Costs

The cost of all baskets increased with increasing remoteness. Table 6 shows the actual cost of each of the three baskets in all five ARIA categories. Table 7 shows how much more people living in each ARIA category have to pay relative to those in the *highly accessible* ARIA category. Figure 3 highlights the increasing price for all baskets with increasing remoteness. The cost of all baskets was the most consistent between the accessible ARIA categories, with a larger difference between the three accessible and two remote ARIA categories.

**Table 6: Cost of Baskets (mean  $\pm$  se)**

Basket	QLD (\$) <i>n</i> = 92	ARIA category: highly accessible (\$) <i>n</i> = 16	ARIA category: accessible (\$) <i>n</i> = 12	ARIA category: moderately accessible (\$) <i>n</i> = 17	ARIA category: remote (\$) <i>n</i> = 14	ARIA category: very remote (\$) <i>n</i> = 33
Healthy Food Access Basket	358.32 $\pm$ 5.63	310.29 $\pm$ 2.51	323.28 $\pm$ 12.36	325.18 $\pm$ 7.83	372.11 $\pm$ 10.42	405.57 $\pm$ 7.60
Fruit, vegetables and legumes in basket	136.79 $\pm$ 2.6	119.48 $\pm$ 2.67	119.75 $\pm$ 7.48	121.96 $\pm$ 3.64	148.39 $\pm$ 5.78	154.10 $\pm$ 3.63
HFAB excluding fruit, vegetables & legumes	221.53 $\pm$ 3.32	190.81 $\pm$ 1.30	203.52 $\pm$ 5.68	203.22 $\pm$ 5.16	223.71 $\pm$ 5.25	251.48 $\pm$ 4.46

**Table 7: Relative Cost of Baskets**

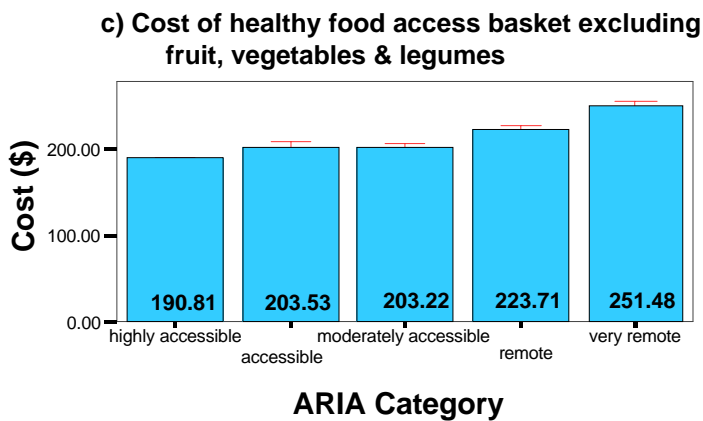
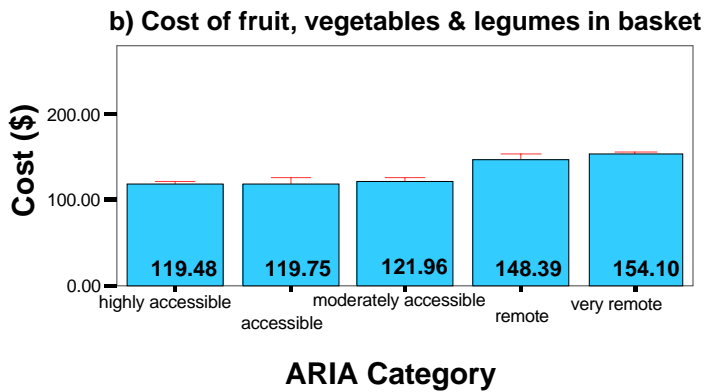
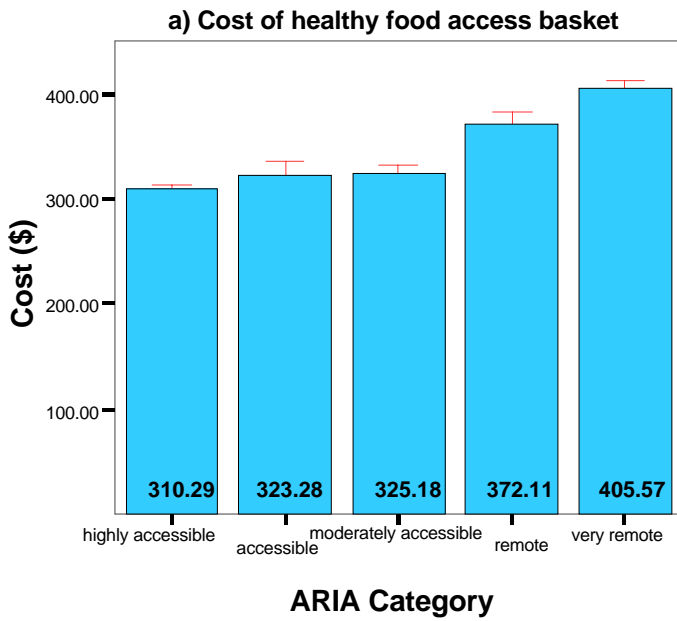
ARIA category	Healthy Food Access Basket 2000	Fruit, vegetables & legumes in basket 2000	HFAB excluding fruit, vegetables & legumes 2000
<b>highly accessible (<i>n</i>=16)</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>accessible (<i>n</i>=12)</b>	<b>104%</b>	<b>100%</b>	<b>107%</b>
<b>moderately accessible (<i>n</i>=17)</b>	<b>105%</b>	<b>102%</b>	<b>107%</b>
<b>remote (<i>n</i>=14)</b>	<b>120%</b>	<b>124%</b>	<b>117%</b>
<b>very remote (<i>n</i>=33)</b>	<b>131%</b>	<b>129%</b>	<b>132%</b>

Remoteness/accessibility is clearly an important factor in the determination of access to healthy food. ARIA explained:

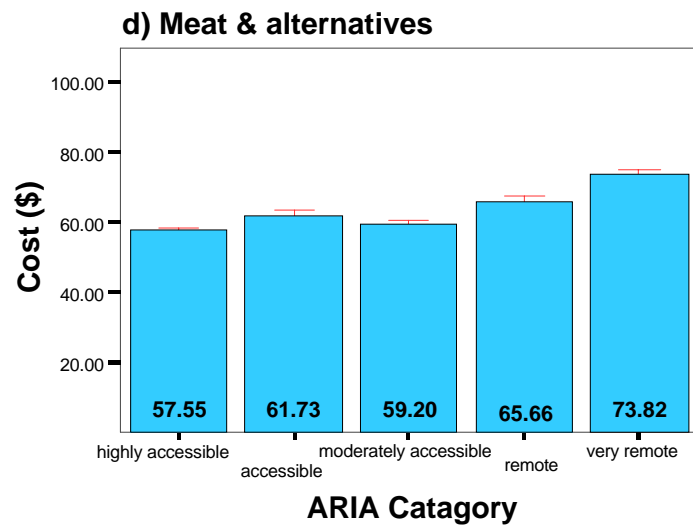
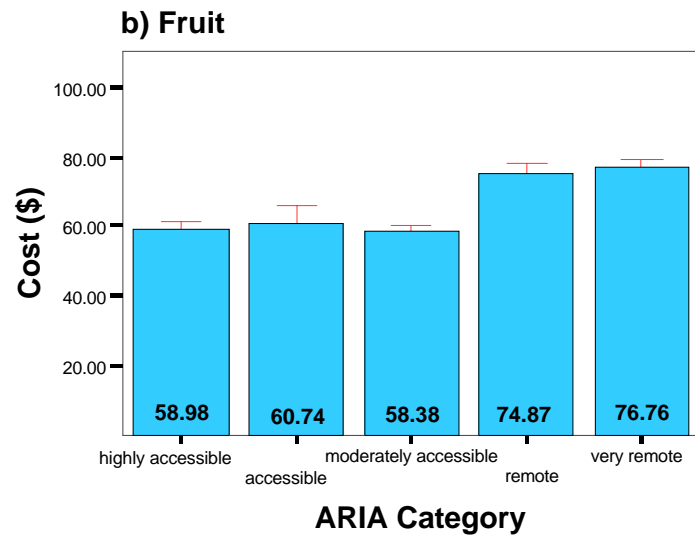
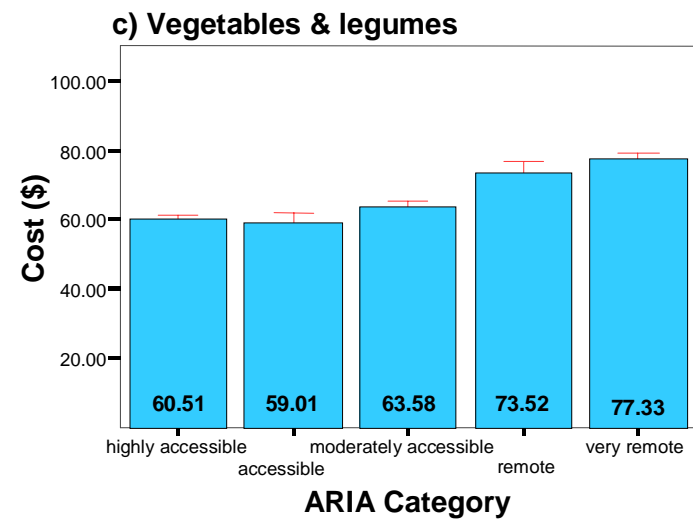
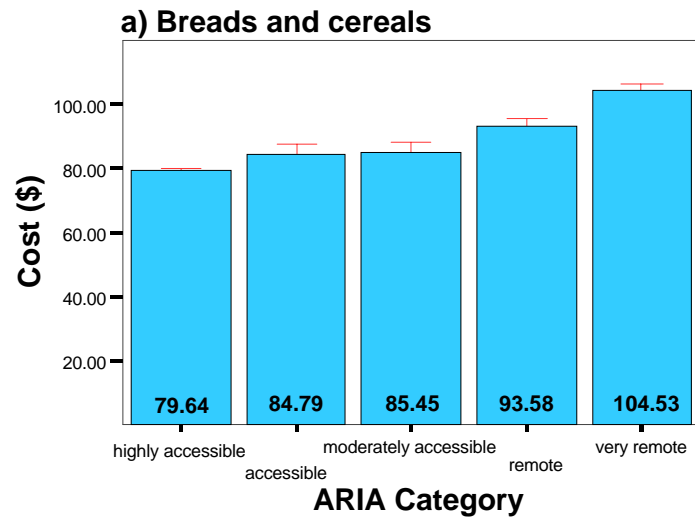
- 58% of the change in cost of the HFAB throughout the State.
- 42% of the change in cost of the fruit, vegetables and legumes in the basket
- 67% of the change in cost of the HFAB excluding fruit, vegetables and legumes.

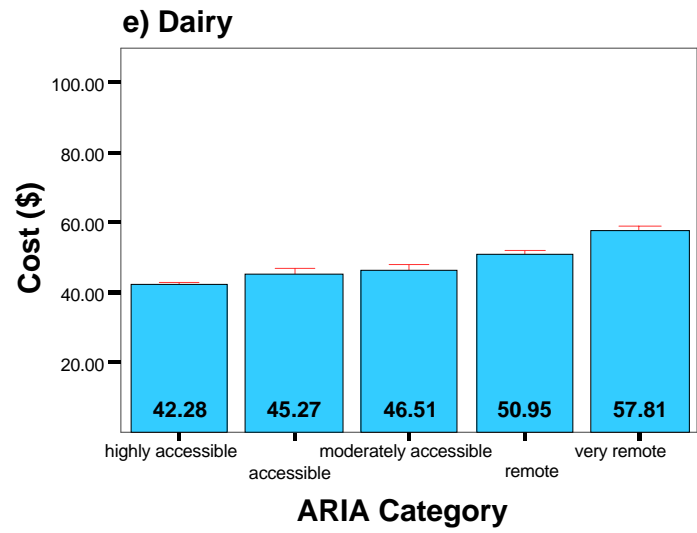
The contents of the HFAB were separated into six food groups. There was a highly significant effect of ARIA on the cost of all food groups (Table 8). The effect of increasing remoteness on the cost of the baskets can be seen in Figure 4. The meat and meat alternatives, and dairy food groups were most affected by ARIA. The cost of fruit, vegetables and legumes was relatively less affected by remoteness/accessibility (Table 9). There was greater inequity in the cost of vegetables in tropical north Queensland than other parts of the state.

**Figure 3: Cost Of Baskets in Year 2000 (Mean  $\forall$  Se)**



**Figure 4: Cost of Individual Food Groups (mean  $\pm$  se)**





**Table 8: Cost of Individual Food Groups in Year 2000 (mean √ se)**

Core food group	QLD (\$) n = 92	ARIA category: highly accessible (\$) n = 16	ARIA category: accessible (\$) n = 12	ARIA category: moderately accessible (\$) n = 17	ARIA category: remote (\$) n = 14	ARIA category: very remote (\$) n = 33
bread & cereals	92.43√1.45	79.64√0.66	84.79√2.86	85.44√2.68	93.58√2.50	104.53√2.02
fruit	67.90√1.57	58.98√2.38	60.74√5.10	58.38√2.15	74.87√3.30	76.77√2.36
vegetables & legumes	68.90√1.30	60.51√1.11	59.01√2.84	63.58√1.89	73.52√3.31	77.33√2.06
Meat and meat alternatives	65.47√0.94	57.55√0.89	61.73√1.43	59.20√1.31	65.66√1.87	73.82√1.29
dairy	50.34√0.87	42.28√0.49	45.27√1.63	46.51√1.49	50.95√1.04	57.81√1.27
non-core foods	13.29√0.25	11.34√0.10	11.73√0.23	12.07√0.40	13.53√0.47	15.31√0.41

**Table 9: Relative Cost of Individual Food Groups**

ARIA category	bread & cereals	fruit	vegetables & legumes	meat & meat alternatives	dairy	non-core foods
highly accessible (n=16)	100%	100%	100%	100%	100%	100%
accessible (n=12)	106%	103%	98%	107%	107%	103%
moderately accessible (n=17)	107%	99%	105%	103%	110%	106%
remote (n=14)	118%	127%	122%	114%	120%	119%
very remote (n=33)	131%	130%	128%	128%	137%	135%

In all ARIA categories throughout the state, the cost of the ‘non-core’ foods (sugar, cooking oil and margarine) were much lower than the ‘core’ food groups (bread and cereals, fruit, vegetables and legumes, meat and alternatives and dairy) by both weight (state mean \$0.94 per kg compared with \$3.49 per kg) and by unit of energy (state mean \$0.03 per mega joule (MJ) compared with \$0.89 per MJ).

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Non-Core foods: Poly or mono-unsaturated margarine, canola oil and white sugar.

## Tobacco and Take-away Food Items

While the price of the tobacco and take-away food items also rose with distance from main centres (Table 10), the relative cost increase was much less than that for healthy food (Table 11). Remoteness/accessibility accounted for only 28% of the change in price of these items throughout the state. Although the actual price of tobacco and take-away food items are not comparable with the HFAB baskets as they do not reflect dietary requirements in any way, these results show that people in remote areas, who choose to purchase healthy food must be prepared to pay disproportionately more than they would if they purchased less healthy items.

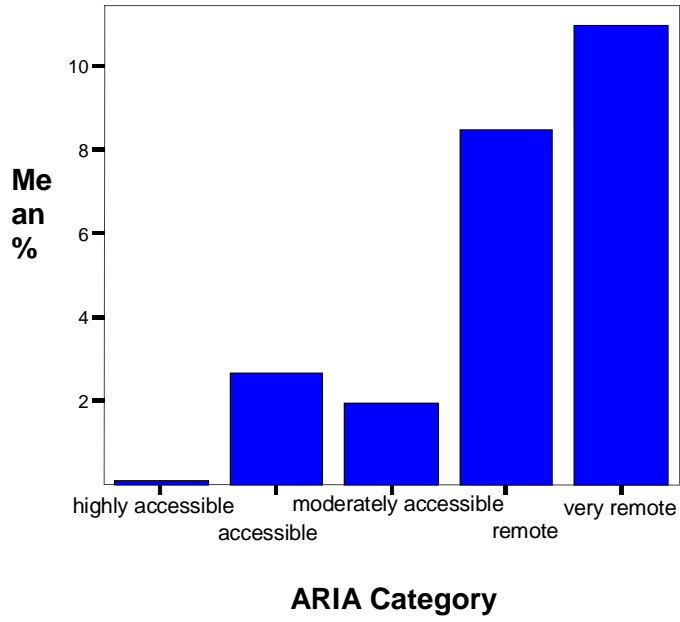
**Table 10: Cost of tobacco and take-away food items in Year 2000 (mean  $\forall$  se)**

QLD (\$) <i>n</i> = 92	ARIA Category: Highly Accessible (\$) <i>n</i> = 16	ARIA Category: Accessible (\$) <i>n</i> = 12	ARIA Category: Moderately Accessible (\$) <i>n</i> = 17	ARIA Category: Remote (\$) <i>n</i> = 14	ARIA Category: Very Remote (\$) <i>n</i> = 33
25.74 $\forall$ 0.25	24.22 $\forall$ 0.21	24.47 $\forall$ 0.40	24.58 $\forall$ 0.50	26.36 $\forall$ 0.44	27.28 $\forall$ 0.48

**Table 11: Relative cost of tobacco & take-away food items**

ARIA Category	Tobacco & Take-away Food Items 2000	Healthy Food Access Basket 2000
highly accessible ( <i>n</i> =16)	100%	100%
accessible ( <i>n</i> =12)	101%	104%
moderately accessible ( <i>n</i> =17)	101%	105%
remote ( <i>n</i> =14)	108%	120%
very remote ( <i>n</i> =33)	113%	131%

**Figure 5: Percentage of missing HFAB items per store**



## Availability

The number of missing items in each store tended to increase with remoteness, with 12% of the HFAB food items missing in *very remote* stores (Figure 5). The ten most frequently missing items in all stores included four items from the better nutritional choices checklist (Table 12).

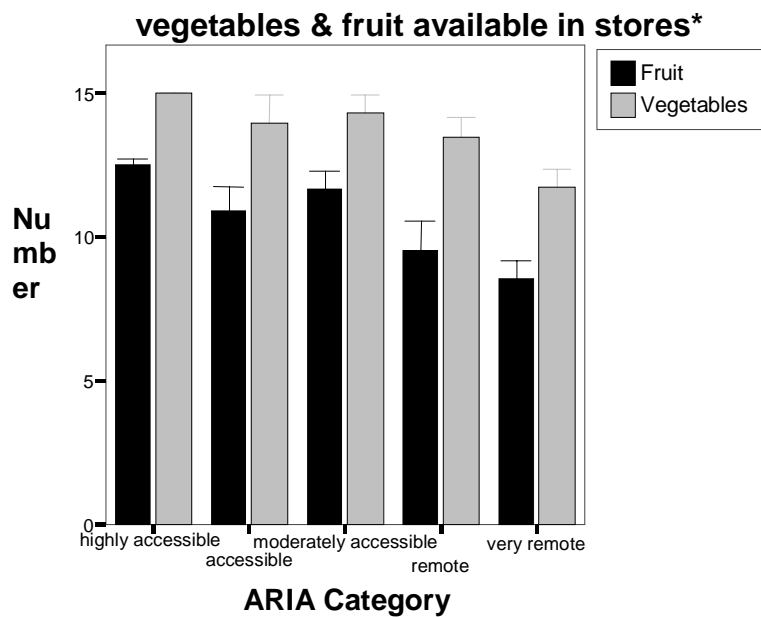
The availability of fresh vegetables and fruit is presented as a score (rounded to whole numbers) out of 15 of the most commonly available and consumed varieties (Figure 6). Significantly more varieties of vegetables and fruit were available in the *highly accessible* than *very remote* ARIA categories. A wider variety of vegetables tended to be available than fruit. Some of the varieties of fruit surveyed however, such as stone fruit and grapes, are seasonal and this may explain the low number of varieties of fruit available in all ARIA categories. Despite this there was still a definite trend for the number of varieties available for purchase to decrease in *remote* and *very remote* ARIA categories.

The stores in the *very remote* ARIA category had significantly fewer better nutritional choices available than stores in the *highly accessible* and *moderately accessible* ARIA categories (Figure 7).

**Table 12: The most frequently missing HFAB items in 2000**

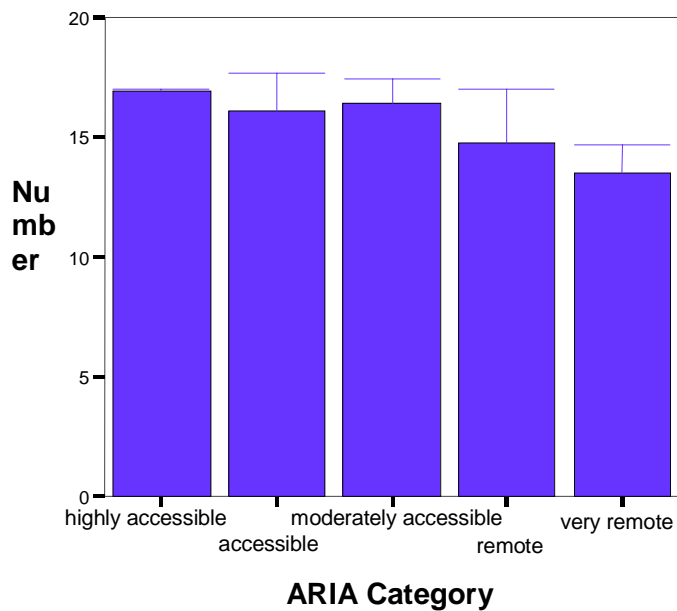
- wholemeal flour
- powdered skim milk
- ham, tinned
- orange juice 100%, no added sugar
- wholemeal bread
- mince (beef), fresh or frozen
- tinned fruit salad in natural juice
- cabbage
- bananas
- fresh reduced fat milk

**Figure 6. Variety of most fresh vegetables & fruit available in stores**



\* Out of a maximum score of 15 (see vegetable and fruit variety checklist in methods)

**Figure 7. Availability of better nutritional choices in stores\***

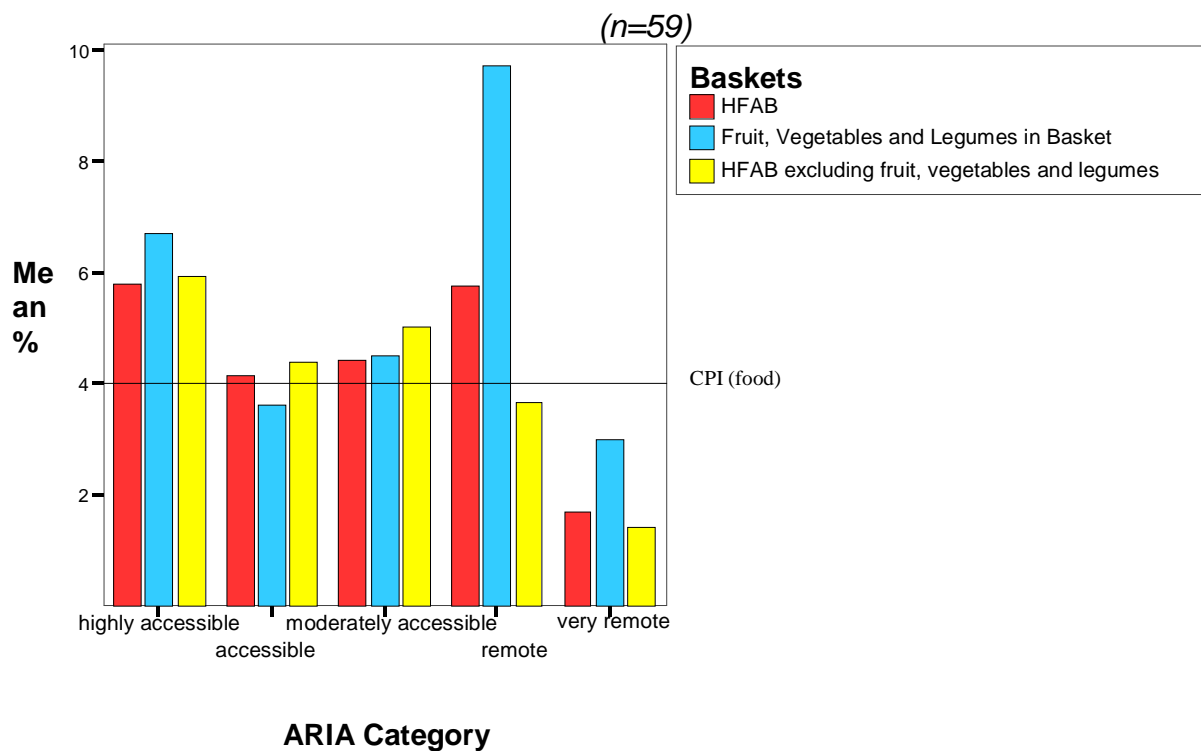


\* Out of a maximum of 17 (see better nutritional choices checklist in methods)

## Percentage change in cost of baskets from 1998 to 2000

The change in price of food baskets from 1998 to 2000 was investigated by comparison of costs in stores surveyed in both years and the Consumer Price Index (CPI)<sup>26</sup> increase for food over the same period (Figure 8). Although the price increased for all baskets in all five ARIA categories, prices increased least in percentage terms in the *very remote* ARIA category and increased less than the CPI for food in this category. The highest mean price increase was for the fruit, vegetables and legumes baskets in the *remote* ARIA category. The mean percent increase for the whole state was just below the CPI with the cost of the HFAB increasing from \$332.04 to \$343.34 overall.

**Figure 8. Percentage of change in cost of baskets from 1998 to 2000 in paired stores**



\* Cabbage and ham are excluded (see methods)

## Discussion

### The effect of ARIA on the cost and variety of food available in Queensland

The results of the survey confirm that the cost of the HFAB and combined food items rises considerably with increasing remoteness, but this is the first time that results have been expressed in terms of the effects of ARIA category. The greatest price increases are seen between the three accessible and two remote ARIA categories.

Although the actual price of tobacco and take-away food items are not comparable with the HFAB baskets, the relative cost indicates that a much smaller price disadvantage exists in purchasing these items than basic and healthy foods in remote ARIA categories in Queensland. The lower price differential of the tobacco and take-away items may be due to the fact that some of them are less likely to be damaged during transport. There may be subsidised freight costs on these items to the stores and frequent discounting on large orders, and incentives such as the provision of refrigerators or drink display/vending cabinets. These items are also popular “loss leaders” ie. the price of tobacco and take-away food items may be kept low to attract customers into the store to potentially buy other stock. It is relevant to note that in some *very remote* stores, profits from the sale of tobacco and take-away food items have been used to cross-subsidise the costs of vegetables and fruit to enable greater access to fresh produce.<sup>27</sup>

An adequate range of good quality, safe food must be available at all times in order to ensure food security. The high rates of missing items and limited variety of fresh produce and better nutritional choices in stores in *remote* and *very remote* ARIA categories compromises food security and health in these communities. The high cost and limited availability of some healthy items may also cause people to regard them as luxury foods, only to be purchased on special occasions or as treats.

In Queensland, food supply and nutrition interventions have tended to focus on *very remote* communities, in particular aiming to increase the availability and reduce the cost of vegetables and fruit<sup>28, 29</sup> Although inequality in the cost of vegetables and fruit still exists, there are greater differences in the mean cost of other basic foods such as meat and alternatives, and dairy foods in remote areas. Comparison of the results of HFAB surveys in 1998 and 2000 revealed that prices in *very remote* stores have increased less than the CPI for food over the same period. This may be due to the effect of increased media and government focus on higher living costs in very remote areas and/or the development and implementation of store nutrition policies and in store healthy food promotion.

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<sup>27</sup> Lee A, Hobson V, Katarski L. A review of the nutrition policy of the Arnhem Land Progress Association. Aust N Z J Public Health 1996;20:538-544

<sup>28</sup> Leonard D, Beilin R, Moran M. Which way Kaikai blo umi? Food and Nutrition in the Torres Strait. Aust J of Public Health. 1995;19:589-95

<sup>29</sup> Stubbs G, Groos A, Riley M. Food West: Supply and consumption of fruit and vegetables in remote Queensland communities. Proceeding of the 19<sup>th</sup> National Dietitian Association of Australia conference; 2000 May 19-21; Canberra, Australia

Retail prices may also have already been so high in *very remote* locations, that store managers may have been reluctant to increase prices further and risk decreased sales; lower profit margins may have been accepted to absorb wholesale price increases in the short term. Due to the pre-existing level of very high prices a similar dollar increase would also reflect as a smaller proportional increase in the remote locations. In comparison, prices in *remote* stores actually increased more than the CPI, particularly for fruits and vegetables. Although the reasons for this are not clear, this does suggest that more attention may need to be focused toward stores in the *remote* ARIA category as well as *very remote* locations of particular interest.

Increased availability of nutritious foods together with health promotion within a community has previously demonstrated increased turnover of vegetables, fruit and other nutritionally preferred foods in remote stores, increasing both store profits, access to basic healthy foods and the health status of indigenous communities.<sup>30,31</sup> The important role of store managers in affecting food supply in rural and remote areas has also been demonstrated and is now widely acknowledged.<sup>32</sup>

### **Structural factors contributing to high prices in rural and remote stores**

Although ARIA has proved to be a very important factor in the cost of the HFAB, it only partially explains the inequality seen in these results – there are potentially many other factors. The high prices of food in remote areas reflect the high overheads of operating a small business selling perishable products, which have to be transported long distances without the economies of scale associated with large population centres. Freight costs have been found to contribute 3-20% of the cost of goods in central and southern rural and remote areas in Queensland,<sup>33</sup> although they are often assumed to be more, if not the most important. Contribution of freight costs in northern tropical areas has yet to be determined.

Store managers and owners in remote areas carry high overheads compared to main centre stores,<sup>34 35</sup> because:

- It is necessary to build and maintain storage facilities for large quantities of goods. It is particularly expensive to install, maintain and repair required freezers and chiller capacity.

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<sup>30</sup> Lee A, Bonson A, Yarmirr D, O'Dea K, Mathews J. Sustainability of a successful health and nutrition program in a remote Aboriginal community. *Med J Aust* 1995;162:632-635.

<sup>31</sup> Lee A, Yarmirr D, O'Dea K, Mathews J. Survival tucker: Improved diet and health indicators in an Aboriginal community. *Aust J Public Health* 1994;18:277-285.

<sup>32</sup> Lee, A.J., Bonson, APV., and Powers, JR. (1996). The effect of store managers on Aboriginal dietary intake in remote areas. *Aust NZ J Publ Health* 20:212-215.

<sup>33</sup> Hughes R, Beck K, Ambrosini G, Marks G. *The Queensland Food System: Description of Distribution, Marketing and Access*. Brisbane: The University of Queensland and Queensland Health; 1997.

<sup>34</sup> McMillan S. Food and nutrition policy issues in remote Aboriginal communities: lessons from Arnhem Land. *Aust J Public Health* 1991;15:281-85.

<sup>35</sup> Peel, B. Department of Aboriginal and Torres Straight Islander Policy and Development (personal communication).

- Orders must be placed in advance so it is not possible to 'fine-tune' quantities according to turnover as is possible where daily ordering and delivery occurs. This incurs higher losses due to wastage.
- It is difficult to return damaged, unwanted or poor quality stock.
- Delivery and wholesale costs must be paid in advance, which can mean committing large amounts of capital with no return for weeks or months, particularly when the wet season limits road access,
- Freight costs can be particularly high during the wet season when it is often necessary to obtain perishables by air.
- The type of transport available and the distances travelled are factors that impact on costs. Barge service is usually more expensive than road transport. Air Freight is more expensive again.
- The freighting of freezer/chiller products and other perishables requires temperature control, which raises the cost of transport for these products, compared to dry groceries.
- The additional costs of preparing goods for freighting off-road, by sea and in multiple handling situations, by double shrink wrapping and cross strapping the pallet, is necessary to minimise damage in transit.

These points help illustrate that the situation will not be addressed by 'blaming' store managers and owners, the vast majority of whom are committed to providing an excellent service and do so despite many obstacles.

### **Potential Impact of a Goods and Services Tax**

Although fresh foods do not attract GST in theory, there has been speculation that some rural and remote stores with only basic accountancy systems may not have the capacity in practice to implement administrative processes that differentiate between items which do and do not attract GST. There will also be tax implications with respect to freight, especially where communities rely on barge and/or airfreight, rather than road transport, and store overheads such as maintenance. Therefore there is some concern that additional costs related to implementation of the GST may be transferred inadvertently to consumers. The relatively high cost of basic healthy food is already an issue for people on low incomes, especially those living in remote and rural areas. Funding for a post-GST HFAB survey to be conducted in April/May 2001 has been secured. In light of previous trends and CPI data, pre and post-GST comparison of HFAB data from the same season should enable a better understanding of any pricing changes in foods throughout the State.

## Conclusion

Remoteness and accessibility, as defined by ARIA category, are critical factors in the determination of access to basic food items and healthy food choices. This 2000 HFAB study has confirmed that the cost of basic food is significantly higher in rural and remote communities than in more accessible metropolitan and regional centres. There is structural systematic disadvantage to people in rural and remote areas in Queensland in respect to access to affordable, healthy food. There may be some capacity to improve the food supply within current constraints in rural and remote areas. However, the food supply and delivery system is structured to favour metropolitan areas. If we are to achieve equity in health status, we need to achieve equity in food supply. Although such inequity is well known, this is the first study to describe price differentials by ARIA category, to investigate differences in the types of foods contributing to the differential and to monitor changes over time. Over the last two years, relative improvements in retail price have been seen in stores in the *very remote* ARIA category. However for *very remote* locations, the overall HFAB cost remains on average 31% higher than in stores in the *highly accessible* ARIA category (with one location recording a price that was 56% higher). Aside from the price differential, concerning findings are the number of basic food items which may not be available for purchase at any given time (approximately 12% HFAB food items in *very remote* and 9% in *remote* stores). In addition, stores in these locations had the lowest variety of fresh vegetables and fruit and a limited range of better nutritional choices available at the time of the survey.

Regular food supply monitoring can contribute to surveillance systems and advocacy efforts. Healthy food is essential to good health and access to healthy food is often taken for granted by those who live in cities or large towns, but is not always easy to achieve in remote locations. There is now increasing recognition of the challenges faced by small retail outlets selling perishable food products in small or isolated communities. Most of the factors that determine the food supply at the end point of purchase in any one location lie outside the health sector and require commitment and partnerships across a range of sectors to address the identified problems. However, food security remains a key concern for public health nutrition in terms of the capacity of individuals, families and communities to secure a diet consistent with dietary guidelines and recommendations. Where there are barriers to making healthy food choices it is the role of the health sector to identify these and raise awareness to stimulate appropriate action. This may include policy initiatives to target particularly vulnerable areas or population groups, initiatives and interventions in relation to specific foods or types of retail outlets, and other developments addressing various levels of the food supply chain and entire food system.

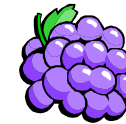
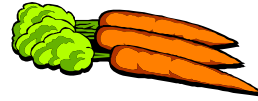
## Recommendations

1. This study confirms that disparity exists in access to basic healthy food in terms of cost and availability, between metropolitan areas and remote and rural areas in Queensland. Disparity in food cost underpins disparity in health status. Addressing this issue requires the collaboration of several stakeholders including government and those who play a role in food production, distribution and retailing. It is recommended that Public Health Services develop a communication strategy to target key stakeholders and promote further action.
2. Experience has demonstrated that an improved supply of healthy food will lead to improved sales. Strategies to improve storage and display conditions for fresh produce in remote stores should be identified and implemented. These strategies could include support to upgrade infrastructure as well as the skills and knowledge of staff. This process could be informed by the experience of the Queensland Department of Aboriginal and Torres Strait Islander Policy and Development Retail Stores Unit. The fresh industry representative groups (eg. Queensland Fruit and Vegetable Growers, Australian Horticultural Industry) and retailer organisations may be interested in participating in such an initiative.
3. Initiatives to improve access to healthy food should be matched by strategies to promote healthy food choices in remote and rural areas, to ensure that improved supply is met by consumer demand. Queensland Health has the opportunity to lead in this respect by participation in the planned national promotion of vegetables and fruit, which will support food supply and promotion initiatives. In addition, community level programs and health promotion initiatives such as Health Promoting Schools, Lighten Up to a healthy lifestyle, Healthy Weight Program and FoodCent\$ can contribute to food selection skills and encourage preference for healthy food.
4. Food supply monitoring can provide the basis for advocacy by assisting in highlighting disadvantaged areas to government and intersectoral partners who have the ability to influence the food supply. Ongoing monitoring of access to basic healthy food should occur at a national level and also continue statewide within Queensland.

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## Appendices

### Appendix 1: “How to Get the Most out of Your Vegetables and Fruit”



#### How to Get the Most out of Your Vegetables and Fruit

All fresh vegetables and fruit are living organisms that require food and water for the survival and maintenance of their nutritional benefits. From the time of harvest, fruit and vegetables are forced to use their own stored reserves. This process of using stored energy to survive is called respiration. The speed at which respiration occurs is the most important factor determining the rate of fresh produce deterioration.

Temperature greatly affects the respiration rates of fresh produce. If fresh produce is exposed to high temperatures, even only for a short time, the rate of respiration increases and leads to quicker deterioration and loss of quality. Keeping fresh produce at optimal temperatures slows down the growth of any infectious organisms that may be present and prevents early ripening. Along with temperature, humidity controls the moisture content of fresh products. Maintaining the moisture content keeps your vegetables and fruit juicy, crisp and crunchy. For products sold by weight, greater moisture retention means they will maintain their value from the wholesaler to the customer. When the optimum temperature and humidity is not maintained it causes stock to dehydrate and become wilted, shorten their shelf life and their visual appeal.

The following table overleaf gives an indication of the storage life and the recommended storage temperatures for common fruit and vegetables. This list can be used to help store fresh stock at the most appropriate temperature and humidity to sustain the life, quality and attractiveness of the fresh product. This should help reduce wastage and promote sales

Produce Type	Max Storage Life
To be stored at room temperature (25°C) in a dry display ♦	
Garlic	Up to 1 month
Onion	30 – 100 days
To be stored at room temperature (25°C) in semi-moist display ▲	
Pineapple	Ripe 1-2 weeks
To be stored in semi-moist refrigeration (0-4°C) ▲	
Apple	1-2 months
Mandarin	14-28 days
To be stored in moist refrigeration (0-4°C) ♣	
Apricot	7-14 days
Broccoli	10-14 days
Brussels sprouts	3-5 weeks
Cabbage	21-150 days
Carrot	28-48 days
Cauliflower	20-30 days
Grapes	30-180 days
Lettuce	7-10 days
Mushroom	5 days
Orange	21-84 days
Peach	14-28 days
Plum	14-28 days
Rockmelon	5-14 days
Spinach	10-14 days
Strawberries	5-7 days
Sweet corn	4-6 days

Produce Type	Max Storage Life
To be Stored at < 15°C in dry display ♦	
Ginger	6 months
To be stored at < 15°C in semi-moist display ▲	
Avocado	Green 2-4 weeks Ripe 8-10 days (0-4 °C)
Banana	Green 7-28 days Ripe 2-4 days
Lemon	4 weeks
Potato	56-140 days
Pumpkin	2-4 months
Sweet potato	4-6 months
To be stored at <15°C in moist display ♣	
Beans	7-10 days
Squash	7-10 days
Capsicum	14-21 days
Cucumber	10-14 days
Mango	14-25 days
Paw Paw	Ripe 7-21 days
Tomato	10-14 days
Watermelon	14-21 days
Zucchini	7-14 days

## Appendix 2: HFAB Instructions and Survey Form April/May 2000

### Cost Section of the Survey

- We are looking for the CHEAPEST product in the size closest to that on the sheet.
- Do not include specials unless the normal price is the cheapest. Record the **normal price** for the survey.
- Do not include generic brands unless they are the only brand available for that product. Generic brands include: Black and Gold, No Frills, Farmland, Home Brand, etc
- Choose the product in the stated size or size range, if there is none look for the next smaller size and find the cheapest brand in that size. If there is no smaller size go for the nearest larger sized product. **The tin size ranges are inclusive, chose the cheapest within the range and record the actual weight of the tin.**
- If the store usually has the product and there is a price on the shelf but no stock, record the price but put N/A in the comments section.
- If fruit and vegetables are priced by different sizes or piece, make sure you record the size in the 'size found' column, eg. quarter, half, piece. **For cabbage, look for the cost per half cabbage but if this is not how it is priced in the store, a whole cabbage or per kilo price is fine provided you make a note on the form. If possible also record a weight for the items sold by piece only.**
- If the store only sells frozen meat and there is a butcher shop in the community, get the price of fresh meat from the butcher shop.

### Fresh Fruit and Vegetable Variety and Availability

- We are interested in the range of choices available for consumers and potential dietary diversity.
- Consider only the fruit and vegetables **on display**, NOT what may be in the store room.
- Go through the list given and tick if there is stock available on display.
- The list is not exhaustive and some large stores will have even more variety, however our list does include all of the core items that people buy a lot of (Cabbages, Carrots, Onions, Potatoes, Pumpkin, Lettuce, Tomatoes, Oranges, Apples, Bananas) and some other choices that might be seasonal or show greater diversity of diet (Sweet potatoes, Cauliflower, Broccoli, Beans, Capsicum, Mushrooms, Stone fruits, Grapes, Strawberries etc).

### **Fresh Fruit and Vegetable Quality**

- We are interested in the fruit and vegetables **on display** and **any major quality problems**. If there is one mouldy snow pea or strawberry this would not rate a yes as it is a common problem in all stores.
- Keep in mind the quality scoring system we used during the 1998 survey:

**Excellent:** **NONE** of the characteristics listed below are present

**Aged:** Softness, discolouration, wilting, limpness, skin wrinkling (generally fruit still edible)

**Bruised:** Bruising, breakage of skin (only portions of fruit still edible)

**Mouldy:** Mould present, rotting (fruit not edible)

### **Circle No if any of the following are present:**

- There are several pieces of fruit or vegetables that fall into the mouldy or rotting category. *eg. about a third of the potatoes on display are mouldy or green, half a dozen oranges were mouldy, about half of the beans were discoloured and rotting at the ends.*
- Most of the available items are seriously bruised. *eg. all the apples were bruised and aged.*
- There are several varieties of fruit and vegetables that are not fresh and fall into the aged category. *eg. all the silverbeet is seriously wilted, broccoli looks yellowish and is limp, bananas are all spotty and very ripe, most of the celery and carrots are limp.*

**\*Most of the questions on this page will have to be answered by the store manager \***

Name of person conducting the survey	
Date	
Location	

**STORE INFORMATION**

Name of store	
Address	
Phone number	
Name of store manager	
Who owns the store? (eg. Woolworths, DATSIPD, privately owned)	
Is the store part of a larger retailing group?	

**FRUIT AND VEGETABLE SUPPLY**

Under normal circumstances, how long is the transit time from the wholesaler to your store?	_____ hours (specify number of hours ) _____ days (specify number of days) _____ weeks (specify number of weeks) Don't know
What type of transport is normally used to deliver fruit and vegetables to the community?	Unsealed-Road   Sealed-Road   Air   Sea   Rail Other _____ (please circle all types used) Don't know Transit Route _____ _____
<b>Days/Hours</b> since last supply of fruit and vegetables	_____ days/hours (please circle) Don't know
<b>Frequency</b> of fruit and vegetable delivery	__ Daily   __ Weekly   __ Fortnightly   __ Monthly Other _____ (please circle or specify frequency in space provided) Don't know

**Store Location:** \_\_\_\_\_

① Place the temperature and humidity gauge in the refrigerated and unrefrigerated display areas for fresh fruit and vegetables. If there is more than one temperature zone record both (eg, open and closed refrigerated areas)

It will take at least 15 minutes for the reading to stabilise!

ITEM	SIZE TO LOOK FOR	SIZE FOUND	COST	COMMENTS (Optional)
<b>BREADS, CEREALS AND LEGUMES</b>				
White Bread (1 loaf)	680g			
Wholemeal Bread (1 loaf)	680g			
Weetbix (if not available, look for Vitabrits).	750g			
Traditional/Rolled Oats	1kg			
Sao Biscuits	250g			
White Flour, plain	2kg			
Wholemeal Flour, plain	1kg			
Rice, white	1kg			Any white rice can be used
Instant Noodles (square pack)	85g			
Tinned Spaghetti	420-425g			
Baked Beans	420-425g			
<b>FRUIT</b>				
Apples	Per kg			
Oranges	Per kg			
Bananas	Per kg			
Tinned fruit salad, in natural juice	400-450g			
Orange Juice 100%, no added sugar Non-refrigerated	1 Litre			
<b>VEGETABLES</b>				
Onion	1 kg			
Potato	1 kg			loose potatoes only
Pumpkin	1 kg			
Cabbage	Per half cabbage	_____ g		Please include weight of cabbage
Tomato	1 kg			
Lettuce	Per lettuce			
Carrot	1 kg			
Tinned Peas	420-440g			Do not include "processed" Tinned peas
Tinned Beetroot	425-450g			
Frozen Mixed Vegetables (peas, carrot, corn mix. If not available choose peas)	500g			

Store Location \_\_\_\_\_

✓ If the store only stocks frozen meat and there is a butcher in the community, please get the price of fresh meat from the butcher and record their information. If there is no butcher and you use the original store for prices in this section, write "as above".

**Meat Data obtained from:** Name of store \_\_\_\_\_

Address: \_\_\_\_\_

Phone No: \_\_\_\_\_ Store Manager: \_\_\_\_\_

ITEM	SIZE TO LOOK FOR	SIZE FOUND	COST	COMMENTS (optional)
<b>MEAT &amp; ALTERNATIVES</b>				
Ham, tinned	450g			
Tinned Corn Beef	340g			
Tinned Meat & Vegetables/onion	400-425g			
Mince (beef), fresh or frozen	1 kg			Only include "Bulk Meat" prices if it is the only type available
Rump Steak , fresh or frozen	1 kg			Only include "Bulk Meat" prices if it is the only type available
Sausages	1 kg			Only include "Bulk Meat" prices if it is the only type available
Frozen Chicken (if not available, look for chicken pieces, 1kg).	Size 11			
Smoked Oysters	85-105g			
Eggs, large (1 dozen), min 50g	660g			
<b>DAIRY</b>				
Fresh Full Cream Milk	2 Litres			
Fresh Reduced Fat Milk (Trim – 1.4% Fat)	2 Litres			
Cheese, cheddar type	500g			
Powdered Reduced Fat Milk	1 kg			
Powdered Full Cream Milk	1 kg			
Longlife (UHT) Milk, full cream	1 Litre			
<b>NON-CORE FOODS</b>				
Margarine (any with poly or monounsaturated on packaging)	500g			
Oil , Canola only	750ml			
Sugar, white	2 kg			
<b>OTHER</b>				
Meat Pie ( <b>HOT only</b> )	190g			
Can of Coke ( <b>COLD only</b> )	375ml			
Tobacco (1 wallet)	50g			
Cigarettes (Winfield Red 25s)	1 pack of 25			

**Did you obtain the prices from the shelves?** Yes No

**Did you need to ask someone from the store about any prices?** Yes No

**Are all the prices in the store adequately displayed?** Yes No Unsure

(If you think that it is very easy for the shopper to find the price of all the items in the store, then the answer is yes).

**Store Location:** \_\_\_\_\_

**FRESH FRUIT VARIETY AND AVAILABILITY**

<b>FRUIT</b>	<b>Available? (tick or cross)</b>	<b>VEGETABLES</b>	<b>Available? (tick or cross)</b>
Apple		Potato	
Banana		Tomato	
Rockmelon		Onion	
Peach		Lettuce	
Pear		Pumpkin	
Pineapple		Cabbage	
Grape		Cauliflower	
Strawberry		Green Beans	
Orange		Carrot	
Watermelon		Broccoli	
Other stone fruit		Sweet potato	
Other citrus fruit		Capsicum	
Mango		Mushroom	
Pawpaw		Sweet corn	
Kiwi fruit		Cucumber	

**FRESH FRUIT AND VEGETABLE QUALITY**

**Q.** Do you think that most of the displayed fresh fruit and vegetables are fit for sale?

Yes            No            Don't Know

**If No,** Briefly describe the problem with the fruit and/or vegetable:

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**Store Location:** \_\_\_\_\_

<p>Record the temperature and humidity of the <b>UNrefrigerated</b> fruit and vegetables display area</p> <p>Temperature _____ ° C  Humidity _____ %</p>
<p>Record the temperature and humidity of the <b>open shelved REFRIGERATED</b> fruit and vegetable display area</p> <p>Temperature _____ ° C  Humidity _____ %</p>
<p>Record the temperature and humidity of the <b>closed REFRIGERATED</b> fruit and vegetable display area (eg. drinks fridge)</p> <p>Temperature _____ ° C  Humidity _____ %</p>

**Note: If the store does not have an open or closed refrigerated display area, make a note on the form that the temperature and humidity reading is not applicable.**

**Store Location:** \_\_\_\_\_