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The Illawarra Healthy Food Price Index. 2. Pricing methods and index trends from 2000-2003

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Publication Details

This article was originally published as: Williams, P, James, Y & Kwan, J, The Illawarra Healthy Food Price Index. 2. Pricing methods and index trends from 2000-2003, *Nutrition and Dietetics*, 2004, 61(4), 208-214. The definitive version is available at www.blackwell-synergy.com. *Nutrition & Dietetics* is the official journal of the Dietitians Association of Australia. Copyright 2004 Blackwell Publishing.

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Abstract

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Design Detailed instructions for the method of pricing the IHFB were developed and tested. The price of the IHFB was collected each year in September at a major supermarket, green grocer and butcher in five Illawarra suburbs, representing a range of socio-economic locations. Data on welfare payments available to the reference family, assuming all members were unemployed, were collected from staff of Centrelink.

Main outcome measures The average weekly cost of the IHFB, the Illawarra Healthy Food Price Index (IHFPI) values in 2000, 2001 and 2003, and trends in the food basket costs compared to changes in average weekly earning and welfare benefits for the reference family.

Results The IHFPI values were 100 in 2000, 111.3 in 2001 and 112.1 in 2003. The average cost of the IHFB in 2003 was \$225.86. Over the three year period average weekly earnings increased 14.5% and welfare payments for the reference family increased by 11.9%. The food component of the IHFB with the largest increase in prices was vegetables, which increased 19.8%.

Conclusion The results indicate that the affordability of healthy foods has not deteriorated over the time period 2000-2003. Fruits and vegetables and meat may be cheaper at independent grocers and butchers than in supermarkets.

Keywords

food security, food prices, dietary guidelines, healthy food basket

Disciplines

Arts and Humanities | Life Sciences | Medicine and Health Sciences | Social and Behavioral Sciences

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Title: **The Illawarra Health Food Price Index.
2. Pricing methods and index trends from 2000 - 2003**

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Running Title: Healthy Food Basket Part 2
Key Words: Food security; food prices; dietary guidelines; healthy food basket
Word Count: 3600
Version: IHFPI-Part2-V2

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Introduction

Food prices are thought to influence consumer choices, especially among the socioeconomically disadvantaged (1, 2) and food insecurity is strongly inversely associated with household and per capita income (3), yet there are few ongoing programs monitoring the affordability of healthy foods either in the Australian context or elsewhere. One study in Derbyshire found that the cost of one defined basket of healthy food choices fell by 7% from 1990 to 1992 and then remained stable for the next two years, while in the same period the national surveys of household food expenditure rose by 24% (4). In that study the 52 foods were costed at 10 supermarkets, selecting the cheapest brand at each. Many Australian surveys that have been repeated over time have not been restricted to healthy food choices (5-8). One of the most comprehensive ongoing local monitoring programs has been that of the Queensland Health Food Access Basket (HFAB), which was based on the approach used by Northern Territory nutritionists from the early 1990s. Surveys of the cost of the HFAB have been repeated in 1998, 2000 and 2001, allowing trend analysis of the costs of a family basket of healthy foods in that state over recent years (9). However it is not known how representative these results are for people in other parts of Australia.

The background to this project to develop an ongoing index of the cost of a basket of healthy foods in the Illawarra region of NSW has been explained in Part 1 of this report, along with the method of defining a basket of foods for a family of five (10). The Illawarra Healthy Food Basket (IHFB) consists of 57 food items, mostly core food items from the Australian Guide to Health Eating (11), but also including 13 extra (non-core) foods. Our aim was to develop a convenient and reproducible method of costing the IHFB that could be used regularly by relatively untrained students to collect prices annually and to report on trends in affordability. While we wanted to include a representative range of outlets, time and cost constraints necessitated limiting the number of food outlets to be surveyed to no more than 15. This paper describes the pricing methods used and presents results from the first three years of monitoring.

Methods

The process of developing the food basket pricing system consisted of five stages:

- 1) Definition of the food outlets to be surveyed
- 2) Selection of products for pricing
- 3) Pilot survey and refining of survey instructions
- 4) Determining the method of calculating the IHFPI
- 5) Specification of comparison measures

Location and type of food outlets

Five suburban locations were selected in the Illawarra region, representing a range of socio-economic status (SES) levels. The selection was based on relative socio-economic disadvantage scores (12) and consultations with local community dietitians:

Lower SES: Warrawong and Warilla

Mixed SES: Wollongong Central

Higher SES: Corrimal and Figtree.

In each suburb, the largest supermarket (according to estimated floor space) was chosen, ensuring at least one each from the three main NSW chains was included: Woolworths, Coles and Franklins. The largest individual butcher and a green grocer shop were selected in the same shopping centre as each supermarket. In 2000 and 2001 the same 15 food outlets were surveyed. In 2003, the butcher in the Wollongong and the supermarket in Warrawong had closed, and similar alternative outlets in the same locations were chosen to replace them. Further details about the food outlets used can be obtained from the authors.

Product selection

Surveys of product quality by the Australian Consumers Association (ACA) have suggested that supermarket brands of some basic grocery items such as milk, butter, sugar and eggs are likely to be fairly similar in quality to branded equivalents, whereas for other more complex packaged foods, like biscuits, there is a greater variation in quality (13). It was

decided for this study to select the cheapest product for most plain items, but for some foods a branded product was specified (eg, Kraft Vegemite, Nestle Milo, Arnott's Spicy Fruit Rolls). For other foods several brands of similar quality were specified and surveyors were instructed to choose the cheapest on the day of the survey (eg, Bodalla or Bega reduced fat cheese; Cadbury or Nestle plain milk chocolate).

Because the price of products can vary depending on the pack size, it was important to specify the size to be surveyed. A pilot pricing survey was undertaken and the data analysed to calculate the most economical pack size relevant to the quantity in the IHFB. For several items (Sultana Bran, rice, oil, Milo and honey, chocolate, tomato paste and chicken) the most economical options were very large pack sizes. It was decided that these would be impractical for many typical families to purchase and a more normal size was chosen. For example, 1.5kg buckets of honey are available, but the IHFB specifies only 90g of honey per week for the family, so a more appropriate size jar of 500g was specified to be priced. Table 1 sets out the final guide to the brands and pack sizes for the pricing survey, excluding fresh produce.

A standard set of data collection sheets with instructions was developed. The following general principles for the pricing surveys were used:

- Choose the cheapest product available from the specified brands
- If the specified pack size was not available, choose the next smallest size
- Record standard shelf prices of products, not special discount prices
- For meat, fruit and vegetables, and other items sold in bulk, record the price per kilogram
- For fresh products priced in units (eg lettuce, avocado) choose three items and weigh them to calculate the price per kilogram

Survey instructions and pilot testing

Because season can affect price and availability of some fresh produce, it was decided to limit the timeframe of collection to a single month of the year – September. The clarity of

the instructions was tested with a pilot survey and feedback on the instructions and data sheets was used to refine the final version of the survey. In 2000 and 2001 the basket was priced by three surveyors in the same supermarket on the same day to assess the reliability of the instructions. Inter-observer variation was estimated at less than 1.2%. Full details of the survey instructions are available from the authors.

Calculation of index

The price per kilogram of each item was used to calculate the cost of the amount of food specified in the basket. For example, if a 3kg packet of sugar was priced at \$3.06 (ie \$1.02 per kilogram), the cost of the 450g of sugar specified in the IHFB was calculated to be 46 cents (1.02 x 0.45). In each suburb, the average price of meat, fruit and vegetables was calculated by taking the mean of the prices from the supermarket or the butcher or green grocer. This equal weighting of prices from the two types of outlets was based on the estimation that around 50% of people buy these items at supermarkets (14). The final estimated price of the basket was calculated as the mean of the prices recorded in each of the five suburbs. The IHFPI was calculated by setting the baseline cost of the IHFB in September 2000 equal to an index value of 100. In subsequent years the index was calculated as the price of the basket in that year as a percentage of the basket price in the year 2000:

$$\frac{\text{New Value (\$)}}{\text{Baseline Value (\$)}} \times 100 = \text{New Index}$$

Comparison measures

Data on average weekly earnings (AWE) - all employees total earnings, NSW - from the ABS was used as one comparison measure (15). Since data for that report is collected in May each year, the values represent the AWE from four months before the food price survey was conducted. Information on available welfare payments for the reference family was sought from staff of the Commonwealth employment service, Centrelink. The assumptions for this estimate were given as follows: no family member was employed; the 65-year old female was single; unemployment and child support allowances are paid

without any rental assistance. The welfare payments that would be available to the reference family were identified as: Newstart allowance, parenting payment, family tax allowances, and the aged pension.

The baseline data collection occurred in September 2000 and was repeated in the same month in 2001 and 2003, using the same food outlets. In 2000 and 2001 two surveyors carried out the surveys. One person completed all the pricing surveys in 2003.

Results

The cost of the IHFB in five suburbs of the Illawarra region from 2000 to 2003 is summarised in Table 2. The average IHFB cost of all five suburbs for 2003 was \$225.86, which represents an increase of \$24.40 (12.1%) from the baseline survey in 2000, and an increase of \$1.71 (0.8%) from 2001. The basket cost varied each year by an average of 9% between the highest and lowest priced suburb and there was no consistent pattern of which suburb was the most expensive. In the 2003 survey, the IHFB was the most costly in Wollongong at \$233.80, \$18.34 more expensive than in Warilla, which was the cheapest location in all three surveys.

Figure 1 shows that of the food categories in the basket, vegetables incurred the greatest price increase between 2000 and 2003 (19.8%). Meats and eggs, fruits, and dairy foods also had price increase of over 10%. In contrast, the price of breads and cereals, which rose by 9% in 2001, had declined since then to close to the baseline price in 2000.

The variation in prices by outlet type is illustrated in Figure 2, comparing the basket costs of all foods with the fresh meat, eggs, fruit and vegetable items purchased at the supermarket or with those items purchased from the independent butcher and green grocer. In 2003, the cost of the IHFB priced from supermarkets only was generally slightly higher than when the basket was priced using the independent food outlets for vegetables, fruits, meats and eggs, although the Warilla suburb was an exception. The mean difference was a saving of \$4.96 per week.

The IHFPI was set to be 100.0 in 2000 as the baseline. It rose considerably to 111.3 in 2001, but in the subsequent two years there was only a slight increase to 112.1 in 2003. The overall trend of the index was similar to those of the possible income sources for the reference family: the AWE and the welfare payments (Figure 3). Both the AWE and welfare benefits underwent steady increases from 2000 to 2003.

The affordability of the IHFB, presented as a proportion of each of the two comparison income sources, is shown in Table 3. The proportions have remained relatively constant

over the three year period, with the IHFB making up the highest proportion relative to both income sources in 2001: 31.9% of the AWE and 33.3% of the welfare payments.

Discussion

There are several limitations to this study that require consideration. Firstly the convenience sample of food stores used for the costing of the IHFB was not statistically representative of all outlets in the Illawarra region. A variety of methods have been used by researchers to select the locations and outlets at which to cost a standardised basket of foods. Some select shops in low income areas within a city (16, 17); others use a range of shops from over the district of study (4, 18). The types of shops surveyed have generally included both supermarkets and smaller specialty shops such as butchers and bakers, with researchers noting that many low income people may use smaller local stores because of lack of transport to larger supermarkets (4, 17-19). For the Consumer Price Index (CPI), the Australian Bureau of Statistics (ABS) surveys a wide range of food outlets, including both supermarkets and smaller stores, but these are limited to the national capital cities (20).

In the IHFB, the survey pricing survey was conducted in stores from a selection of large urban centres in the Illawarra region. In particular it did not include small local shops that may be used more by people on low incomes who lack transport to larger supermarkets. Thus while the stores were sampled from a cross section of suburbs of different socio-economic levels, caution should be used in interpreting the results and the costs reported may underestimate those experienced by households with limited access to transport. The main purpose of this project was to measure trends in costs over time, not to assess differences by geographic location. While a larger number of outlets could be used in future to increase the representativeness of the results, the sustainability of monitoring is likely to be compromised if the size of the survey necessitates substantially more resources.

The specification of some foods in the IHFB as particular branded products introduces another element of bias. There are three possible methods for selecting sizes and brands of products for pricing. One is to price the leading brand, with the highest sales volume. Such data is available from market research companies or leading retailers and this has been used in some Australian studies (14, 21). The second method is to choose the cheapest brand item, excluding generic supermarket label products. Three Australia studies have used this method (16, 22, 23), on the assumption that “it was considered unlikely that many people

would choose a basket made up mainly of generic brands” (22). A third possible method would be to choose the cheapest product regardless of whether it was a generic or branded product. This method ignores differences in quality and is unlikely to represent normal purchasing decisions. Other baskets have included a similar mixture of branded and unbranded foods to that used in the IHFB - for example the Tasmanian survey specifies Milo, Vegemite, Sultana Bran and Salada biscuits (24). However, ultimately the choice of branded products is somewhat arbitrary, and it needs to be noted that changes in the costs of the IHFB will not necessarily be comparable to other surveys that have priced only the cheapest non-generic brands.

Finally, as noted when the foods for the IHFB were defined, the survey assumes that there is no waste of food after purchase aside from the inedible food components (10). In practice families might need to purchase more food than that specified in the basket to meet their nutritional needs, if there is any significant degree of food wasted at home. This means that the affordability values are likely to be low estimates of the true figure. The two aims are now included in the last paragraph of the Introduction. This same limitation applies to all other comparable studies.

Trends in the IHFPI

There was a sharp 11.3% rise in the IHFPI from 2000 to 2001, followed by a much smaller increase from 2001 to 2003. The reasons for the yearly fluctuations are not clear, but the changes over the three year period were similar to national trends in food prices. The national CPI for food increased by 12.8% between 2000 and 2003, very similar to the 12.1% increase of the IHFPI over the same period (5). The food basket used in the CPI comprises a wider range of food items than the IHFB, including restaurant meals and take-away foods, and is the average of prices in eight capital cities across Australia. The ACA periodically conducts price surveys in supermarkets in the major cities throughout Australia. In its report published in July 2003, food costs were found to have risen by 13% since 2000 (6). However, given the different compositions of the baskets used in these surveys it is not possible to draw firm conclusions from these similarities.

It should be noted that the baseline data for the IHFI was collected three months after the introduction of the GST in July 2000. In contrast, the data for the Queensland HFAB was collected in April and May 2000, before the GST was applied to processed and prepared food items (9). The Australian Competition and Consumer Commission predicted that the tax changes would have little effect on overall food costs but found that it was very difficult to measure the actual impact of the GST because prices of fresh foods were very volatile at the time, due to adverse weather conditions (25). The results from the Queensland and Illawarra surveys show the changes in the costs of the two basket from 2000 to 2001 were very similar: the HFAB increased 10.7%, compared to an 11.1% increase in the IHFI.

Like the HFAB results, where the percentage price increases were much greater for fresh/unprocessed food than for processed food and beverages (9), the IHFI shows that most core food items increased in price more than the non-core extra foods, although the overall difference was not as pronounced as in the Queensland results. From 2000 to 2003, the price of the extra foods in the IHFB rose by 10.5% compared to increases of 15% in the price of fruit and 19.8% for vegetables.

Affordability

The affordability of the IHFB relative to income remained relatively constant over the three year period. However, there were fluctuations within this time frame (Figure 3).

Affordability decreased in 2001, because the changes in the AWE and the welfare payments in that year did not accommodate the significant rise in the food prices at that time. The data on the IHFB as a proportion of AWE and welfare payments show that the reference family on average incomes or relying on welfare payments would need to spend 31% of the household income to purchase the IHFB. In contrast, the 1998-99 Household Expenditure Survey found that Australians in the lowest quintile of income generally spent 20% of household expenditure on food (26). Since our study was based on a larger than average hypothetical family of five people, this difference is not unexpected. This difference is also consistent with other studies. A report on food supply in rural South Australia estimated that households there would have to spend 22-36% of their income to purchase the food basket used in that study (22).

The results of the present study support other surveys that have found that location and type of food outlet have an influence on the cost of food. Generally, however, the suburbs with lower socio-economic status had the lowest prices of the IHFB suggesting that lower socio-economic groups may not be disadvantaged in their access to less expensive foods in the Illawarra region. This is in contrast to the findings of the Tasmanian study, which found costs were higher where the median income was lower (24). The present study also showed that the type of food outlet does have an impact on food price. Generally, it costs less to purchase fruits and vegetables at independent green grocers and meat at butchers. Although the absolute differences were small, consumers could make useful savings by being selective about the type of food outlets when purchasing specific foods.

According to the CPI, all food groups increased in price by 10-13% between 2000 and 2003, with the exception of meat and seafood, which increased by 21.7% (5). In both the IHFPI and the CPI, vegetables and meat had the greatest increases over the three year period. The breads and cereals group had surprisingly minimal price changes in the IHFPI whereas the CPI recorded a 12.1% increase nationally since 2000. The reason for this

difference is not clear. Differences in the foods used in each index may be factor, but a more likely reason may be due that competition between local manufacturers and supermarkets kept prices low.

Since the IHFPI covers only one geographic region, it is inappropriate to extrapolate the results to other parts of the nation. The sample size (five supermarkets and ten independent food outlets) is not large enough to provide a full picture of the food prices in the entire Illawarra region. Nonetheless the changes in the IHFPI seem consistent with other national indices and it is anticipated that the trends measured by the index over time will provide a useful tool for public health professionals to monitor changes in the affordability of healthy foods in the local context.

Food affordability, as measured by use of a healthy food basket, represents just one piece of the food security puzzle; macro level influences such as methods of food production, composition of the retail food industry, and cultural and technological developments all impact food security (27). Nonetheless such baskets can be a useful way to assess which populations may be economically vulnerable to food insecurity. The basket described here has now been used over three years for the calculation of the IHFBI, using baseline data in 2000. It is hoped that by using this standard tool over a longer time frame, one useful index of the affordability of a healthy diet can be established that may form a part of an emerging national nutrition monitoring system.

Acknowledgements

Our thanks to the Illawarra public health nutritionists Denise Chapman, Heather Proud and Julie Parkinson for advice on food outlets in the Illawarra region, to Kirsty Shaw, Rachel Coper and Andrea Lyons for collecting some of the pricing data, and to Kaylene Smith, Carmella Savu, Sara Walcott, Jo Rout and Jo Hetland for the assistance in pilot testing the survey tool. We also acknowledge with thanks the cooperation of the participating stores in the surveys, whose managers gave permission for the surveys to take place and the results reported. We would also like to thank the anonymous reviewers whose comments have helped improve this manuscript.

Table 1. Pricing guide for packaged foods in the Illawarra Healthy Food Basket ^(a)

| Food Item | Brand | Pack size |
|--|---|------------------|
| Breads and cereals | | |
| Crispbread | Paradise Lites | 200 g |
| Crumpets | None ^(b) | Pack of 6 |
| Fruit toast | None | 650 g |
| Quick cooking oats | None | 1 kg |
| Sultana bran | Kelloggs | 725 g |
| Wheat biscuit breakfast cereal (Weetbix, Vita Brits or Golden Wheats) | Sanitarium, Uncle Tobys, or Kelloggs | 1 kg |
| White hamburger buns | None | Pack of 6 |
| White rice (long grain) | None | 2 kg |
| White spaghetti | None | 500 g |
| Wholemeal bread | None | 680g |
| Milk, yoghurt cheese | | |
| Cheddar cheese, reduced fat | Bodalla or Bega | 750 g |
| Low fat vanilla yoghurt | None | 1 kg |
| Reduced fat milk | None | 3 L |
| Vegetables and legumes | | |
| Baked beans, salt reduced | None | 425 g |
| Frozen mixed vegetables | None | 1 kg |
| Frozen peas | None | 2 kg |
| Canned tomatoes, no added salt | None | 810 g |
| Canned corn kernels | None | 420 g |
| Tomato paste, no added salt | None | 140 g |
| Fruit | | |
| Canned peaches | None | 825 g |
| Orange juice, fresh, no added sugar | None | 2 L |
| Meat, fish, poultry, eggs, nuts | | |
| Frozen fish, crumbed, baked | None | 425 g |
| Tinned tuna, in spring water | None | 425 g |
| Whole frozen chicken | None | 1.5 kg |
| Eggs | None | 600 g |
| Peanut Butter, no added salt | None | 375 g |
| Extra foods | | |
| Cake (plain or madeira) | None | 450 g |
| Canola margarine | None | 500 g |
| Canola oil | None | 2 L |

| | | |
|-----------------------------|--------------------|---------------------|
| Chocolate, milk | Cadburys or Nestle | 200 g |
| Cola soft drink | Coca Cola or Pepsi | 2 L |
| Coffee, instant (Nescafe) | Nestle | 250 g |
| Honey | None | 500 g |
| Low fat ice cream (vanilla) | None | 2 L |
| Milo | Nestle | 750 g |
| Spicy Fruit Rolls | Arnotts | 250 g |
| Tea | None | Pack of 100 teabags |
| Vegemite | Kraft | 910 g |
| White sugar | None | 3 kg |

^(a) Fresh produce (fruit, vegetable and meat) priced by the kilogram not included

^(b) None = no specified brand; the cheapest (including generic supermarket brands) to be chosen

**Table 2. Cost of the Illawarra Healthy Food Basket in the five suburbs:
2000, 2001 and 2003**

| | 2000 | 2001 (\$) | 2003 | Percent change 2000-2003 |
|----------------------|--------|--------------|--------|-----------------------------|
| Suburbs | | | | |
| Corrimal | 196.27 | 223.93 | 223.57 | 13.9 |
| Wollongong | 207.94 | 219.48 | 233.80 | 12.4 |
| Figtree | 212.66 | 228.60 | 231.40 | 8.8 |
| Warrawong | 200.74 | 233.16 | 225.09 | 12.1 |
| Warilla | 189.71 | 215.59 | 215.46 | 13.6 |
| Average cost of IHFB | 201.46 | 224.15 | 225.86 | 12.1 |

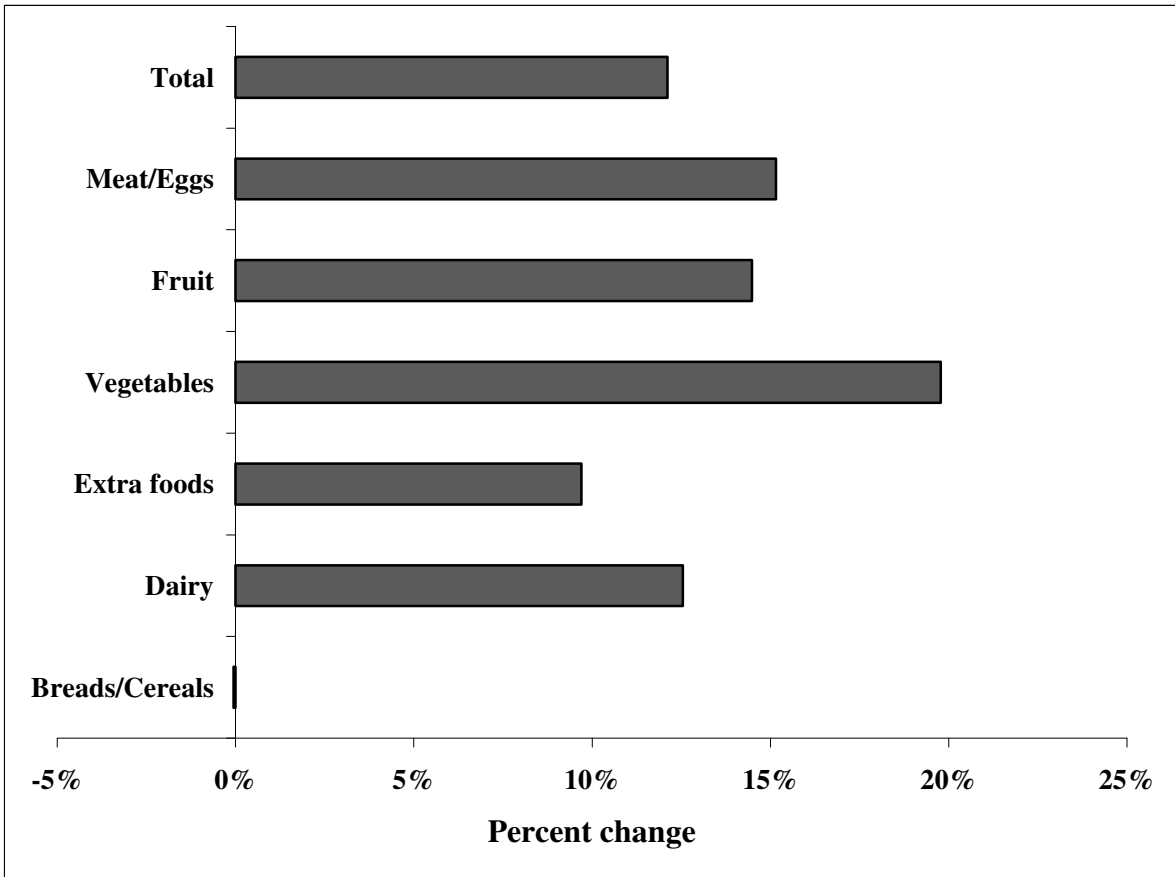
Table 3. The cost of the Illawarra Healthy Food Basket compared to average weekly earnings ^(a) and welfare payments ^(b): 2000-2003

| Type | | 2000 | 2001 | 2003 |
|----------------------------|------------------------------------|-------------------------|----------|----------|
| AWE (\$) | | 675.10 | 706.50 | 772.70 |
| IHFB as % AWE | | 29.8 | 31.9 | 29.2 |
| Welfare Payments (\$) | | | | |
| 39 year old male | Newstart (partnered basic) | 316.40pf ^(c) | 328.90pf | 347.30pf |
| 39 year old female | Parenting payment (partnered) | 316.40pf | 328.90pf | 347.30pf |
| 65 year old female | Age pension benefit (single basic) | 394.10pf | 410.50pf | 452.80pf |
| 15 year old female | Family tax benefit | 147.29pf | 155.82pf | 165.48pf |
| 5 year old make | Family tax benefit | 116.19pf | 122.92pf | 130,48pf |
| Total per week | | 645.38 | 673.52 | 721.68 |
| IHFB as % welfare payments | | 31.2 | 33.3 | 31.3 |

a. Average weekly earnings for all employees, total earnings in NSW in the May quarter (15)

b. Welfare payments per week for the reference family (Centrelink 2003)

c. pf = per fortnight/per two weeks



**Figure 1. Percent change in the cost of Illawarra Healthy Food Basket components:
2000-2003**

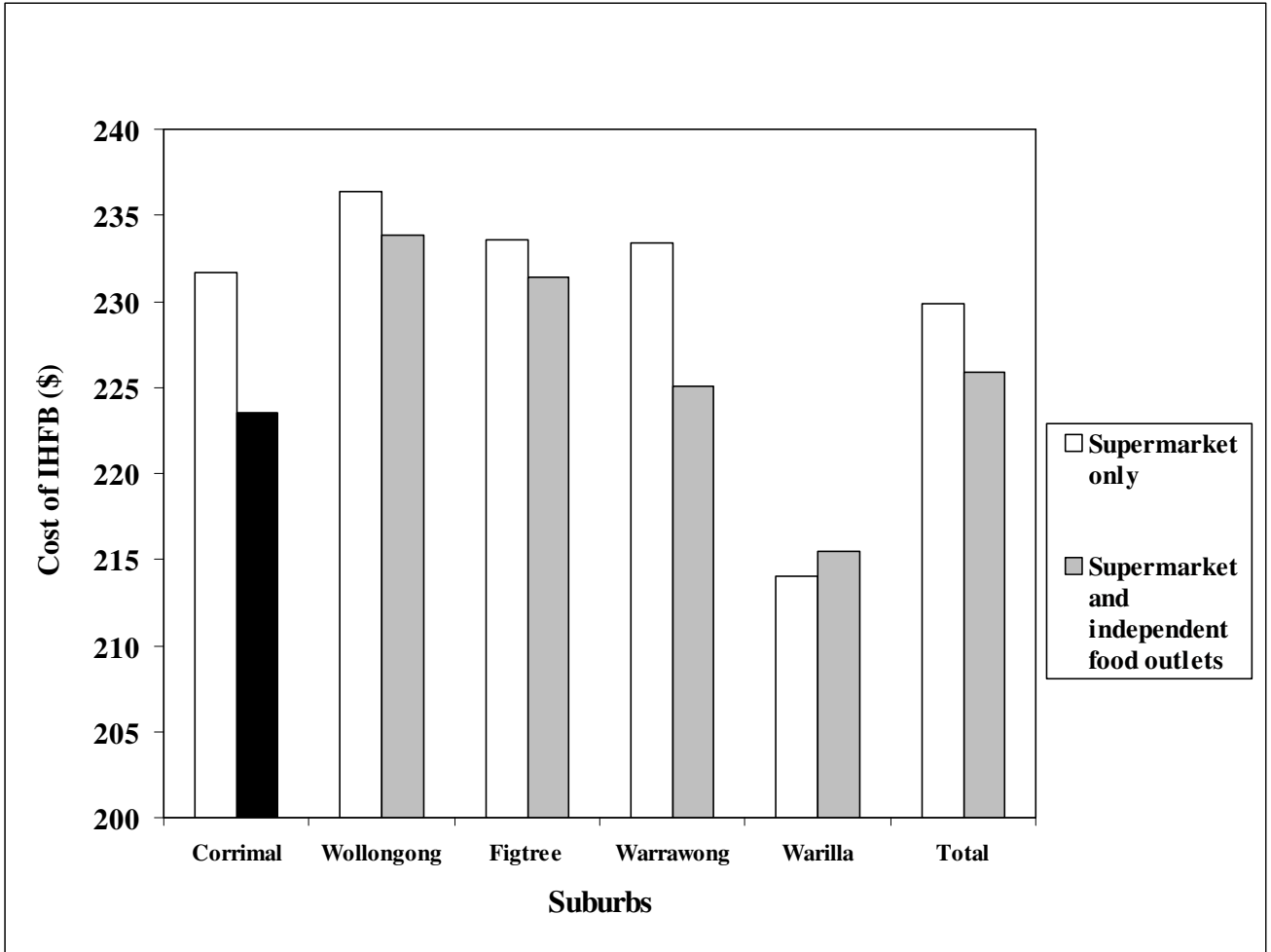


Figure 2. Illawarra Healthy Food Basket by suburb in 2003 comparing costs with the fresh meat, eggs, fruit and vegetable items purchased at the supermarket or from the independent butcher and green grocer.

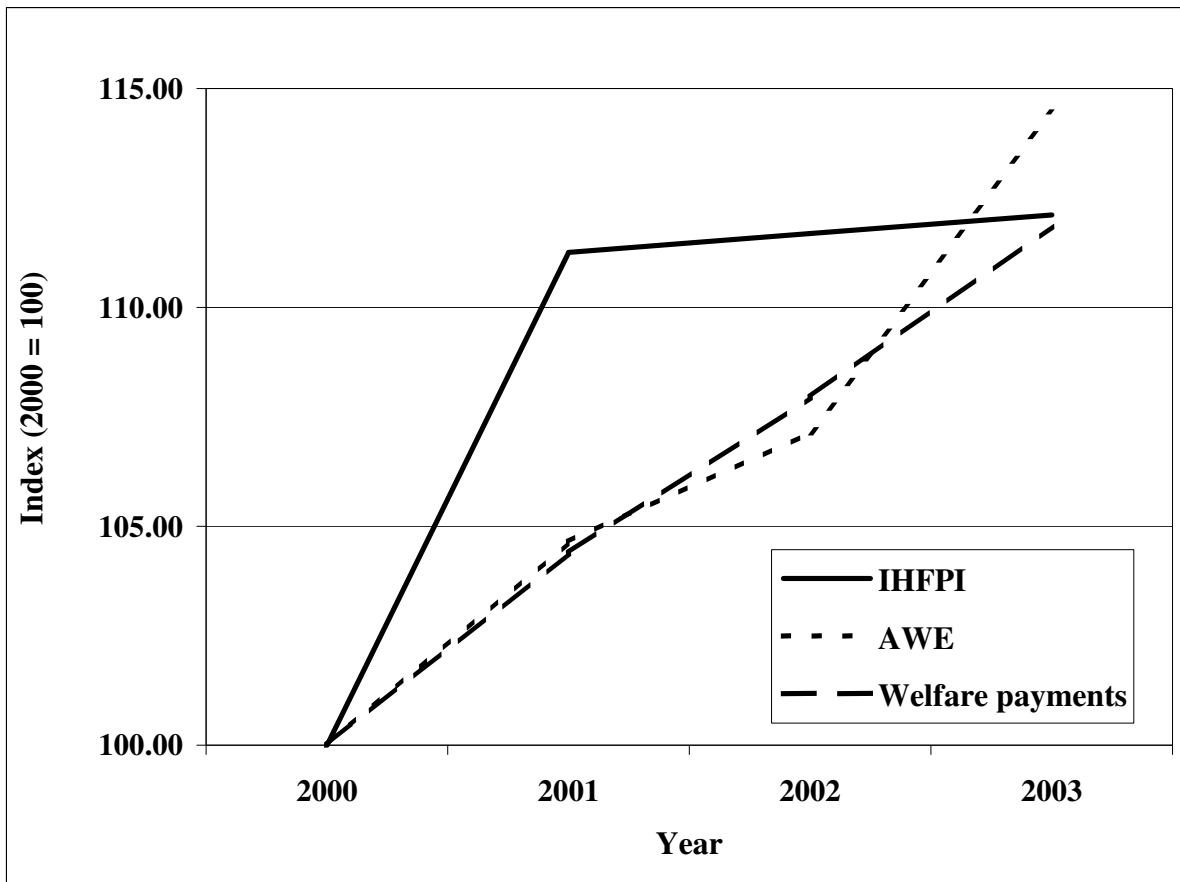


Figure 3. Changes over time in the Illawarra Healthy Food Price Index, average weekly earnings (15) and welfare payments (Centrelink 2003)

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