

MONITORING UPDATE

Apparent consumption of selected foods and household food expenditure

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FOREWORD

PANORG's *Monitoring Updates* focus on summarising new information relating to indicators identified and described in the PANORG publication 'A Framework for Monitoring Overweight and Obesity'. Updates not only cover more recent data on variables described in that report, but also extend the information by reporting on additional indicators as data sources and evidence for their utility emerges.

Topics for the *Monitoring Updates* are determined on the basis of policy-relevance. The principal audience for *Monitoring Updates* comprise policymakers and health promotion professionals in NSW and Australia. This includes professionals working in government agencies, Area Health Services and non-government and community organizations who have an interest in overweight and obesity prevention and promotion of healthy nutrition and physical activity.

OTHER PANORG MONITORING REPORTS

Espinel Paola T, and King L. (2009) *A framework for monitoring overweight and obesity in NSW*. Sydney: NSW Department of Health and the Physical Activity Nutrition Obesity Research Group.

Innes-Hughes C, Thrift A and Cosgrove C. (2010) A further analysis of the weight status and dietary characteristics of people reporting food insecurity in NSW: NSW Population Health Survey data 2007 and 2008. PANORG: Sydney.

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EXECUTIVE SUMMARY

This report aims to describe trends in the apparent consumption of key core and non-core foods, by presenting secondary analyses of apparent consumption data that have been collected through the Australian Bureau of Statistics and are published annually in the *Australian Food Statistics* report and in the *Australian Commodity Statistics* annual report, with the assistance of the Australian Bureau of Agriculture and Resource Economics. Additional data from the Food and Agriculture Organisation of the United Nations on food supply and from Dairy Australia were also reviewed, as well as data from the Household Expenditure Survey (HES). Statistics on supply and demand of selected foods can provide an indication of consumer and industry trends, and contribute to a comprehensive system for monitoring population weight status.

Apparent consumption data reveal that Australians have made substantial changes in their diet in the past four decades. For example, beef and veal apparent consumption has decreased, while poultry and pig meat have become more popular. There has also been an increase in the apparent consumption of fruit and vegetables. Over a number of decades, consumption of cane sugars has decreased, and more recently stabilized; however, Australians remain high consumers of sugar when compared to other countries. Importantly, there has been a rise in the consumption of sugar in the form of manufactured or processed foods. Further, analysis of data from the HES revealed an increasing expenditure on takeaway food and snacks.

These trends in supply and demand are consistent with the increasing prevalence of overweight and obesity amongst Australian adults and children.

INTRODUCTION

The *Framework for Monitoring Overweight and Obesity* report recognised the value of drawing upon information from health and non-health survey sources, in order to monitor factors related to weight status across the NSW population (1).

In addition to data on people's eating behaviours from large nutritional surveys, there are a number of key food statistics that can provide an indication of trends in the consumption of selected foods in Australia. Key food statistics of interest include:

- apparent consumption of selected foods in Australia,
- average retail prices of selected foods, and
- average weekly household expenditure on food and beverages.

This report aims to describe trends in the apparent consumption of key core and non-core foods by presenting mostly secondary analyses of data that have been collected through the Australian Bureau of Statistics (ABS) and are published annually in the *Australian Food Statistics* report (2) and in the *Australian Commodity Statistics* annual report (3), with the assistance of the Australian Bureau of Agriculture and Resource Economics (ABARE)^a. Additional data from the Food and Agriculture Organisation of the United Nations (FAO) on food supply and from Dairy Australia were also reviewed. Together, these statistics on supply and demand of selected foods can provide an indication of consumer and industry trends, and contribute to a comprehensive system for monitoring population weight status.

APPARENT CONSUMPTION OF SELECTED FOODS IN AUSTRALIA

Apparent consumption statistics^b provide an estimate of food consumption at a national level, and contain details on imports, exports, wastage, and non-food use and stock carryovers. Because consumption of foods is not measured directly and apparent consumption data are based on food supply measures, these statistics cannot provide information on a state level, or accurate information about the food intakes of individuals, households or population subgroups. However, data on apparent consumption are the primary sources of data on the foodstuffs and nutrients available for consumption and are the only sources of information about trends in consumption over the last 50 years (4).

Historical data regarding the apparent per capita consumption of selected food groups in Australia are presented in Table 1 for the past five decades as averages for three-year periods, from 1948-49 to 1998-9. During this period there have been significant changes to the food supply and in the Australian diet. The main factors that have contributed to this include changes in composition of population (rapid migration), age distribution, consumer demands and technological developments in food processing (4).

From the year 2001, annual data from the ABS are only available for dairy products and meat products as the final publication of the Apparent Consumption of Foodstuffs data was compiled in relation to the 1998-99 reference period and it has now been discontinued. However, annual statistics on Australian food supply for sugar, vegetables and fruit have been obtained from FAO data (5) and are presented later in this report.

^a ABARE (<u>www.abare.gov.au</u>) is an Australian government economic research agency that captures ongoing data in regards to production, farming, export/import and costs for agricultural, fishing, forestry, energy and mineral industries and provides rigorous independent economic research analysis and forecasting.

^b Apparent consumption of the various foodstuffs is estimated using the Food and Agriculture Organisation of the United Nations (FAO) measurement for availability of foodstuffs. The apparent consumption equation is as follows: Commercial production (Estimated home production, Imports and opening stocks) - Exports (use for processed food, non-food use, wastage and closing stocks). When certain components of the general equation are not available (i.e. milk, some milk products, cheese, rice, bread, butter, sugar, wheaten flour and dried fruits), this consumption equation is not used and consumption is estimated on the basis of domestic deliveries.

		Average for 3 years ended during each period												
	-	1948-	1958-	1968-	1978-	1988-	1998-	2001-	2002-	2003-	2004-	2005-	2006-	2007-
	Unit	49	59	69	79	89	99	02	03	04	05	06	07	08
Dairy products														
Butter/dairy blends	kg	11.2	12.3	9.8	5.1	3.2	2.8	3.4	3.4	3.6	4.1	3.9	3.8	4.1
Margarine (table)	kg	0.4	n/a	1.5	5.4	6.8	4.5	4.3	4.2	4.2	4.4	4.3	4.2	4.0
Cheese	kg	2.5 ^c	2.6 ^c	3.5 [°]	5.3 ^c	8.8 ^c	10.7 ^c	11.6 ^ª	12.1 ^ª	11.5 ^a	11.3 ^a	11.7 ^a	12.0 ^a	11.8 ^a
Whole milk powder	kg	1.5	1.1	0.8	1.3	0.9	1.0	1.3	1.2	1.1	1.7	1.8	1.8	2.0
Skim milk powder ^b	kg	0.3	1.1	4.3	2.7	2.8	2.0	1.3	1.3	1.5	1.3	1.3	1.2	1.2
Drinking milk	L	138.7	128.7	128.2	100.5	101.7	103.2	98.5	98.3	99.0	100.2	100.5	103.7	103.7
Meat														
Beef and veal	kg	49.5	56.2	40.0	64.8	40.0	38.0	34.5	36.9	37.7	37.6	36.7	38.0	37.9
Lamb and mutton	kg	31.9	36.4	39.9	18.0	22.2	16.7	16.7	15.4	13.5	13.0	13.0	13.9	14.8
Pig meat	kg	3.2	4.6	6.7	13.3	17.5	18.4	18.8	20.7	22.1	22.3	23.8	23.4	25.9
Poultry meat	kg	n/a	n/a	8.3	17.1	24.1	29.4	32.3	35.8	34.6	36.2	37.7	39.3	38.9
Cane Sugars														
As refined sugar	kg	31.2	27.0	21.0	14.9	8.8	n/a*							
In manufactured foods	kg	23.1	23.6	27.7	34.6	33.9	n/a*							
Fresh Fruit (include fruit														
for fruit juice)														
Citrus	kg	16.9	16.1	22.5	34.5	39.1	49.2	n/a*						
Other	kg	39.5	35.6	40.8	34.6	49.9	54.8	n/a*						
Vegetables														
Potatoes	kg	56.3	51.7	53.7	50.1	61.5	69.5	n/a*						
Other root and bulb	kσ	10 1	15 0	171	16.7	10.3	24.0	n/a*						
vegetables	ĸв	19.1	15.5	17.1	10.7	19.5	24.0	ny a	n/a	n/a	ny a	n/a	n/a	Π/a
Leafy and green vegetables	kg	20.5	17.9	21.3	24.3	23.8	20.6	n/a*						

Table 1 Apparent per capita consumption^ of selected foods in Australia

^ Apparent consumption data are expressed as total product amount per year, and per capita consumption is derived by dividing apparent consumption by the mean resident population for that year. * n/a= data not available from the ABS statistics. However, further information was available from FAO and is presented later in this report.

^a In natural equivalent weight.

^b Includes buttermilk powder and mixed skim milk powder.

^c Combine product and natural weight equivalent weights prior to 1971-1972.

Abbreviations: Kg= kilogram, L=litre

Source: Adapted from Australian Food Statistics (2008) (2), and Australian Commodity Statistics (2009) (3).

Primary source: ABS (2000) (6)

Dairy products

The main dairy products Australians consume are drinking milk, cheese, butter and butter blends and yogurt (7). Per capita consumption trends have varied significantly by product in the past decades. For instance, apparent consumption of butter declined slowly from the 1950s to the end of the 1990s. Although it has been relatively stable in the past two decades, dairy blends have experienced growing popularity and per capita consumption of dairy spreads is now around 4 kg per year. Additionally, the proportion of butter to table margarine has fallen steadily, with the table margarine supply exceeding that of butter by the mid-1970s. Apparent per capita consumption of cheese has increased markedly since 1968–69, from 3.5 kg per year up to 12 kg per year in the 2000s and remaining stable in recent years. Skim milk and whole milk powder have not experienced major changes (see Figure 1).



Figure 1 Apparent per capita consumption of dairy products (kg)

Source: Adapted from Australian Food Statistics (2008) (2), and Australian Commodity Statistics (2009) (3). Primary source: ABS (2000) (6)

Per capita consumption of drinking (market) milk dropped from 128 L per year to less than 100 L per year in the early 2000s but has experienced steadily small increases over the past five years (See Figure 2).





Source: Adapted from Australian Food Statistics (2008) (2), and Australian Commodity Statistics (2009) (3). Primary source: ABS (2000) (6)

In addition, data from the Dairy manufactures and Dairy Australia indicate that drinking milk consumption has been shifting gradually from regular to modified milk types, such as reduced and low-fat milks (7) (See Table 2).

Table 2	Drinking	milk sale	s by type	(million L)
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	1989/90	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Regular	1,257	1,099	1,094	1,074	1,055	1,057	1,063	1,093	1,107	1,126
Reduced	322	498	415	435	440	462	492	488	530	553
Low fat	n/a*	n/a*	95	105	120	118	116	124	125	123
Flavoured	111	173	165	170	174	190	199	201	213	213
UHT^	40	164	165	140	153	154	154	155	181	187
Total	1,730	1,933	1,934	1,924	1,942	1,981	2,024	2,061	2,156	2,202

^ Milk subjected to ultra high temperature treatment to extend shelf life

* n/a= data not available

Source: Adapted from Australian Dairy Industry in Focus (7).

Meat

Figure 3 shows that there was a notable fall in the apparent consumption of beef and veal in the 1990s, and a steady decline in the apparent consumption of lamb and mutton. By contrast, apparent consumption of pig meat and poultry meat shows a long-term gradual upward trend.





Source: Adapted from Australian Food Statistics (2008) (2), and Australian Commodity Statistics (2009) (3). Primary source: ABS (2000) (6)

Sugars

Figure 4 illustrates a significant decline in the apparent consumption of refined sugars for home use but, at the same time, an important increase in the apparent consumption of sugar in manufactured foods.





Source: Adapted from Australian Food Statistics (2008) (2), and Australian Commodity Statistics (2009) (3). Primary source: ABS (2000) (6)

Data available from FAO statistics show that although the per capita supply of sugars decreased in the four past decades, it has been stable in recent years (See Figure 5).





Source: Adapted from FAO Australian Food Balance Sheets (5).

Fresh fruit

Figure 6 shows that per capita apparent consumption of fruit has increased in the past decades, particularly with an increase in the consumption of citrus fruit.

Figure 6 Apparent per capita consumption of fresh fruit (kg)



Source: Adapted from Australian Food Statistics (2008) (2), and Australian Commodity Statistics (2009) (3). Primary source: ABS (2000) (6)

ABS findings are consistent with data available through FAO that shows a steady increase in the per capita supply of total fruit.



Figure 7 Per capita supply of fruit (kg/capita/year)

Source: Adapted from FAO Australian Food Balance Sheets (5).

Vegetables

Apparent consumption of vegetables has shown a long-term upward trend. After 1978-9, potato consumption has increased markedly (See Figure 8).





Source: Adapted from Australian Food Statistics (2008) (2), and Australian Commodity Statistics (2009) (3). Primary source: ABS (2000) (6)

Similarly, FAO statistics indicate that the total per capita vegetables supply has increased considerably in the past decades (See Figure 9).

Figure 9 Per capita supply of vegetables (kg/capita/year)



Source: Adapted from FAO Australian Food Balance Sheets (5).

COST OF SELECTED FOODS

Many factors influence food prices, including direct production costs, the effects of demand, international price fluctuations, transport, storage costs, and taxes. An accepted indicator of price is the Consumer Price Index (CPI). CPI is a current social and economic indicator that is constructed to measure changes over time in the price of a 'representative basket' of goods and services which account for a high proportion of metropolitan households' expenditure (8). CPI provides a general measure of price inflation for the household sector as a whole. Food is one of the eleven items that are included in this 'basket'. Prices are collected at regular intervals, especially for those items with high price volatility such as milk, bread, fresh meat and seafood, fresh fruit and vegetables, with monthly prices being recorded. The food CPI is presented every quarter, along with other CPI groups, and is available for the main cities in Australia. Sydney CPI numbers are presented in this report as they are relevant for NSW. However, Figure 10 shows the large similarity between Sydney and Australian CPI numbers in the past decades.



Figure 10 Sydney Food Consumer Price Index (CPI) compared to Australian Food CPI

Table 3 shows Sydney index numbers and percentage change of CPI for food and food groups for the same quarter of the previous year for the last ten years. Overall, during the past decade, the main contributors to change in the food CPI group comprise fresh products, and particularly fruits and vegetables, with volatile prices. In most of the years, fruits and vegetables show a greater percentage change from the corresponding quarter of the previous year compared to snacks, soft drinks and takeaway foods.

The rise in the cost of fruit and vegetables can be explained mainly as a result of seasonal factors and adverse weather conditions in some growing areas, which result in short supplies for a number of these fresh products. While the CPI data for food suggest fruit and vegetables are susceptible to bigger price fluctuations, other fresh foods such as meat, milk and bread do not appear to be so variable. However, CPI for fresh food products tend to rise more above the CPI for all foods compared to processed foods.

Figure 11 illustrates the annual percentage change of food subgroups' CPI in Sydney in the past five years. Again, it is evident that fresh products such as fruit, vegetables and dairy products have fluctuated the most during this period of time, when compared with other food subgroups.

Source: Adapted from ABS (2010) (8)

Item		Dec 2000	Dec 2001	Dec 2002	Dec 2003	Dec 2004	Dec 2005	Dec 2006	Dec 2007	Dec 2008	Dec 2009
All foods	CPI number	134.6	144.0	147.7	152.6	155.3	161.0	175.5	175.2	185.5	189.0
All 1000S	% change	3.9	7.0	2.6	3.3	1.8	3.7	9.0	-0.2	5.9	1.9
Dairy and	CPI number	138.8	148.7	155.4	154.9	163.0	171.1	178.6	196.1	210.3	210.5
products	% change	-0.9	7.1	4.5	-0.3	5.2	5.0	4.4	9.8	7.2	0.1
Bread and cereal	CPI number	144.2	150.9	154.4	157.9	156.4	163.6	171.2	181.2	198.1	200.3
	% change	1.2	4.6	2.3	2.3	-0.9	4.6	4.6	5.8	9.3	1.1
Meat and Sea foods	CPI number	118.1	138.0	139.3	145.7	147.6	150.9	152.2	159.3	167.8	170.9
	% change	2.5	16.9	0.9	4.6	1.3	2.2	0.9	4.7	5.3	1.8
Fruit	CPI number	130.5	157.0	144.7	154.4	162.6	153.7	273.4	174.2	183.1	191.3
	% change	-5.4	20.3	-7.8	6.7	5.3	-5.5	77.9	-36.3	5.1	4.5
Vogotablos	CPI number	109.2	116.1	127.3	132.8	122.7	134.1	143.0	149.4	153.8	145.4
vegetables	% change	6.1	6.3	9.6	4.3	-7.6	9.3	6.6	4.5	2.9	-5.5
Soft drinks,	CPI number	126.6	134.7	139.9	140.8	147.9	150.0	163.2	170.5	180.2	182.1
juices	% change	-7.0	6.4	3.9	0.6	5.0	1.4	8.8	4.5	5.7	1.1
Snacks and	CPI number	153.7	157.5	163.2	170.8	173.6	186.5	193.7	203.9	214.2	221.4
confectionary	% change	4.4	2.5	3.6	4.7	1.6	7.4	3.9	5.3	5.1	3.4
Take away and	CPI number	138.7	144.5	148.3	155.7	158.6	163.6	169.4	176.4	189.4	196.9
fast foods	% change	11.9	4.2	2.6	5.0	1.9	3.2	3.5	4.1	7.4	4.0

Table 3 Sydney Food Consumer Price Index (CPI) numbers and annual percentage change(December quarter 2000 to December quarter 2009) by food subgroup

Note: Base of each index: 1989–90 = 100.0.

Source: ABS (2010) (8)

Figure 11 Percentage change of CPI food and food subgroups CPI from corresponding quarter of previous year



Source: ABS (2010) (8)

HOUSEHOLD EXPENDITURE ON FOOD AND BEVERAGES

The Household Expenditure Survey (HES) has been conducted by the ABS in 1974-75, 1975-76, 1984, 1988-89, 1993-94, 1998-99 and 2003-04. It is planned to be conducted 6-yearly from 2003-04; so that the next new data will be for 2009-10. The HES collects detailed information about the expenditure, income and household characteristics of a sample of households resident in private dwellings throughout Australia (9).

Results from the HES showing the average Australian weekly household expenditure on food and beverages in the past 30 years are presented in Table 4 and Figure 12. In the 1970s, the highest expenditure was on meats (20%) and alcoholic drinks (16%), followed by takeaway foods (15%) and fruits and vegetables (11%). By contrast, in the past two decades meals out and takeaway foods has accounted for more than 20% of the weekly expenditure, and expenditure on non-alcoholic drinks and snacks food has increased by approximately three percent. On the other hand, expenditure on meats and seafood, dairy products, and oils and fats has decreased over time. Proportionally, weekly expenditure on fruit and vegetables, and breads, cakes and cereals has remained consistent in the past three decades. It is important to consider that these trends do not necessarily represent changes in what is eaten, as relative price movements between food categories will also influence the pattern of expenditure.

	1975-76		1988-89		1998-9		2003-4	
	\$	%	\$	%	\$	%	\$	%
Dairy products	3.69	9.2	7.68	6.8	10.50	7.1	11.26	6.4
Fresh milk and cream	2.32		4.63		5.89		5.64	
Cheese	0.56		1.84		2.53		3.05	
Butter	0.51		0.45		0.38		0.43	
Meat and seafood	8.06	20.1	18.68	16.6	18.75	12.7	23.87	13.5
Beef and veal	3.13		4.38		3.59		4.13	
Lamb and mutton	1.16		2.32		1.63		2.10	
Pork	0.31		0.90		0.94		1.11	
Poultry and game	0.85		2.34		2.89		3.96	
Processed meat	2.04		6.64		6.75		8.72	
Fish and other seafood	0.57		2.10		2.95		3.85	
Fruit and vegetables	4.45	11.1	13.15	11.7	16.52	11.2	20.38	11.6
Fresh fruit	1.36		4.58		6.05		7.55	
Other frozen and processed fruit	0.24		0.45		0.60		0.75	
Dried fruit and nuts	0.31		0.88		1.16		1.47	
Potatoes	0.47		1.23		1.17		1.23	
Other fresh vegetables	1.40		4.50		5.65		7.11	
Other frozen and processed vegetables	0.67		1.51		1.89		2.27	
Other food categories								
Bread, cakes and cereals	3.83	9.5	10.88	9.6	15.14	10.3	16.06	9.1
Edible oils and fats (incl. margarine)	0.70	1.7	1.30	1.2	1.31	0.9	1.39	0.8
Eggs, sugar, syrups, jams, jellies, tea,	3.45	8.6	8.33	7.4	13.78	9.3	19.09	
coffee								10.8
Non-alcoholic drinks and snacks food	3.34	8.3	12.30	10.9	17.43	11.8	18.72	10.6
Meals out and take away foods	6.10	15.2	23.47	20.8	33.55	22.8	42.10	23.9
Alcoholic drinks	6.54	16.3	16.91	15.0	20.44	13.9	23.32	13.2
Total food and beverage expenditure	40.16	100	112.70	100	147.42	100	176.19	100
Total household expenditure	172.35		502.71		698.97		883.45	

Table 4 Average weekly household expenditure on food and beverages in Australia

Source: Adapted from Australian Food Statistics (2008) (2), primary source: ABS (2006) (9)



Figure 12 Trends in weekly household expenditure on selected food and beverages in Australia (%)

Source: Adapted from Australian Food Statistics (2008) (2), primary source: ABS (2006) (9)

DISCUSSION

Data available through ABS and FAO provide useful information regarding trends for Australian's apparent food consumption and expenditure patterns in the last decades. Apparent consumption datasets reveal that Australians have made substantial changes in their diet in the past decades. For instance, beef and veal apparent consumption has decreased, while poultry and pig meat have become more popular. There has been an increase in the consumption of fruit and vegetables. Although overall consumption of cane sugars had decreased then stabilised in the past 5 years, Australians remain high consumers of sugar. Importantly, there has been a rise in the consumption of sugar in manufactured or processed foods. These findings are consistent with those described by Dobson et al in 1997, who reported the pattern on diet changes observed from two community-based surveys in the Lower Hunter Region of New South Wales conducted 11 years apart. They found a reduction in the consumption of meat and eggs, and a greater consumption of fruit, vegetables and low-fat dairy products (10). Although these changes are positive and consistent with intensive marketing of fat-reduced products and health promotion initiatives, Australian household expenditure data suggest that other less healthy options such as takeaway food, snacks and soft drinks have become proportionally more significant items in recent years.

Many factors impact on the supply and demand for food in a local market. For instance, changes in the population and technological developments in food processing contribute to local changes in the food supply. In addition, climatic conditions and varying fuel prices affect the cost of foods, particularly those fresh products that cannot be warehoused for long periods of time. ABS data illustrate that core foods such as dairy products, meats and fresh fruit and vegetables (fresh products unsuitable for warehousing) tend to fluctuate more than non-core foods (such as sugar sweetened beverages, fats and oils, sugar, confectionary and meals out and takeaway foods).

These findings on food prices were also reported by Burns et al in 2008, who analysed trends in the CPI for food and found that the average percentage increase in price was significantly higher for some core foods (such as milk, cheese, bread, breakfast cereal, lamb, poultry, fish and eggs) compared to the average percentage increase in price per quarter of food overall (11). Given that price strongly influences people's choices and purchases (12), high food prices have the potential to limit people's access to healthy foods, and this is particularly the case for socioeconomically disadvantaged groups (13). These findings have significant implications for public health nutrition interventions which aim to improve the intake of core foods.

Although this report provides an overall depiction of the Australian diet and an understanding of eating habits at population level, important limitations of the data need to be considered. In some cases, the classification for current CPI food subgroups mixes core and non-core foods in one category (i.e. soft drinks, juices and water), therefore it is not possible to distinguish the impact of changes in price on core foods alone. Additionally, it is recognised that the apparent consumption series are an estimate of food supply, rather than accurate food intake by individuals.

CONCLUSION AND IMPLICATIONS

Findings from ABS statistics on apparent food consumption, food prices and household expenditure can be useful to understand population level dietary patterns. These provide useful information on key factors which influence the weight status of a population. The observed trends in increasing apparent consumption of sugar in manufactured foods, and increased expenditure on takeaway food and snacks, are consistent with the increasing prevalence of overweight and obesity amongst Australian adults and children.

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