

The increasing cost of healthy food

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The increasing cost of food is a topical issue in Australia. Increasing costs of healthy food can affect food security, particularly among the most vulnerable groups within society, and can contribute to the onset of diet-related disease.¹ However, little information is collected on the increasing costs of healthy food throughout Australia. To better understand the magnitude and nature of increasing costs of healthy foods in Queensland, the state Government has been monitoring the cost of healthy foods since 1998.

The 2006 Healthy Food Access Basket (HFAB) survey is the fifth state-wide cross-sectional survey of the cost and availability of a standard basket of basic healthy food items conducted since 1998, but the first to apply a sampling framework based on randomisation of towns throughout the state. Eighty-nine stores in the five remoteness categories across Queensland were surveyed during May 2006. This paper presents the cost comparison by remoteness category in 78 stores in randomised towns for 2006 and cost comparisons over time for analogous stores.

Methods

Sample selection and data collection

Unlike the previous HFAB surveys, towns for the 2006 HFAB were randomly selected based on their population size and the largest store in each town identified by local retailer knowledge was then selected. The Urban Centre/ Locality list produced by the Australian Bureau of Statistics (ABS) was used to obtain a distribution of where people live. Towns with a population less than 200 people are excluded from this list. In this paper all urban centres and localities are referred to as towns. The towns were stratified by remoteness category as defined by the ABS Remoteness Structure² using the updated Accessibility/Remoteness Index of Australia categories (ARIA+)³ for populated localities (Figure 1). ARIA+ defines localities in terms of access to services as well as remoteness of geographical location. The remoteness categories include major cities, inner regional, outer regional, remote and very remote. The very remote category was further split into three strata – towns less than 2,000 km from Brisbane, towns more

Abstract

Objective: To assess changes in the cost and availability of a standard basket of healthy food items (the Healthy Food Access Basket [HFAB]) in Queensland.

Methods: Analysis of five cross-sectional surveys (1998, 2000, 2001, 2004 and 2006) describes changes over time. Eighty-nine stores in five remoteness categories were surveyed during May 2006. For the first time a sampling framework based on randomisation of towns throughout the state was applied and the survey was conducted by Queensland Treasury.

Results: Compared with the costs in major cities, in 2006 the mean cost of the HFAB was \$107.81 (24.2%) higher in very remote stores in Queensland, but \$145.57 (32.6%) higher in stores more than 2,000 kilometres from Brisbane. Over six years the cost of the HFAB has increased by around 50% (\$148.87) across Queensland and, where data was available, by more than the cost of less healthy alternatives. The Consumer Price Index for food in Brisbane increased by 32.5% over the same period.

Conclusions and Implications:

Australians, no matter where they live, need access to affordable, healthy food. Issues of food security in the face of rising food costs are of concern particularly in the current global economic downturn. There is an urgent need to nationally monitor, but also sustainably address the factors affecting the price of healthy foods, particularly for vulnerable groups who suffer a disproportionate burden of poor health.

Key words: food supply, inequalities, consumer price index, cost of living, economics, Australian Aborigines.

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than 2,000 km from Brisbane and islands. The number of islands selected was limited to contain survey costs. The sample sizes were chosen so that differences of 10% of the cost of the basket of food between remoteness categories could be detected at $p < 0.05$ and 90% power. A total of 78 towns were selected, including some towns sampled in previous HFAB surveys.

In 2006, the HFAB survey was conducted by the Office of Economic and Statistical Research in Queensland Treasury during the *Spatial Price Index* (SPI) survey.⁴ To improve the sample size for time-series analysis, the HFAB survey was conducted in a further 11 stores participating in the SPI survey, which had previously participated in HFAB surveys. This resulted in a total sample of 89 towns surveyed during 2006 with a 100% response rate.

Stores were not advised of the specific date and time of surveys so that results reflect usual availability and cost for consumers. The survey is conducted at the same time each year in an endeavour to control for seasonality.

The range and types of foods included in the HFAB represent commonly available and popular foods (Table 1). The foods selected provide 70% of the nutritional requirements and 95% of the estimated energy requirements of a hypothetical family of six people for a two-week period.⁵ For cost comparison purposes, an additional six popular 'less nutritious' food items from the 'extra' food category of the Australian Guide to Healthy Eating (cream biscuits, plain milk chocolate, ice-cream, a packet of potato crisps, a soft drink and a meat pie) and two tobacco items were

Figure 1: Location and ABS remoteness categories (ARIA+) for the 89 stores in the 2006 HFAB survey.

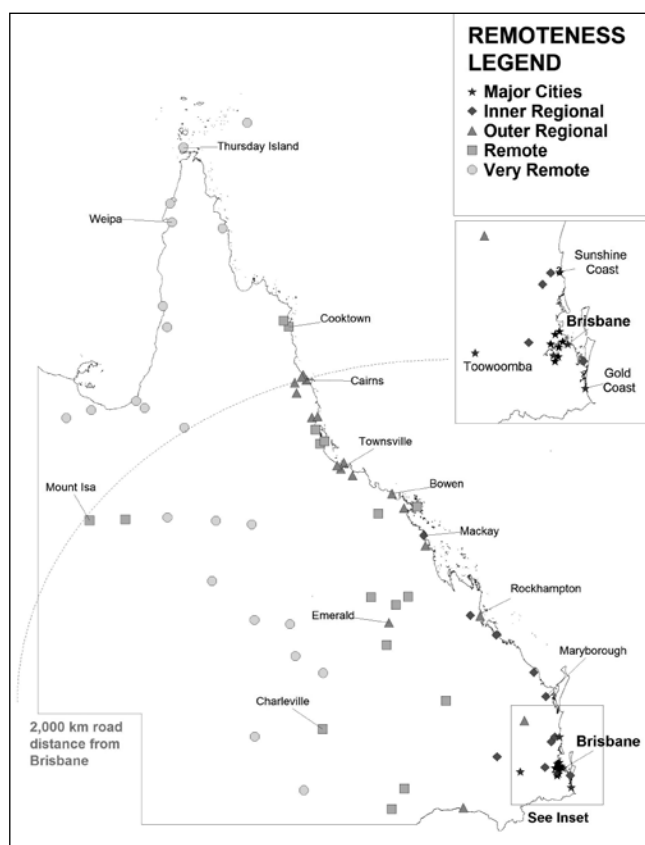


Table 1: Healthy Food Access Basket (HFAB) contents.

Basket item	Unit size	Total amount in HFAB	Basket item	Unit size	Total amount in HFAB
Dairy group			Bread and cereals group		
Fresh full-cream milk	2 L	8 L	White bread	650–750 g	6800 g
Fresh reduced-fat milk	2 L	1 L	Wholemeal bread	650–750 g	6800 g
Powdered full-cream milk	750 g–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 full fat cheddar type	500 g	500 g	Rolled oats	750 g–1 kg	750 g
Fruit, vegetables and legumes group			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	Meat and meat alternatives group		
Orange juice (100%)	1 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	1kg	1 kg
Frozen vegetables	500 g	2.5 kg	Tinned ham	450 g	1 kg
Tinned peas	420–440 g	880 g	Non-core foods		
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

also surveyed. Popularity was determined by supermarket sales data as described elsewhere.⁵

The availability of each item comprising the HFAB, 15 of the most commonly consumed fruit and vegetables (broccoli, cabbage, capsicum, carrot, cauliflower, cucumber, green beans, lettuce, mushroom, onion, potato, pumpkin, sweet corn, sweet potato, tomato, apple, banana, grape, kiwi fruit, mango, orange, other citrus fruit, other stone fruit, pawpaw, peach, pear, pineapple, rockmelon, strawberry, watermelon) and food items considered to be 'better nutrition choices' (wholemeal bread, dried fruit, low fat dry biscuits, tinned fruit in natural juice, mono-unsaturated oil, fresh reduced fat milk, yoghurt, bottled water, baked beans, 100% orange juice, diet cordial, diet soft drink, lean meat, dried legumes (other), poly/mono-unsaturated margarine, red kidney beans, tinned bean mix) were also recorded.⁵

Data collected included the prices of the cheapest brand available (including generic brands if no brand available) for the 44 HFAB food items the less nutritious food items and the two tobacco items. As there were four additional less nutritious food items in 2006, only the two items surveyed since 1998 were used for crossover comparisons. The six less nutritious food items and the two tobacco items are referred to as 'unhealthy' items in this paper.

Information regarding missing HFAB food items, the availability of fresh vegetables and fruit and the availability of better nutrition choices items was also collected. Methods are detailed in the 2000 HFAB Survey Full Report.⁵

Data analysis

Results were analysed using Microsoft Access⁶ and SPSS.⁷ For missing items, the mean cost for the item in the corresponding remoteness category was used as the default price for that year. The differences in mean costs of the HFAB contents were assessed

by one-way analysis of variance and the differences in mean costs over time were assessed by paired t-tests. Kendall's Tau was used to test for correlations between remoteness and cost.

To adjust for the different sampling fractions in the different strata, the 78 towns were weighted for the analysis proportional to the population size for each stratum. For comparisons with previous surveys, weights were proportional to population size for strata divided by the number of stores surveyed in that stratum.

Cost comparisons

The mean cost of the total HFAB; the fruit, vegetables and legumes in the basket; the unhealthy items; and basic healthy food groups were compared cross-sectionally by remoteness category for the 78 stores surveyed in 2006. Because the product description for ham and cabbage changed after the 1998 survey, the total basket could only be compared from 2000 onwards. Changes in the cost and availability of foods since the previous three surveys (2000, 2001 and 2004) were also analysed by remoteness category for the 47 stores included in all four surveys.

To compare changes between consecutive HFAB surveys, only those 36 stores that were included in all five surveys (1998, 2000, 2001, 2004 and 2006) were included. As the time intervals between the five successive HFAB surveys were different, the per cent change was annualised to allow for comparable time frames for assessing price change. This was done by calculating the square root of the ratio of the prices for the 1998 and 2000 surveys, the cube root of the ratio of the prices between the 2001 and 2004 surveys and the square root of the ratio of the prices between the 2004 and 2006 surveys. However, the cost change in dollars was not annualised and was shown as an average cost. Increases were compared with the increase in the CPI for food in Brisbane over the same period.⁸

Table 2: Mean cost (95% CI) of baskets and the basic healthy food groups in the 78 stores surveyed in 2006 by remoteness category.^a

Cost in 2006	QLD (\$) (CI) n=78	Major cities (\$) (CI) n=10	Inner regional (\$) (CI) n=10	Outer regional (\$) (CI) n=18	Remote (\$) (CI) n=18	Very remote (\$) (CI) n=22	% (\$) increase in mean cost from Major cities to Very remote	Kendall's Tau ρ -value
Healthy Food Access Basket	457.46 (450.49-464.44)	446.37 (427.57-465.16)	459.49 (452.10-466.87)	480.53 (464.29-496.77)	472.06 (457.78-486.34)	554.18 (526.22-582.14)	24.2% (\$107.81)	<0.001
Fruit, vegetables and legumes	204.99 (200.62-209.35)	200.93 (188.00-213.86)	201.03 (188.58-213.47)	216.59 (206.79-226.40)	206.33 (199.12-213.53)	242.22 (223.72-260.73)	20.6% (\$41.29)	<0.001
Bread and cereals	101.52 (99.14-103.90)	96.43 (90.88-101.99)	105.85 (99.99-111.71)	110.44 (105.82-115.06)	110.29 (103.41-117.18)	128.45 (123.94-132.96)	33.2% (\$32.02)	<0.001
Dairy	57.91 (57.01-58.80)	56.98 (55.80-58.15)	60.06 (56.91-63.21)	58.19 (55.42-60.97)	61.10 (58.00-64.20)	73.43 (68.41-78.46)	28.9% (\$16.45)	<0.001
Meat and alternatives	79.88 (78.68-81.08)	79.48 (77.16-81.79)	78.39 (73.94-82.85)	81.41 (77.30-85.53)	80.33 (77.53-83.13)	89.93 (86.37-93.48)	13.2% (\$10.45)	<0.001
Fruit	122.79 (119.90-125.69)	121.77 (112.39-131.16)	119.59 (109.64-129.53)	127.10 (121.20-132.99)	119.16 (114.09-124.23)	143.02 (133.26-152.77)	17.5% (\$21.25)	<0.001
Vegetables and legumes	82.20 (79.90-84.49)	79.16 (72.95-85.37)	81.44 (74.26-88.62)	89.50 (84.33-94.66)	87.17 (83.38-90.95)	99.21 (88.82-109.59)	25.3% (\$20.05)	<0.001

Note: a) Weighting proportional to Queensland population size by each remoteness category.

The CPI for food is based on a wide range of commonly purchased items (including soft drinks, cakes, biscuits, confectionary, take away and fast food) some of which incur the Goods and Services Tax (GST). Basic food items (such as those in the HFAB) that are required to support and maintain health are usually exempt from this tax. All CPI data are collected in capital cities only.

Results

Costs in 2006

The 2006 HFAB survey results highlight the extra expenditure needed to purchase basic healthy food by families living in outer regional, remote and very remote areas compared to those living in major cities and inner regional centres. Figure 2 shows increasing food prices with increasing remoteness categories, with the exception of the remote category for which the cost of the HFAB was slightly lower than the outer regional category, but the difference was not significant.

In the very remote category the cost of the HFAB was 24.2% (\$107.81) higher and the cost of fruit, vegetables and legumes in the basket was 20.6% (\$41.29) higher compared with the major cities category (Table 2 and Figures 2a and 2b). There were also significant differences within the very remote category. For very

remote stores greater than 2,000 km from Brisbane (n=12), the cost of the HFAB was 32.6% (\$145.57) higher and the cost of fruit, vegetables and legumes in the basket was 29.5% (\$59.25) higher compared with the major cities category. For very remote stores less than 2,000 km from Brisbane (n=10) the cost of the HFAB was 14.0% (\$62.50) higher and the cost of fruit, vegetables and legumes in the basket was 9.8% (\$19.74) higher compared with the major cities category (Figures 2a and 2b).

There were significant differences in the cost of all the basic healthy food groups by remoteness category as shown in Figure 3. The bread and cereals and the dairy groups were found to have greater differences between remoteness categories than the fruit and the vegetable and legumes groups.

The cost of the unhealthy items was 22.8% higher in the very remote category than in the major cities category.

Cost increases

There has been a significant increase in the price of basic healthy food in the 47 stores that have been surveyed since 2000 (Table 3). Between 2004 and 2006, the Queensland average price of the HFAB increased by 12.6% (\$50.68). The inner regional category experienced the greatest cost increase for the HFAB (17.2%, \$68.00).

Table 3: Change in mean cost (95% CI) of baskets in the 47 stores surveyed from 2000 to 2006 by remoteness category.^{a,b}

	QLD (\$) (CI) n=47	Major cities (\$) (CI) n=4	Inner regional (\$) (CI) n=11	Outer regional (\$) (CI) n=13	Remote (\$) (CI) n=10	Very remote (\$) (CI) n=9
Cost of the Healthy Food Access Basket in 2000	304.01 (289.79-309.25)	298.83 (280.50-317.16)	309.59 (303.41-315.77)	309.46 (301.92-317.00)	347.29 (327.01-367.57)	404.82 (373.74-435.90)
Cost of the Healthy Food Access Basket in 2001	344.04 (339.04-349.04)	339.56 (324.10-355.02)	345.17 (334.12-356.22)	353.59 (341.76-365.42)	377.58 (357.94-397.22)	425.29 (398.13-452.45)
% (\$) increase in mean cost 2000-2001	13.2% ^e (\$40.03)	13.6% (\$40.73)	11.5% (\$35.58)	14.3% (\$44.13)	8.7% ^e (\$30.29)	5.1% ^c (\$20.47)
Cost of the Healthy Food Access Basket in 2004	402.20 (395.50-408.90)	398.28 (366.97-429.59)	394.75 (383.07-406.43)	417.24 (406.77-427.71)	428.42 (416.47-440.37)	504.36 (479.72-529.00)
% (\$) increase in mean cost 2001-2004	16.9% ^e (\$58.16)	17.3% (\$58.72)	14.4% (\$49.58)	18.0% (\$63.65)	13.5% (\$50.84)	18.6% ^d (\$79.07)
Cost of the Healthy Food Access Basket in 2006	452.88 (445.34-460.42)	443.00 (412.26-473.74)	462.75 (452.09-473.41)	478.27 (466.60-489.94)	480.56 (456.55-504.57)	556.40 (523.42-589.38)
% (\$) increase in mean cost 2004-2006	12.6% ^e (\$50.68)	11.2% (\$44.72)	17.2% ^e (\$68.00)	14.6% ^e (\$61.03)	12.2% ^e (\$52.14)	10.3% ^d (\$52.04)
Cost of fruit, vegetables and legumes in 2000	113.11 (109.44-116.78)	111.36 (91.97-130.75)	114.24 (107.72-120.76)	114.95 (108.32-121.58)	130.43 (120.17-140.69)	152.54 (139.25-165.83)
Cost of fruit, vegetables and legumes in 2001	140.38 (137.41-143.35)	138.15 (129.05-147.25)	141.84 (132.11-151.57)	146.65 (137.58-155.72)	149.08 (138.30-159.86)	162.59 (146.50-178.68)
% (\$) increase in mean cost 2000-2001	24.1% ^d (\$27.27)	24.1% (\$26.79)	24.2% (\$27.60)	27.6% (\$31.70)	14.3% ^c (\$18.65)	6.6% (\$10.05)
Cost of fruit, vegetables and legumes in 2004	174.45 (169.21-179.69)	172.54 (144.81-200.27)	169.57 (159.36-179.78)	186.65 (175.13-198.17)	175.62 (162.81-188.43)	197.62 (178.46-216.78)
% (\$) increase in mean cost 2001-2004	24.3% ^d (\$34.07)	24.9% (\$34.39)	19.5% (\$27.73)	27.3% (\$40.00)	17.8% (\$26.54)	21.5% (\$35.03)
Cost of fruit, vegetables and legumes in 2006	204.96 (200.15-209.77)	201.28 (176.70-225.86)	205.10 (194.13-216.07)	219.84 (212.87-226.81)	207.97 (195.70-220.24)	233.13 (211.51-254.75)
% (\$) increase in mean cost 2004-2006	17.4% ^e (\$30.51)	16.7% (\$28.74)	20.9% (\$35.53)	17.8% (\$33.19)	18.4% (\$32.35)	18.0% ^c (\$35.51)

Notes:

a) Weighting proportional to Queensland population size by each remoteness category

b) Source: Healthy Food Access Basket Surveys 2000, 2001, 2004 and 2006

Significance:

c) = $p < 0.05$; d) = $p < 0.01$; e) = $p < 0.001$

On an annual basis, the increase in the Queensland average price of the HFAB from 2004 to 2006 (6.1%, \$25.34 per annum) was comparable to the increase between 2001 and 2004 (5.3%, \$19.39 per annum) but less than half of the 13.2% increase (\$40.03 per annum) experienced for the HFAB between 2000 and 2001.

The mean Queensland price of the fruit, vegetables and legumes in the basket increased by 17.4% (\$30.51) between 2004 and 2006 (Table 3). Differences in the cost of these items in the basket across the remoteness categories were greater than those seen for the total HFAB. As in the 2004 survey, price increases in 2006 were greatest for the fruit group (Figure 4).

Annualised per cent increases in costs for the 36 stores surveyed from 1998 to 2006 compared with the change in the CPI for food in Brisbane over the same period are shown in Figure 5. While

the largest change in food costs was observed between 2000 and 2001 when the New Tax System (NTS) was introduced, the cost of healthier foods has continued to increase more than the CPI for food in Brisbane in the majority of the remoteness categories. The 2004–2006 price changes for CPI for food in Brisbane were slightly higher than those for Australia as a whole (5.7% and 5.0% respectively).⁸ According to ABS figures, the 2005/06 Brisbane food price increases were highest within the basic healthy food groups, driven mainly by the surge in fruit and vegetable prices (Table 4).

Availability

Availability of the 15 vegetable and fruit varieties, better nutrition choices and HFAB items are presented in Figures 6a, 6b, 7 and 8. Less variety of fruit and vegetables was available in the very remote compared to the major cities category, despite a modest (non-significant) improvement in the availability of vegetables in the remote and very remote categories (Figure 6a and 6b). Overall, there was a wider variety of vegetables available compared to fruit, with a decrease (non-significant) in the availability of fruit recorded in all remoteness categories. Availability of better nutrition choices declined with remoteness, although slight (non-significant) improvements were registered for the remote stores since 2001 and for very remote stores since 2000 (Figure 7).

The number of missing basic healthy food items continued to be high in 2006 in particular among stores in the outer regional, inner regional, and very remote categories,

Figure 2a: Mean cost of HFAB.

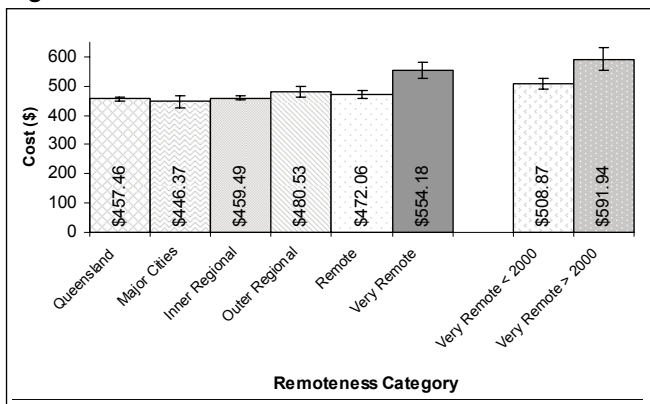


Figure 2b: Mean cost of fruit, vegetable and legumes in basket.

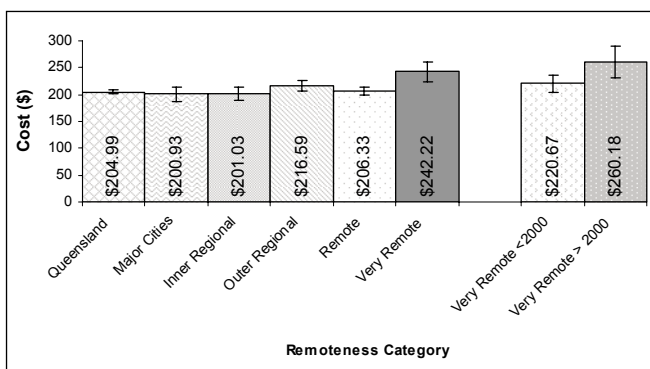


Figure 3: Mean cost of basic food groups.

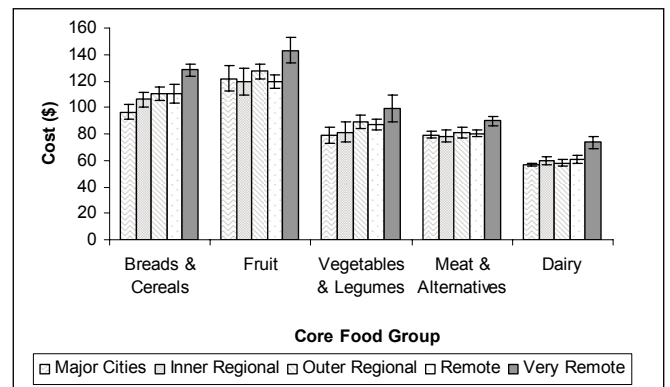


Figure 4: Mean cost of basic food groups and price change.

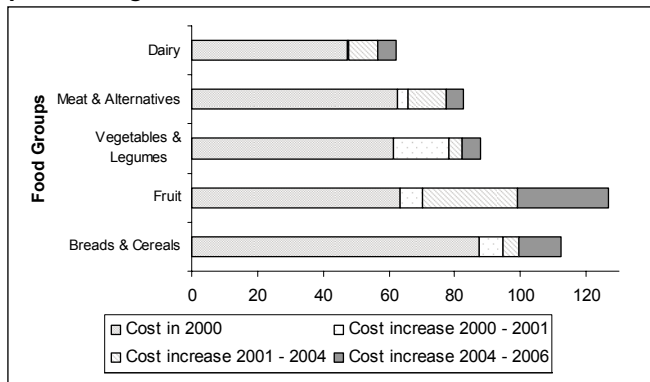
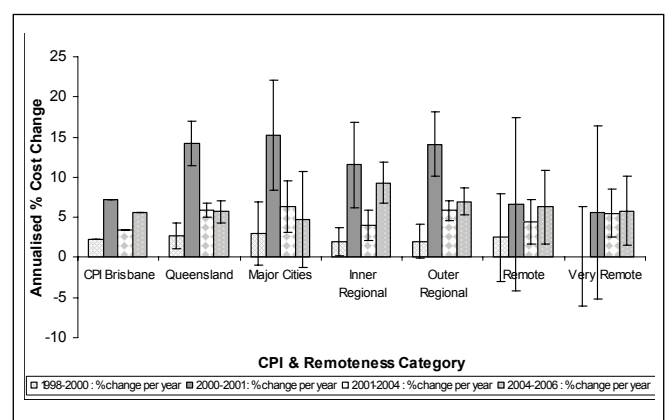


Figure 5: Annualised percent change in costs of HFAB.



remote and very remote categories (Figure 8) with almost 9% of HFAB food items not available for purchase in stores from the very remote category. The most frequently missing HFAB items in all stores were bananas, wholemeal flour, powdered skimmed milk, tinned ham and dry biscuits. The most frequently missing better nutrition choice items were 100% orange juice and wholemeal bread.

Implications of findings

A major limitation of the method has been addressed with application of a sampling framework based on randomisation of towns throughout the state. However, methodological issues

remain including lack of information about changes in stores over time, lack of a rigorous framework to standardise unhealthy items and the high proportion of missing items. However, we have attempted to minimise confounding by including only the same stores for time series analysis, and by standardising all parameters where possible, such as the contents of the HFAB, seasonality of survey and training of data collectors.

In just six years the cost of healthy food has increased by around 50% (\$148.87) across the state and, where data was available, by more than the cost of less healthy alternatives, with the CPI for food increasing by 32.5% over the same period. The price increases recorded in all the remoteness categories since 2004

Figure 6a: Availability of vegetables.

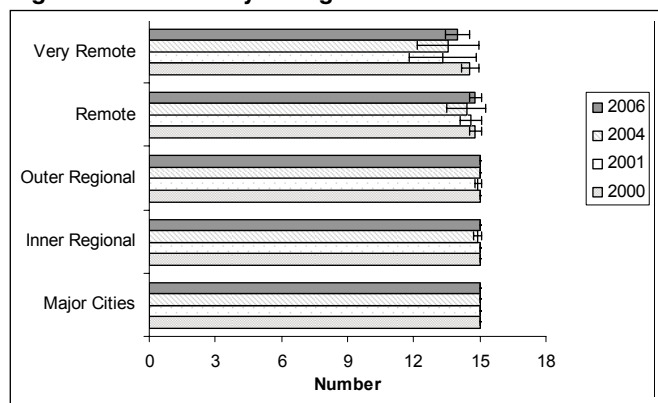


Figure 7: Availability of better nutrition choices.

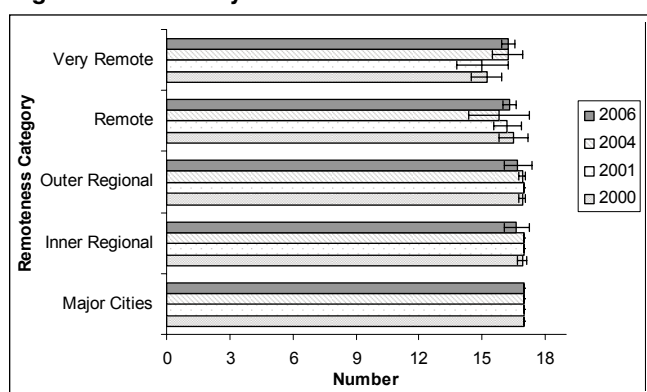


Figure 6b: Availability of fruit.

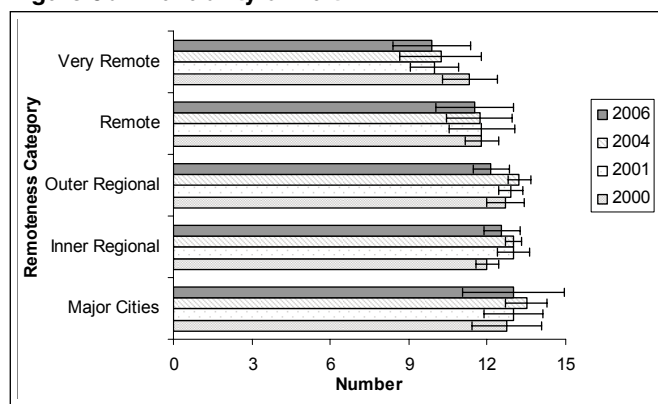


Figure 8: Number of missing HFAB items.

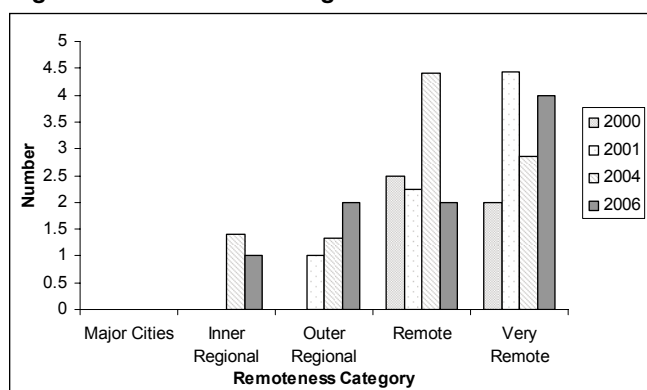


Table 4: Annual percentage price change for selected food items (June Quarter 1997 to June Quarter 2006) in Brisbane.^a

Items	97-98 %	98-99 %	99-00 %	00-01 %	01-02 %	02-03 %	03-04 %	04-05 %	05-06 %	00-06 %	98-06 %
CPI for food	2.8	2.4	2.2	7.3	4.8	4.1	1.5	2.7	8.7	32.5	38.8
Bread	3.4	6.5	2.2	8.4	3.4	2.9	-6.6	1.4	7.5	17.4	27.7
Bread and cereal products	1.9	2.3	1.8	5.7	3.9	5.4	-1.6	0.4	5.1	20.3	25.2
Dairy and related product	2.2	3.9	8.0	-1.2	7.3	3.8	0.8	4.5	3.9	20.5	35.3
Milk	2.2	3.4	11.5	-4.6	6.4	4.3	0.2	4.5	3.2	14.5	32.0
Fruit and vegetables	3.3	6.0	-0.8	11.4	0.7	9.0	2.6	-2.6	38.7	69.7	78.3
Fruit	-8.1	25.8	-17.7	18.2	13.3	-8.6	10.2	-4.9	65.5	112.3	119.6
Vegetables	12.6	-8.4	15.9	6.5	-9.4	26.9	-3.0	-0.7	15.9	36.6	45.1
Meat and seafood	0.7	-0.1	4.5	8.4	10.7	0.7	1.9	6.0	2.8	34.0	39.9
Soft drinks, water and juices	6.3	-1.5	-1.6	-1.3	1.4	0.2	0.6	4.9	3.0	8.9	5.6
Take-away and fast foods	3.0	3.1	3.6	11.1	3.7	3.7	3.0	3.2	3.8	31.8	40.8
Snacks and confectionery	4.2	5.0	1.8	5.5	5.7	4.9	2.0	3.7	6.2	31.4	40.5

Note: a) Source: Australian Bureau of Statistics

raises concerns about healthy food access for all Queenslanders. Higher prices and limited availability of healthy foods are barriers to healthy eating, which can compromise nutritional and health status and add to the burden of obesity and chronic disease.⁹ Environmental influences, such as food access, remain major contributors to the higher death rates experienced by people from more socio-economically disadvantaged areas and remote regions¹⁰ as observed in Queensland.¹¹

This inequality in physical and economic access to healthy food is greatest in the most remote towns, particularly those located more than 2,000 km from Brisbane, but also exists throughout the state. With cost identified as the key factor in determining the purchasing choices of socially disadvantaged groups,¹² effective strategies to address this issue can only be developed by decreasing the price differential between healthy food and less nutritious food.¹³

The price of the unhealthy items was affected by remoteness category to a comparable level as the HFAB items, which is in contrast to the results of previous HFAB surveys.¹⁴ However, as an item requiring freezer transport (ice-cream) was added to the list of unhealthy items in 2006, results could reflect higher transport costs. This confirms the need for the standardisation of the list of unhealthy items for subsequent surveys.

The substantial cost increase recorded between 2000 and 2001 (10.3%) remains the greatest impact on costs since 2000, despite predictions of cost reductions secondary to the introduction of the GST under the NTS.¹⁵ Increasing costs of healthy food have been higher than that of the CPI (food) ever since. Labour and energy-intensive services such as transport, handling, distribution and retailing have been previously cited as contributing to these cost increases.¹⁶ Adverse weather conditions in horticultural areas, and increased fuel and packaging costs, have been cited as contributing to more recent price increases.⁸

The increase in the CPI for food in Brisbane in 2005/06 was mainly due to price increases for fruit.⁸ While increasing fruit prices have also effected food costs of the 36 stores surveyed since 1998, the HFAB cost increase continued to be higher than the CPI for food in Brisbane, across all remoteness categories except major cities. As CPI is the statewide economic benchmark, this implies that the cost of healthy foods continues to be more expensive than that of less nutritious alternatives.

Affordability has been measured in a number of food surveys. Studies in Adelaide in 2005¹⁷ and Wollongong in 2003¹⁸ showed that the cost of a basket of food required to sustain health would account for 31% of the weekly welfare payment, and 29% of average weekly earnings respectively. In the Northern Territory in 2003, a reference family in Darwin and remote communities respectively spent 27% and 35% of average income on food.¹⁹ Based on the methodology used in the Adelaide study for estimating income on welfare payments,¹⁷ the statewide cost for the 2006 HFAB would require 26% of the reference family's income.

Availability data reflects a decline in access to healthy food with remoteness, which is more apparent for fruit than for vegetables. The improved vegetable variety since 2004 may be associated with the outcomes of the Queensland *Go for 2 & 5* fruit and vegetable social marketing campaign, which has recorded positive results in knowledge, attitudes and consumption behaviour throughout the state.¹¹ Improvements in access to better nutrition choices in the remote and very remote stores may also be associated with the implementation of health promotion strategies, such as remote store nutrition policies.²⁰ However, the decline in availability of basic healthy food items with increasing remoteness remains a food security issue throughout the state.

Clearly it is not sufficient to monitor increasing prices without trying to improve access to healthy food, and various other initiatives have been, or are being, introduced and evaluated in Queensland including mandatory unit pricing of grocery items,²¹ updating the Queensland Nutrition Policy for Remote Retail Stores²⁰ and use of the tools of the tools of the Remote Indigenous Stores and Takeaway (RIST) project.²²

Recent national initiatives should help drive change within food supply systems to increase the availability and demand for healthier food products, and decrease the availability and demand for less healthy options among vulnerable groups. These include the Council of Australian Governments development of a national Indigenous food security strategy²³ and recommendations in the National Preventative Health Strategy²⁴ calling for a review of economic policies and taxation systems, and development of methods for using taxation, grants, pricing, incentives and/or subsidies to promote production, access to and consumption of healthier foods.

The ACCC inquiry into the competitiveness of retail prices for standard groceries reported on 31 July 2008. The ACCC inquiry²⁵ did not identify anything "fundamentally wrong" with the grocery supply chain, finding that "grocery retailing is workably competitive in Australia", but identified that there are a number of factors that currently limit the level of price competition including: high barriers to entry and expansion; limited incentives for the two major retailers to compete aggressively on price; and limited price competition from the independent sector. In response to the ACCC inquiry, the Commonwealth government funded a grocery price watch site *Grocery Choice*;²⁶ however this website did not convey prices in a way that assists differentiation of costs of healthy foods or less nutritious alternatives.

National data, such as the assessment of a CPI for healthy food, not just commonly purchased food, and for towns in addition to capital cities, would help to provide a truer picture of cost increases and their broader health and economic implications across the nation. The establishment of a co-ordinated national food and nutrition monitoring and surveillance system to provide food pricing, access and consumption data across Australia is also required.^{14,27}

Conclusion

Australians, no matter where they live, need access to affordable, healthy food. With poor nutrition contributing to around 16% of the burden of disease in Queensland,¹¹ higher prices and limited availability of healthy foods are clear barriers to healthy eating, which impact on the burden of poor nutrition, obesity and chronic disease, especially in socio-economically disadvantaged communities.

Factors affecting the cost and availability of food are complex and largely lie outside of the health sector, but have significant impacts upon nutrition and health. Sustainable solutions require joint commitment and partnerships across a range of sectors, including primary producers, manufacturers, wholesalers, retailers, transporters, advertisers, and government and non-government organisations across local, state and national levels.

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