

Submission No. 154
(Inq into Obesity) *MC 23/12/08*

**Submission to the House of Representatives
Standing Committee on Health and Ageing
Inquiry Into Obesity in Australia**

Department of Health and Ageing

December 2008

TABLE OF CONTENTS

Page

Executive Summary

PART ONE

- | | |
|---|-----------|
| 1. Introduction | 1 |
| 2. Obesity rates in different population groups | 2 |
| 3. Projections of impact on the health care system | 15 |
| 4. Results of international modelling | 21 |
| 5. Drivers of the growth in obesity | 25 |

PART TWO

- | | |
|---|-----------|
| 6. Australia's policy and program response | 34 |
| 7. International Developments | 37 |

APPENDIX A: New and current commitments

APPENDIX B: Selected international developments of relevance to Australia

Executive Summary

Introduction

The increase in the prevalence of obesity over the past two decades constitutes a significant risk to Australia's current levels of good health and may threaten the future sustainability of the health care system. Overweight and obesity affects about one in two Australian adults and almost one in four children. The impact - both on individuals and the health care system - of the rise in obesity rates can already be seen in the threefold increase, since the early 1980s, in the number of Australians with diabetes.

In light of the scale of the challenge, obesity prevention and control is an area currently subject to fundamental policy review. Consistent with the pre-election commitment of the Rudd government, Australian Health Ministers agreed to obesity becoming a National Health Priority Area at their April 2008 meeting. One of the first tasks of the newly created National Preventative Health Taskforce will be to provide advice on a comprehensive national strategy to address obesity, diet and physical activity, in the context of a National Preventative Health Strategy. This is in recognition of the urgent need to tackle obesity rates.

This Submission primarily addresses the first Term of Reference of the Inquiry into Obesity in Australia, namely:

The Committee will inquire into and report on the increasing prevalence of obesity in the Australian population, focusing on future implications for Australia's health system.

The Department does not believe it is appropriate to comment in any detailed sense on the second Term of Reference as it would pre-empt the findings of the Taskforce, namely:

The Committee will recommend what governments, industry, individuals and the broader community can do to prevent and manage the obesity epidemic in children, youth and adults.

In light of the many differing perceptions of the nature of the topic, the bulk of the Submission aims to describe factually the dimensions of the obesity challenge, by drawing together recent data on obesity prevalence and trends, including the differentials in rates among sub population groups. The Submission also sets out what is currently known about the current and projected disease burden associated with obesity, including the projected costs to the health care system of obesity related conditions. In considering likely scenarios for the future, the Submission also briefly reviews the results of international modelling studies, particularly recent work from the UK. It also reviews data on some of the drivers of population weight gain, including trends in diet and physical activity and some of the leading influences on these behaviours.

The Submission sets out in Appendix A what the Government is doing to address the problem now and contains, in Appendix B, a brief review of selected international developments which may have relevance for Australia.

Trends, differentials and projected impact

The number of overweight or obese adults increased from 4.6 million in 1989-90 to 5.4 million in 1995, 6.6 million in 2001, and 7.4 million in 2004-05. Nearly 25% of children (2-16 years) are overweight or obese, up from an estimated 5% in the 1960s. The mean BMI at which Australians enter adulthood has been gradually increasing. For example, for women aged 20-24 years, mean BMI increased from 22.1 kg/m² in 1990 to 23.3 kg/m² in 2004, and younger adults are gaining weight earlier and at a faster rate than previous generations.

The growth in obesity is part of a worldwide trend associated with changing lifestyles, modernisation, and technological change.

The average weight of Australian adults has increased by around 0.5-1 kg per year over the past twenty years, which is attributable to a mean energy imbalance of around 100 kcal/day - equivalent to an extra slice of bread, a soft drink or 30 minutes of sitting instead of brisk walking. These small annual gains in weight may not be noticeable to individuals, but over two decades, the accumulated gains can explain an average increase of up to 20 kilograms, with major implications at the population level.

There is little indication that the trend is abating. While some studies suggest that childhood weight gain may be stabilising, this still leaves a very substantial proportion of children who will go on to become overweight or obese adults. Of concern are studies that show that most obese adults were not overweight as children, suggesting a strong role for the impact of lifestyle change and environmental exposures in adulthood as causative factors.

There are significant variations in the distribution of overweight and obesity across Australia's population. Obesity is particularly prevalent among men and women in the most disadvantaged socioeconomic groups, people without post school qualifications, those with the lowest equivalent income, Aboriginal and Torres Strait Islander people, and among some of those born overseas.

The burden of disease attributable solely to high body mass (7.5% of total burden) is now very close to that of tobacco (7.8%). High body mass is likely to overtake tobacco as the leading modifiable cause of burden as smoking rates decline. This is already occurring for some age groups.

The major conditions for which obesity predicts higher mortality and/or morbidity are type 2 diabetes, cardiovascular disease, certain cancers and, increasingly, osteoarthritis. However, obesity is also strongly associated with a wider range of conditions including back, reproductive and mental health problems and sleep apnoea.

Due to expected increases in the prevalence of obesity, along with demographic changes, diabetes prevalence is projected to increase two to threefold over the next twenty five years. Diabetes is also expected to cause the largest growth in disability in the elderly.

High body mass is responsible for around 55% of the burden for type 2 diabetes. The combined effect of the cluster of associated risk factors - poor diet, physical inactivity, high body mass, high blood pressure and high cholesterol - is responsible for more than 50% of the total burden of cardiovascular disease.

As well as promoting a healthier body weight and providing many other health benefits, a healthier diet can also help to lower raised cholesterol levels, one of the conditions placing significant pressure on the Pharmaceutical Benefits Scheme. Adequate levels of physical activity can help in weight loss and the prevention of weight gain, in addition to helping to lower blood pressure, reduce the risk of some cancers and contribute to improvements in anxiety and depression.

The primary prevention of overweight and obesity by encouraging healthy eating habits and a more physically active lifestyle across all age groups in the population, in addition to improvements in weight management and the prevention of weight gain in those already overweight or obese, therefore provides a substantial opportunity to realise a wide range of health benefits in the Australian population, to preserve the high levels of life expectancy Australians currently enjoy, and to reduce disparities in health status associated with these risk factors.

Program and policy response

Australian governments have taken a range of steps towards addressing the problem. Australia released the world's first strategic plan for obesity prevention in 1997.¹ Since then several landmark

¹ NHMRC Acting on Australia's Weight: a Strategic Plan for the Prevention of Overweight and Obesity (1997)

reports, strategies and action agendas² have been produced, both nationally and at the state level, and various mechanisms to coordinate and lead action have been established.

Obesity prevention and related issues have more recently been a focus of activities under the Council of Australian Governments (COAG), including through the Australian Better Health Initiative (ABHI) and most recently the National Partnership Agreement on Preventive Health agreed by COAG on 29 November 2008.

The implementation of a number of national programs and activities has accompanied these various plans and initiatives (those that are still current are described at Appendix A of the Submission). In the past three years, there has been a significant increase in resources allocated to lifestyle change. Of these, the largest resource commitments have arisen from COAG initiatives. Many of the Commonwealth activities were implemented under the *Building a Healthy Active Australia* banner,³ including the *Active After School Communities* Program. The Commonwealth and state governments have also supported important action research, community based initiatives such as the Colac *Be Active Eat Well* program and Townsville's *10,000 Steps*.

Under the Rudd Government, a number of new initiatives, detailed in Appendix A, were announced in the 2008-09 budget. These include continuing support for the National Nutrition and Physical Activity Survey; the Healthy Kids Check; guidelines on healthy eating and physical activity in early childhood settings; Stephanie Alexander Kitchen Gardens; Learning from Successful Community Obesity Initiatives; and the Healthy Places and Spaces project. The Government's subsequent commitment of \$872.1 million over six years under the National Partnership Agreement on Preventive Health significantly escalates its overall commitment to fighting obesity.

In addition to the role played by governments, many other sectors have implemented policies and programs to promote healthy eating, physical activity and healthy weight management. These include health non-government organisations, local authorities, community organisations and the private sector. These are not considered in any detail in this Submission, but it is recognised that harnessing the range of existing and potential activity across the Australian community and the contributions of many sectors outside health, will be necessary if a significant and sustained impact is to be achieved.

Future directions and challenges

To achieve the potential gains from effective preventive action, all of the major Australian and international reviews and studies considered by the Department come to the same conclusions: a sustained, comprehensive and organised response - similar to the multifaceted strategies successfully deployed against tobacco smoking - is required.

For those individuals already on a weight gain trajectory, those who are already obese and those with associated conditions such as impaired glucose tolerance, clinical interventions delivered through the primary health care system aimed at modifying behaviour and better weight management have an important role to play.

But this does not address the various causative factors of obesity, such as the population imbalance between energy consumption and expenditure, or the environmental drivers of change. For those in weight loss programs, the prospects for sustaining lifestyle change are limited in a society where being overweight is becoming the norm.

² eg *Healthy Weight 2008 - Australia's Future - The National Action Agenda for Children and Young People and their Families*; *Healthy Weight for Adults and Older Australians*; National Public Health Partnership (2001) *Eat Well Australia: an agenda for action in public health nutrition, 2000-2010* and *National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan, 2000-2010*; National Public Health Partnership (2005) *Be Active Australia: A Framework for Health Sector Action for Physical Activity*.

³ The former Prime Minister's *Building a Healthy, Active Australia* package of initiatives was announced in 2004.

As noted, Australia has already taken some significant steps towards addressing the problem which provide important building blocks for our response. The literature reviewed by the Department has identified some of the further elements that might be considered within a comprehensive approach to obesity. These include:

1. *Targeted interventions* based on a lifecourse approach, prioritising: younger families with, or those intending to have children; middle-aged adults; and disadvantaged and vulnerable populations.
2. *Community-wide strategies* aimed at achieving modest but sustained behavioural changes in the population as a whole.
3. *Environmental and structural interventions* aimed at reducing exposure to energy dense foods and beverages, and increasing access to healthy food choices (food system interventions); and strategies to reduce barriers to physical activity, and to make physical activity choices easier (built environment/workplace interventions).

PART ONE

1. INTRODUCTION

Australia is one of the most overweight developed nations, with overweight and obesity affecting about one in two Australian adults and up to one in four children. The situation is worse for Aboriginal and Torres Strait Islander peoples, with nearly one in three Indigenous Australian adults obese. The increase in the prevalence of obesity over the past two decades constitutes a real and significant risk to Australia's current levels of good health and may pose a major challenge to the long term sustainability of the health care system. There are strong indications it may adversely impact economic productivity in the future. The impact of the trend can already be seen in the threefold increase, since the beginning of the 1980s, in the number of Australians with type 2 diabetes. For some population groups, high body mass and a sedentary lifestyle have now overtaken tobacco smoking as the leading avoidable cause of disease burden.

Methodological issues and reporting time frames make international comparisons of overweight and obesity problematic. Nevertheless, having regard for this, Table 1 shows how Australia ranks against selected OECD countries (shown in alphabetical order). This shows that the USA has by far the highest obesity rate amongst OECD countries, followed by the UK, with Australia next in line but somewhat lower. On the data supplied to OECD, the French obesity rate is approximately half that of Australia, and less than a third that of the USA.

Table 1: Prevalence (%) of obesity among adults in selected countries

		Australia	Canada	France	Germany	Japan	Sweden	UK	USA
Obesity	Males	19.0	18	9.8	14.4	2.8	11.1	22.1	31.1
	Females	17.0	17	9.3	12.8	3.2	10.3	24.2	33.2
	Persons	18.0	17	9.5	13.6	3.0	10.7	23.0	32.2

Source: OECD 2007

It is now well recognised that over the past two to three decades the prevalence of overweight and obesity in Australia has been steadily increasing. ABS analysis comparing the results of the 2004-05 National Health Survey (NHS) with surveys conducted in the preceding 15 years, shows that over the four surveys in that period, the number of overweight or obese adults increased from 4.6 million in 1989-90 to 5.4 million in 1995, 6.6 million in 2001, and 7.4 million in 2004-05.⁴ The increase was most marked among obese adults, with the proportion of the adult population in this category doubling between 1989-90 and 2004-05 (from 9% to 18%). Approximately 23% - 25% of children (2-16 years) are overweight or obese, up from an estimated 5% in the 1960s.^{5,6}

High body mass was estimated to be responsible for 7.5% of the total burden of disease and injury in Australia in 2003, and the cause of approximately 55% of the diabetes burden according to the Burden of Disease and Injury in Australia (BoD) study (Table 2).

⁴ Australian Bureau of Statistics (2008), *Overweight and obesity in Adults*, Cat No 4719.0 ABS, Canberra. The ABS notes that: "Even when the effect of changes in the age structure of the adult population over time is taken into account (i.e. when age standardisation is applied to the data), the proportion of overweight or obese adults increased steadily over this period - from 38% in 1989-90 to 44% in 1995, 50% in 2001 and 53% in 2004-05."

⁵ Department of Health and Ageing, *2007 Australian National Children's Nutrition and Physical Activity Survey: Main Findings*, Canberra; Booth M, Okely AD, Denney-Wilson E, Hardy L, Yang B, Dobbins T. (2006) *NSW Schools Physical Activity and Nutrition Survey (SPANS) 2004: Summary Report*, NSW Department of Health, Sydney.

⁶ Australian Society for the Study of Obesity, *Obesity in Australian Children: definition and prevalence*, http://www.asso.org.au/freestyler/gui/files//factsheet_children_prevalence.pdf.

Table 2: Health loss* attributable† to 14 selected risk factors, by broad cause group, Australia, 2003⁷

	Cancers	CVD	Mental disorders	Injuries	Diabetes mellitus	All causes
Total health loss (DALYs lost/1000 people)	25.1	23.8	17.6	9.3	7.2	132.4
Attributable health loss† – individual (%)‡						
Tobacco	20.1%	9.7%	n.a.	0.5%	n.a.	7.8%
High blood pressure	n.a.	42.1	n.a.	n.a.	n.a.	7.6%
High body mass	3.9	19.5	na	na	54.7	7.5%
Physical inactivity	5.6%	23.7%	n.a.	n.a.	23.7%	6.6%
High blood cholesterol levels	n.a.	34.5%	n.a.	n.a.	n.a.	6.2%
Alcohol consumption	3.1%	-4.7%	9.7%	18.1%	n.a.	2.3%
Low consumption of fruit and vegetables	2.0%	9.6%	n.a.	n.a.	n.a.	2.1%
Illicit drug use	n.a.	<0.1	8.0	3.6%	n.a.	2.0%
Occupational exposures & hazards	3.1%	0.4%	na	4.7%	n.a.	2.0%
Intimate partner violence	0.5%	0.3%	5.5%	2.5%	n.a.	1.1%
Child sexual abuse	<0.1%	<0.1%	5.8%	1.4%	n.a.	0.9%
Urban air pollution	0.8%	2.7%	n.a.	n.a.	n.a.	0.7%
Unsafe sex	1.0%	n.a.	n.a.	n.a.	n.a.	0.6%
Osteoporosis	n.a.	n.a.	2.4%	2.4%	n.a.	0.2%
Attributable† health loss – combined (%)‡	32.9%	69.3%	26.9%	31.7%	60.1%	32.2%

CVD = Cardiovascular disease. DALY= disability-adjusted life year. n.a. = not applicable

† "Attributable" health loss is health loss that is explained by past and current exposure to health risks. This is distinct from "avoidable" health loss, which is health loss that might be averted through future changes in exposure to a health risk.

‡Attributable health loss within each column is expressed as a percentage of a total DALY rate for that column.

*Figures for combined effects are not necessarily column totals because risk factors can share common casual pathways.

Of the 14 risk factors analysed for the BoD study, shown in Table 2, high body mass now accounts for the greatest amount of burden in the 45–64 year age group in females; however, the overall burden from high body mass was greater in males due to the higher incidence of type 2 diabetes and the associated cardiovascular complications. Half of the burden from high body mass was due to mortality. The rate of burden from high body mass per head of population increased with age, with the absolute burden concentrated between the ages of 55 and 75.⁸

The only other risk factors for chronic disease whose impact (above 7%) compares with obesity are tobacco smoking and high blood pressure. However, obesity and physical inactivity, along with poor diet, are the leading, modifiable causes of high blood pressure and high cholesterol.⁹ Together, this group of associated risk factors - poor diet, physical inactivity, high body mass, high blood pressure and high cholesterol - account for more than half of the total burden of cardiovascular disease, and together are responsible for around for more than 15 per cent of total burden.¹⁰

2. OBESITY RATES IN DIFFERENT POPULATION GROUPS

Overweight and obesity are widely distributed among Australian adults and children, however, there are some significant variations in the distribution of overweight and obesity across Australia's population.

⁷ Begg SJ, Vos T, Barker B, Stanley L & Lopez AD (2008). Burden of disease and injury in Australia in the new millennium: measuring health loss from diseases, injuries and risk factors. *Medical Journal of Australia* 188(1): 36-40.

⁸ Begg S, Vos T, Barker B, Stevenson C, Stanley L & Lopez AD (2007). *The burden of disease and injury in Australia 2003*. PHE 82. Canberra: AIHW.

⁹ Higher BMI is responsible for around 30% of the prevalence of high blood pressure, and there are consistent positive independent associations between excess body weight and total cholesterol levels (Australian Institute of Health and Welfare and National Heart Foundation of Australia (2004) *The relationship between overweight, obesity and cardiovascular disease* Cardiovascular Disease Series Number 23: AIHW, Canberra).

¹⁰ Note that this is not simply the addition of the respective rows, as risk factors can share common pathways.

Men and women in the most disadvantaged socioeconomic group, people without post school qualifications, those with the lowest equivalent income, Aboriginal and Torres Strait Islander peoples, and many of those born overseas are disproportionately affected by obesity.

Socioeconomic differentials

Approximately equal proportions (around 53%) of people in low income and high income households were overweight or obese in 2004–05 and those in low income households were more likely to be obese with around one-fifth (21%) of adults in low income households obese compared with 15% of adults in high income households. Similarly, the age standardised rate of obesity for adults living in the most disadvantaged geographic areas (bottom quintile) is 22.4%, which is close to twice that of those in the most advantaged areas (12.9%). Similar differences are seen when comparing educational qualifications (Table 3).¹¹ Variations among males were not as high as among females (see also Fig 1 below).

Table 3: Age standardised socioeconomic characteristics (a) of adults and BMI (b): 2004–05

	Units	Normal	Overweight	Obese	Total (c)
Highest non-school qualification					
No non-school qualification	%	41.1	35.6	20.5	100
Other qualification	%	41.7	37.0	19.4	100
Degree/diploma or higher qualification	%	49.2	34.9	13.0	100
Household income (d)					
Low income	%	43.1	32.4	20.8	100
Middle income	%	43.8	35.8	17.4	100
High income	%	37.8	37.8	14.9	100
Index of disadvantage (e)					
First quintile	%	40.0	34.5	22.4	100
Fifth quintile	%	49.6	34.8	12.9	100
All persons aged 18 years and over	%	43.9	35.5	18.0	100
All persons aged 18 years and over	'000	6037.0	4888.0	2478.0	1,3760.6

a) Sub-populations age standardised to 2004–05 total NHS population.

b) Based on self-reported height and weight.

c) Includes person who were underweight

d) Gross weekly equivalised household income. Low income households are in the lowest quintile, middle income in the third quintile and high income in the highest quintile of household income.

e) The first quintile contains areas with the greatest relative disadvantage and the fifth quintile those areas with the lowest relative disadvantage

Source: ABS 2004–05 National Health Survey (as reported in ABS Social Trends, 2007)

It is important to note the difference between variations in the rate of obesity between socioeconomic groups, and the actual numbers within socioeconomic groupings. For example, while the rate of obesity in the highest quintile of socioeconomic disadvantage is nearly twice that of the most advantaged areas, it is still the case that there are nearly 400,000 obese persons in the most advantaged areas, compared with nearly 540,000 in the most disadvantaged.¹²

¹¹ Australian Social Trends 2007 – Article: Overweight and Obesity Cat. No 4102 Aug 2007

¹² Article: ABS Overweight and Obesity in Adults January 2008 Cat. No. 4719. The reason for the anomaly between numbers is that the Socioeconomic Indexes for Area is calculated at the household rate rather than the individual level.

While a widely-reported study of children found a clear social gradient in rates of obesity across schools of low, middle and high socioeconomic status (low SES 8.8%; middle SES 6.3%; high SES 4.3%), the highest absolute number of unhealthy weight children was found in middle income schools (a total of 484 children in low SES schools; 1155 in middle SES schools and 328 in high SES). This is because although the rate is higher in low SES schools, more students attend middle SES schools than low SES schools.¹³

This point is emphasised as it is incorrect to assume that overweight and obesity is a problem only of the poorest and most vulnerable communities. There is undoubtedly a strong case for targeting those areas where the rates are highest, but if this were the only response by governments, a high proportion of cases of overweight and obesity would be missed entirely.

The gap (rate ratio) between highest and lowest socioeconomic quintiles for obesity slightly increased alongside the absolute increases seen for adults of both sexes (Fig 1) between 1995 and 2001. However, more recent data suggests this may not have been the case for children.¹⁴

Fig 1: Prevalence of overweight and obesity among men and women aged 20 years and over in the most and least disadvantaged quintiles of socioeconomic disadvantage, 1995 to 2001



Notes

1. Age-standardised to the 2001 Australian population.
2. Error bars indicate 95% confidence intervals for the prevalence of overweight (BMI \geq 25).

Source: AIHW analysis of the 1995 and 2001 ABS National Health Surveys (AIHW Bulletin 11, Dec 2003)

Urban/rural differentials

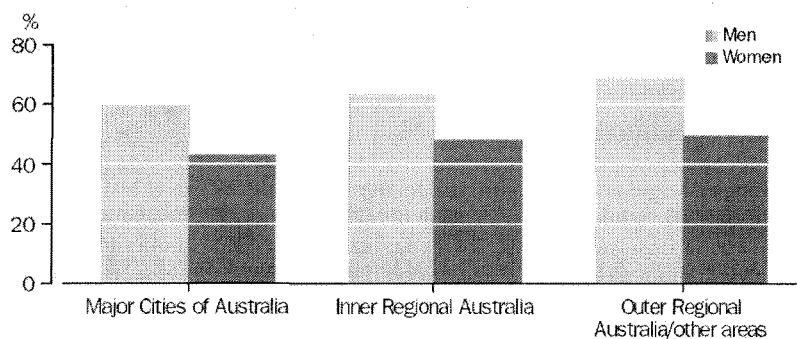
With respect to several health outcomes, rural and remote populations have poorer health than their metropolitan counterparts. The gap in overweight and obesity found between major cities, inner regional areas and outer regional and remote areas for both men and women is increasing. (Fig 2)¹⁵

¹³ O'Dea, J. (2008) Gender, ethnicity, culture and social class influences on childhood obesity among Australian schoolchildren: implications for treatment, prevention and community education *Health & Social Care in the Community* 16 (3), 282-290 doi:10.1111/j.1365-2524.2008.00768.x

¹⁴ Booth ML, Dobbins T, Okely AD, Denney-Wilson E, Hardy LL. Trends in the prevalence of overweight and obesity among young Australians, 1985, 1997, and 2004. *Obesity (Silver Spring)*. 2007 May;15(5):1089-95.

¹⁵ A small qualitative research study of rural men suggests that cultural factors and beliefs may contribute to these differences: many rural men who are overweight believe being a 'big bloke' is an advantage and a sign of strength (O'Kane, Craig and Sutherland, 2008).

Figure 2: Overweight and obesity by geographical areas (a) (b)



(a) Proportion of persons aged 18 years and over who were overweight or obese.

See Glossary.

(b) Excludes those for whom BMI category was not known.

Source: ABS 2008, Overweight and Obesity in Adults Australia 2004 – 05

Indigenous differentials

Among Aboriginal and Torres Strait Islander people obesity is the second highest contributor to disease burden, after tobacco use (Table 4).

Table 4: Indigenous Australian burden and health gap attributable to 11 risk factors¹⁶

	Disease burden		Health gap	
	DALYs	% of total	DALYs	% of total
Total burden	95,976	100	56,455	100
<i>Attributable burden</i>				
Tobacco	11,633	12	9,816	17
Obesity	10,919	11	8,953	16
Physical inactivity	8,032	8	6,554	12
High blood cholesterol	5,262	5	3,994	7
Alcohol	5,171	5	2,362	4
High blood pressure	4,417	5	3,215	6
Low fruit & vegetable intake	3,344	3	2,873	5
Illicit drugs	3,264	3	2,150	4
Intimate partner violence	2,469	3	1,836	3
Child sexual abuse	1,390	1	869	2
Unsafe sex	1,174	1	926	2
11 risk factors combined	35,908	37	27,383	49

Note: the estimates for the 11 risk factors combined takes into account the overlap that exists between risk factors and hence is not the same as the sum of estimates for each of the individual risk factors

In 2004–05, approximately 29% of Indigenous Australians were overweight and 31% were obese. Aboriginal and Torres Strait Islander people are almost twice as likely to be obese compared with non-Indigenous Australians.¹⁷ However, the differences for overweight are less significant (see Table 5).

A higher proportion of Indigenous males were overweight compared to Indigenous females, however, Indigenous females were 1.2 times more likely to be obese compared to Indigenous males.

¹⁶ Vos T, Barker B, Stanley L, Lopez AD (2007). *The burden of disease and injury in Aboriginal and Torres Strait Islander peoples 2003*. Brisbane: School of Population Health, The University of Queensland.

¹⁷ AIHW (2008) *Cardiovascular disease and its associated risk factors in Aboriginal and Torres Strait Islander peoples 2004–05*, Cardiovascular disease series no. 29, Canberra.

The health gap between Indigenous Australians and the general population is the widest for the age group of 35–54 years (at 35%), followed by the 15–34 year age group (at 25%), the 55-year and older age group (at 23%), and then children under 15 years (at 17%). Cardiovascular disease and diabetes are the main contributors to the health gap at ages 35 years and over. Despite the higher disease rates experienced by Indigenous Australians in remote areas, the majority of burden still occurs in non-remote areas.

Differentials by region of birth and cultural background

There are significant differences in overweight and obesity for adults from different regions of birth and cultural backgrounds (Table 5). In 2004–05, while the overall adult obesity rate was 18%, on average people born overseas who arrived before 1996 had a slightly lower age standardised rate of obesity (15%), while the rate was even lower (11%) for more recent arrivals (between 1996 and 2005).

Adults born in South East Asia were least likely to be classified as overweight or obese (31%) and adults born in Southern and Eastern Europe and the Oceania region (excluding Australia) were more likely to be overweight or obese (65% and 63% respectively). Most people born overseas are in good health on arrival due to the rigorous health checks they undergo to be eligible for migration. This 'healthy migrant effect' generally wanes as their length of time in Australia increases, and time since migration is an important factor in excess weight in migrants.¹⁸

For men, the highest proportion of overweight and obesity was recorded for those born in Southern and Eastern Europe (72%), followed by men born in the Oceania region (excluding Australia) (68%). The largest proportion of overweight and obese women were those born in the Oceania region (excluding Australia) and Southern and Eastern Europe (both with 56%).

The NSW Schools Physical Activity and Nutrition Survey (SPANS) study found that overweight and obesity prevalence was around 50% in Year 8 boys of Middle Eastern descent, as compared with 26% in those of English-speaking backgrounds. Prevalence in boys of European background was also high¹⁹. Similarly, the study by O'Dea 2008²⁰ found that obesity was significantly more prevalent among boys and girls of all ages from Pacific Islander backgrounds. Among adolescents, those who were most likely to be obese (4–5 times more likely) were boys and girls of Pacific Islander or Middle Eastern/ Arabic background.

The prevalence of obesity in these groups of children was about 20% or above, as compared with about 6% for those of Anglo/Caucasian background. Populations from certain ethnic and cultural backgrounds in Australia that are disproportionately more overweight and/or obese suffer higher rates of diabetes and cardiovascular diseases.

The prevalence of overweight and obesity among immigrants born in South-East Asia is markedly lower than that for the Australian-born population. However, the prevalence of type 2 diabetes among Asian Australians (including those from the Indian subcontinent, East Asia and South East Asia) has been reported to be increasing at a disproportionately high rate compared to non-Asian Australians; the Asian Indian type 2 diabetes rate is more than double the Australian average; and people born in Southern and Central Asia have significantly higher diabetes separations than those born in Australia.^{21, 22}

¹⁸ AIHW, (2004) *Australia's Health*, Canberra.

¹⁹ Booth M, Okely AD, Denney-Wilson E, Hardy L, Yang B, Dobbins T. (2006) *NSW Schools Physical Activity and Nutrition Survey (SPANS) 2004: Summary Report*.

²⁰ O'Dea, J. (2008) Gender, ethnicity, culture and social class influences on childhood obesity among Australian schoolchildren: implications for treatment, prevention and community education *Health & Social Care in the Community* 16 (3), 282–290 doi:10.1111/j.1365-2524.2008.00768.x

²¹ Colagiuri, R. Thomas M, Buckley A. 2007 *Preventing Type 2 Diabetes in Culturally and Linguistically Diverse Communities in NSW*. Sydney: NSW Department of Health.

²² ABS NHS 2004-05

Various epidemiological studies in Asian Indians have shown that the high and increasing prevalence of type 2 diabetes in this population could be attributed to a high genetic risk and lower risk thresholds for risk factors such as age, obesity, abdominal adiposity and percentage of body fat. Diabetes occurs at a younger age in Asian Indians compared to Caucasians, and the risk of diabetes increases with a body mass index (BMI) of $>23\text{kg}/\text{m}^2$ and waist circumference of 85cm for men and 80cm for women. For a given BMI, Asian Indians have higher central adiposity. There is also evidence of higher insulin resistance, partly explained by higher body fat percentage.²³ Similar findings have been reported for South-East Asians, with a substantial proportion of Asian people shown to have a high risk of type 2 diabetes at a body mass index (BMI) level that is lower than the existing cut-off point for overweight ($\geq 25\text{kg}/\text{m}^2$).²⁴

These studies suggest that faced with a changing and more “obesogenic” environment and the adoption of Western diet and lifestyles – whether through social and economic changes occurring in their home countries or through migration to countries such as Australia, the UK or the USA – the development of diabetes and associated conditions is accelerated in Asian populations due to their lower risk threshold.

On the other hand, many other immigrant groups who also have higher rates of diabetes and cardiovascular risk are those who report significantly higher rates of overweight and obesity. These groups include: Europeans – including people from Germany, Greece, Italy and Malta; the Middle Eastern population – including people from Lebanon, Iraq, and Afghanistan; and Pacific Islanders – including people from Tonga, Samoa, Fiji, Nauru and Maoris (see Table 5).

In some cases, particular cultural practices and beliefs also serve to increase risk. For example, in many immigrant populations religious and cultural beliefs place a great importance on food and its connection with social customs and hospitality. Among Pacific Islander groups there is also a greater acceptance of larger body size, which is traditionally associated with high status, power, authority and wealth and perceived as being beautiful and healthy (Colagiuri et al., cited above).

²³ Ramachandran A, Snehalatha C, Baskar A, Mary S, Sathish Kumar CS, Selvam S, Catherine S, Vijay V. 2004 Temporal changes in prevalence of diabetes and impaired glucose tolerance associated with lifestyle transition occurring in the rural population in India. *Diabetologia*. 47, 5: 806-65.

²⁴ Australian Institute of Health and Welfare (2005). *Diabetes in culturally and linguistically diverse Australians: Identification of communities at high risk* Canberra: AIHW.

Table 5: Risk factors by region of birth – percentage of people in each country/ region

Birthplace by country/ region	Survey population (‘000)	Population above Total per cent by								
		Obese			Overweight or obese			Low/no usual intake of fruit		
		Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
India	143.8	8.4	6.3	7.4	43.0	38.2	40.8	..	..	77.1
Chinese Asia(a)	272.2	4.9	1.6	3.3	21.3	10.6	16.0	..	..	82.8
Other Asia(b)	635.1	3.7	3.3	3.5	37.2	24.9	30.8	75.8	83.1	79.6
Total Asia	1,051.0	4.8	3.3	4.0	33.9	23.0	28.4	74.5	85.6	80.1
Pacific Islands	116.9	38.6	32.6	35.9	76.0	67.8	72.1	52.6	88.0	68.2
New Zealand	377.7	19.2	21.1	21.8	61.1	51.8	59.1	70.1	71.9	70.9
Australia(c) – total	11,385.6	22.4	16.9	18.0	65.4	43.8	52.5	65.3	77.2	71.2
Australia – Indigenous(d)	474.3	26.1	31.3	28.8	58.5	54.4	56.3	n.a.	n.a.	n.a.
Total Oceania	11,880.2	19.5	17.1	18.3	61.4	44.2	52.9	65.4	77.1	71.2
Middle East	204.2	11.6	17.6	14.8	54.1	49.1	51.3	81.8	84.8	83.4
Africa	192.1	21.3	17.2	19.3	54.8	45.4	50.2	69.0	83.9	76.2
Italy	232.5	27.3	24.0	25.8	76.2	68.4	72.8	86.4	93.7	89.5
Greece	121.1	38.2	18.3	30.4	73.6	57.1	67.2	98.0	95.0	96.9
Other South & East Europe	348.5	12.2	18.4	15.3	66.1	47.5	57.1	75.9	92.9	84.3
Total South & East Europe	702.0	22.2	20.2	21.3	71.0	55.6	64.0	83.6	93.5	88.1
United Kingdom	1,128.5	16.3	20.1	18.1	61.8	47.4	55.2	67.0	82.0	73.9
Other North West Europe	334.9	18.9	17.1	17.9	61.3	46.1	53.4	67.4	73.8	70.7
Total North West Europe	1463.4	16.9	19.4	18.1	61.7	47.1	54.8	67.1	79.9	73.1
Other countries(e)	211.4	13.5	10.9	12.2	58.7	39.2	49.0	65.1	75.5	70.3
Total all birthplaces	15,704.3	18.2	16.4	17.3	59.8	43.5	51.8	67.3	78.8	72.9
Birthplace by country/ region	Survey population (‘000)	Population above Total per cent by								
		Smoking			Risky/ high risk alcohol consumption			Physical inactivity		
		Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
India	143.8	..	..	13.3	..	..	1.4	..	..	78.9
Chinese Asia(b)	272.2	..	..	16.9	..	..	1.9	..	..	80.6
Other Asia(c)	635.1	28.2	5.9	16.3	4.8	2.8	3.7	75.1	78.1	76.7
Total Asia(c)	1,051.0	27.4	5.5	16.1	3.7	2.3	3.0	74.4	81.4	78.0
Pacific Islands	116.9	21.2	28.3	24.4	8.0	6.1	7.2	48.7	79.4	62.5
New Zealand	377.7	29.2	27.2	28.3	14.0	14.2	14.1	65.8	70.8	68.1
Australia(d) – total	11,385.6	26.7	21.9	24.2	17.6	13.1	15.3	65.6	72.5	69.2
Australia – Indigenous(e)	474.3	51.3	48.9	50.0	19.5	13.8	16.5	n.a.	n.a.	n.a.
Total Oceania	11,880.2	26.7	22.1	24.4	17.4	13.1	15.2	65.5	72.5	69.1
Middle East	204.2	39.5	12.1	24.7	..	..	1.2	75.7	81.5	78.8
Africa	192.1	17.7	18.6	18.1	6.5	7.2	6.9	64.5	74.4	69.5
Italy	232.5	22.2	9.7	16.6	9.8	6.3	8.3	81.9	84.7	83.1
Greece	121.1	47.1	11.0	32.7	..	..	8.1	87.1	82.6	85.3
Other South & East Europe	348.5	22.1	14.6	18.3	4.9	2.6	3.7	74.7	84.5	79.7
Total South & East Europe	702.0	27.1	12.5	20.3	8.3	3.4	6.0	79.7	84.3	81.9
United Kingdom	1,128.5	21.6	19.3	20.5	17.1	13.8	15.5	64.9	72.5	68.6
Other North West Europe	334.9	17.2	20.3	18.9	13.0	10.7	11.8	65.9	68.7	67.3
Total North West Europe	1463.4	20.6	19.5	20.1	16.2	13.0	14.7	65.1	71.5	68.3
Other countries(e)	211.4	30.4	15.1	22.8	9.3	12.9	11.1	63.1	73.1	68.0
Total all birthplaces	15,704.3	26.3	20.0	23.1	15.4	11.7	13.5	66.8	73.7	70.3

(a) Includes China, Hong Kong, Macau, Mongolia and Taiwan.

(b) Excludes Central Asia.

(c) Includes External Territories.

(d) For the Indigenous population, percentages for ‘obese and overweight’ or ‘obese’ were calculated on the number reporting height and weight (for males, 87% reported height and weight and for females, 68%)

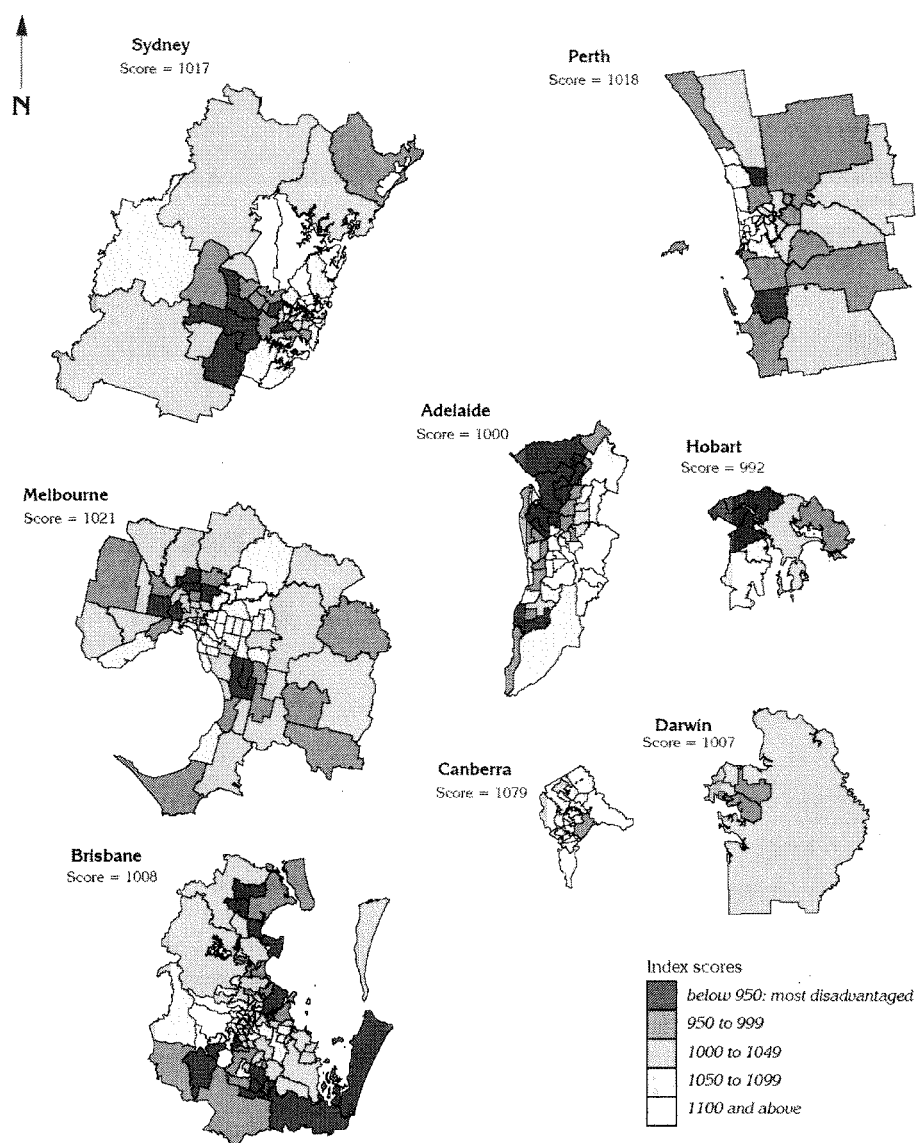
(e) Includes Central Asia and Americas.

Source: Compiled by Population Health Information Development Unit (PHIDU), University of Adelaide, from ABS NHS 2004-05, unpublished data; Indigenous data, ABS NATSIHS 2004-05

Differentials of obesity by local geographic area

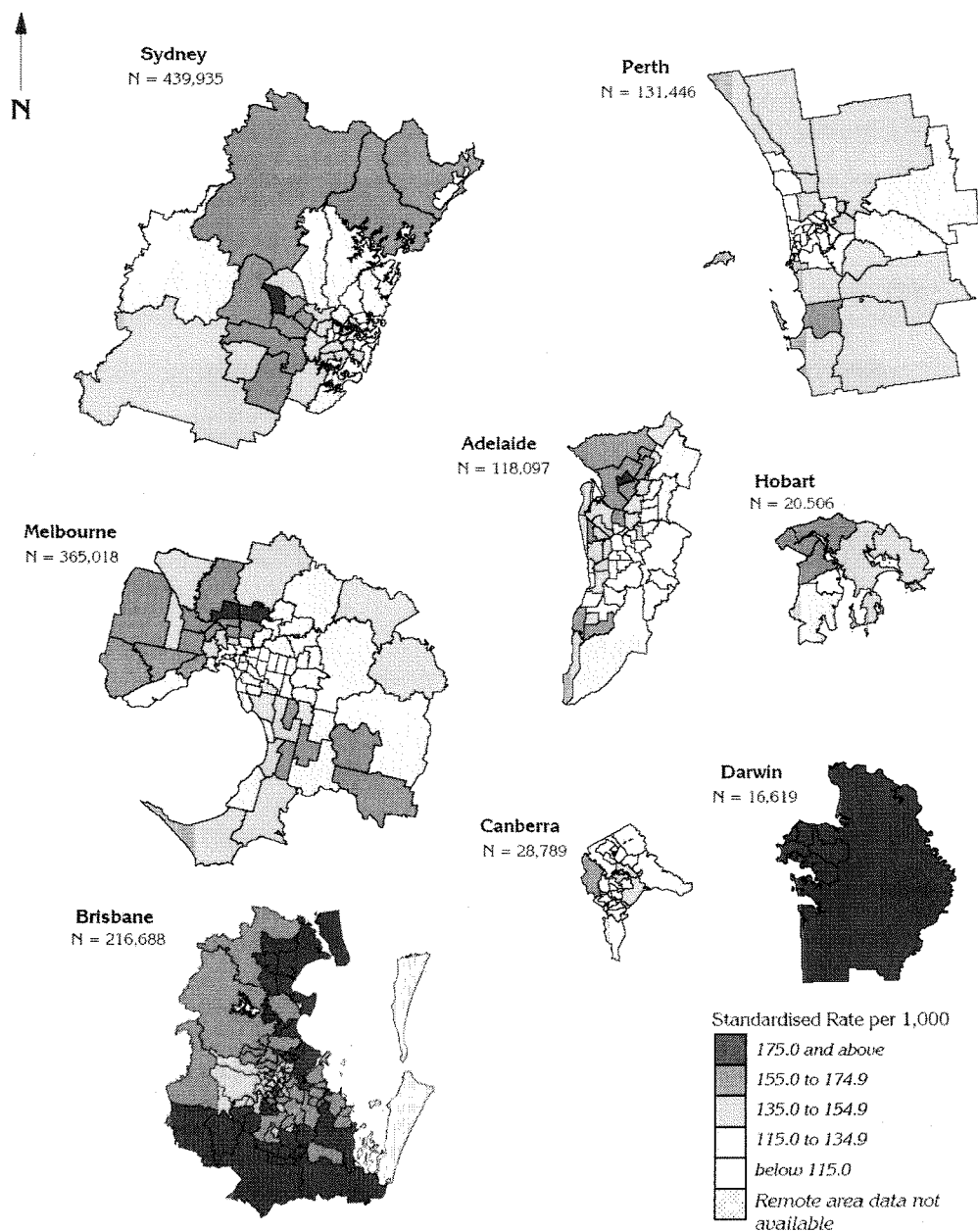
Differentials in obesity, along with other dimensions of health status, are strongly associated with the geographical location where people live in Australia, which in turn frequently correlates with other indicators of socioeconomic disadvantage. The following maps show the pattern of obesity prevalence in urban areas of Australia compared with similar maps showing the ranking of the same areas by SEIFA Index of Relative Socio-Economic Disadvantage. The map of the distribution of obesity shows a pattern highly consistent with the geographic distribution of the socioeconomically disadvantaged population.

Map 1: SEIFA Index of Relative Socio-Economic Disadvantage, 2001, capital cities
Index scores by Statistical Local Area



Source: Compiled by PHIDU from estimates produced by ABS from 2001 National Health Survey

Map 2: Estimates of obese persons aged 15 years and over, 2001, capital cities²⁵
 Age-standardised rate per 1,000 population by Statistical Local Area



Source: Compiled by PHIDU from estimates produced by ABS from 2001 National Health Survey.

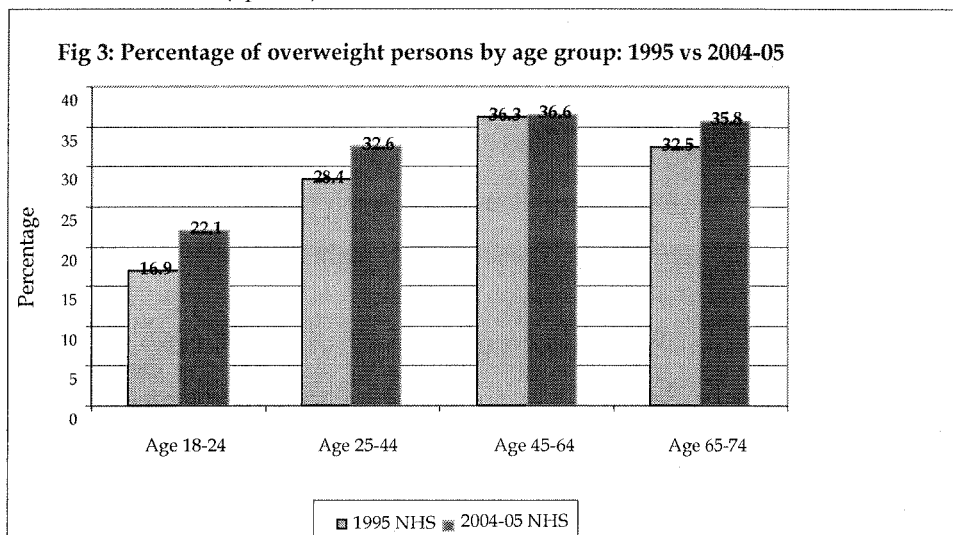
²⁵ Estimates of obese persons were derived from the 2001 National Health Survey, which collected height and weight from respondents (as self-reported measures) in non-remote areas of Australia and estimated using a synthetic prediction technique by ABS, and age-standardised in Population Health Information Development Unit, using indirect age standardisation. Areas mapped are Statistical Local Areas (SLA): where SLAs are suburbs with very small populations (eg in Brisbane, Canberra, Darwin, Gold Coast and Townsville), they have been grouped.

Trends by Age

There is a trend towards earlier weight gain at younger ages with some age groups gaining weight at a faster rate than others.

Between 1995 and 2004-05 the greatest increase in the prevalence of **overweight** was observed for (Fig 1):

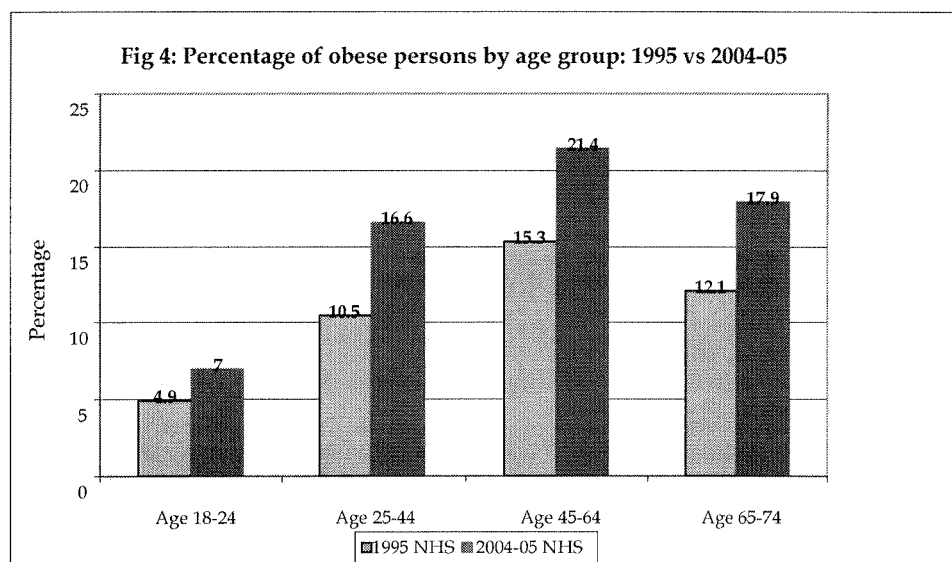
- Adults 18-24 (up 5.2%); and
- Adults 25-44 (up 4.2%)



Source: 1995 and 2004-05 ABS National Health Surveys (NHS).

Over the same period, the greatest increase in the prevalence of **obesity** was observed for (Fig 2).²⁶

- Adults 25-44 (up 6.1%); and
- Adults 45-64 (up 6.1%)



Source: Unpublished DoHA analysis (2008) of 1995 and 2004-5 National Health Surveys.

²⁶ The increase observed in 25-44 yr olds may be partly explained by the fact that, between 1989-90 and 2001, despite relatively low absolute levels of obesity, obesity prevalence in 20-24 year olds more than doubled from 4.4% to 9.5%. AIHW (2003) *Are all Australians gaining weight?* Bulletin 11, Canberra

Children and young adults

Venn et al (2007) have shown that most obese young adults in Australia were not obese as children.²⁷ Table 6 shows that by far the largest numbers of overweight and obese adults in this study were a healthy weight as children. For example, of the males in the study who were a healthy weight as a child, 40% are now overweight as young adults and 10% are now obese.

Slightly less than half of the boys in the study who were obese went on to become obese adults; on the other hand, nearly 70% of obese girls went on to become obese adults. Fewer healthy weight girls than boys went on to become overweight or obese young adults. However, significantly more obese young adult women (158) were a healthy weight as girls, compared with the number (22) who were obese as children. For boys the ratio is even higher (196 obese young men were a healthy weight as children, compared with 15 obese young men who were obese as children).

Table 6: Childhood weight and weight in later life stages

Children in each weight category who became healthy-weight, overweight and obese adults*						
Weight category in childhood	Weight category in adulthood					
	Male (n= 2208)			Female (n= 2363)		
	Healthy weight	Overweight	Obese	Healthy weight	Overweight	Obese
Healthy weight	998 (50.1%)	797 (40.0%)	196 (9.8%)	1546 (73.6%)	397 (18.9%)	158 (7.5%)
Overweight	29 (15.8%)	78 (42.4%)	77 (41.9%)	59 (25.7%)	74 (32.2%)	97 (42.2%)
Obese	3 (9.1%)	15 (45.5%)	15 (45.5%)	6 (18.8%)	4 (12.54%)	22 (68.8%)

* Adjusted for adult body mass index self-report error. ◆

Source: Venn et al (2007)

Child obesity rates increased significantly from the mid-1980s to the mid-1990s, compared with a much smaller rate of increase over the preceding 16 years, and continued to increase to at least 2003. However, it is not clear if this trend is continuing at the same rate, and there is some evidence that growth is continuing but not at the accelerated rate seen in the 1990s.

In 1995, an estimated 4.7% of boys and 5.5% of girls aged 7-15 years were obese and a further 15.3% of boys and 16.0% of girls were overweight but not obese.²⁸

The recently released 2007 *Australian National Children's Nutrition and Physical Activity Survey*²⁹ found that:

- 17% of boys and 18% of girls aged from 2 - 16 years were overweight.
- 5% of boys and 6% of girls aged from 2 - 16 years were classified as obese.
- The prevalence of overweight and obesity tended to increase with increasing age, with a rate of 7% of both boys and girls age 9-13 classified as obese (Table 7).

²⁷ Venn et al (2007) Overweight and obesity from childhood to adulthood: a follow-up of participants in the 1985 Australian Schools Health and Fitness Survey *Med J Aust*; 186: 458-460

²⁸ AIHW (2004) *Risk Factors Data Briefing* Number 2: Canberra.

²⁹ Op cit

Table 7: Proportion (%) of children classified as underweight, normal weight, overweight and obese by age and gender, Children's Survey, 2007

AGE GROUP (YEARS)	BOYS					GIRLS				
	2-3	4-8	9-13	14-16	2-16	2-3	4-8	9-13	14-16	2-16
underweight	5	4	6	5	5	4	4	5	5	5
normal	74	78	69	71	73	78	75	65	72	72
overweight	17	13	18	19	17	14	15	23	16	18
obese	4	5	7	6	5	4	6	7	7	6

Population weights applied

Overseas studies – for example in the US and New Zealand – suggest a flattening in the rate of unhealthy weight gain among children and adolescents. However, to gauge whether this a real change will require survey data from more time points over the next few years.

The study by O'Dea 2008³⁰ found that the prevalence of obesity among children had increased slightly between 2000 and 2006, from 5.1% to 6.4%. However, the level of obesity did not appear to have increased at all among 6–12-year-old boys and girls of Anglo/Caucasian background or 12–18-year-old girls of Anglo/Caucasian background. Based on the data from her studies, O'Dea argues that there is a suggestion that the obesity prevalence trend is declining in adolescent girls, especially among those of higher SES.

A similar finding has been reported by Booth et al (cited above) in their analysis of data from the NSW Schools Physical Activity and Nutrition Survey in 2004 which found that of the 5–16 year olds surveyed, 25% of boys and 23.3% of girls were either overweight or obese, which was up from the 1995 data but similar to results reported in 2000 and 2003. Over the period 1985 to 1997, the authors report that the prevalence of overweight and obesity increased significantly among the younger and older boys and the younger girls. The prevalence of overweight, but not obesity, increased among the older girls over this period. Over the period 1997 to 2004, the prevalence of overweight/obesity combined increased significantly among boys of both age groups but not among girls.

However, some studies show that healthy weight children now have a higher mean BMI, reducing the margin for the increases in weight with ageing, before the population mean BMI cut-point for overweight is reached. The mean BMI at which Australians enter adulthood has increased with each subsequent National Health Survey between 1990 and 2004. For example, for women aged 20–24 years, mean BMI increased from 22.1 kg/m² (1990) to 22.5 kg/m² (1995) to 23.2 kg/m² (2001) to 23.3 kg/m² (2004).³¹

This is supported by findings from the Australian Longitudinal Study on Women's Health (ALSWH) which has shown that average weight gain was significantly higher in younger women than in mid-age women, and significantly higher in younger women in rural and remote areas than in younger urban women.³²

The latest data from the ALSWH shows that the largest gain in body size among women has occurred in the youngest cohort (age 18-23 in 1996). Between Surveys 1 and 4, the average BMI of the younger women increased by 2.2 units (from 22.8 at Survey 1). Average BMI changed more slowly in the mid-aged cohort (45-50 in 1996), increasing by 1.3 units (from 25.7 at Survey 1) over the eight years between Surveys 1 and 4. In the older cohort (70-75 year in 1996), average BMI remained largely unchanged over the first three surveys, reflecting the decreases in both weight and height in this cohort; but it declined between Surveys 3 and 4.

³⁰ O'Dea, J. (2008) Gender, ethnicity, culture and social class influences on childhood obesity among Australian schoolchildren: implications for treatment, prevention and community education *Health & Social Care in the Community* 16 (3), 282-290 doi:10.1111/j.1365-2524.2008.00768.x

³¹ Alliman-Farinelli, MA, King L and Bauman AE (2007) Comment on Venn et al *Med J Aust* 187: 314

³² Australian Longitudinal Study on Women's Health (2007) *Women's weight: Findings from the Australian Longitudinal Study on Women's Health*. A report prepared for the Department of Health and Ageing.

According to ALSWH researchers, the rapid increase of weight in the younger cohort means that the BMI pattern for women aged 28-33 years of age is fast approaching the pattern seen for the "Mid-aged" cohort when they were 45-50 years of age. If this rate of weight gain continues, the cohort of younger women will be substantially heavier than the mid-aged women by the time they reach 45.

As shown in Figure 5 below, the mean BMI of young adults is increasing compared with previous generations and younger generations, and based on current trends, Generation X men - those born from the mid 60s to late 70s - will have the highest mean BMI of any generation.

Baby boomer generation women (Fig 5b) are predicted to have the highest average BMI in 2010, compared to other generations of women, and Generation X women are gaining weight faster.

As overweight Generation Xers are now parents, their children are at risk of being overweight or obese. And with rapid increase in BMI in younger women (some of Gen X and Gen Y), there is mounting concern about the impact of an unhealthy body weight on pregnancy outcomes. Excessive weight gain during pregnancy is directly associated with having an overweight child, and with gestational diabetes, and may lead to weight gain and diabetes in later life in the mother.

Figure 5: Mean BMI by birth cohort for men and women in Australia 1990-2000 and 2010 projections

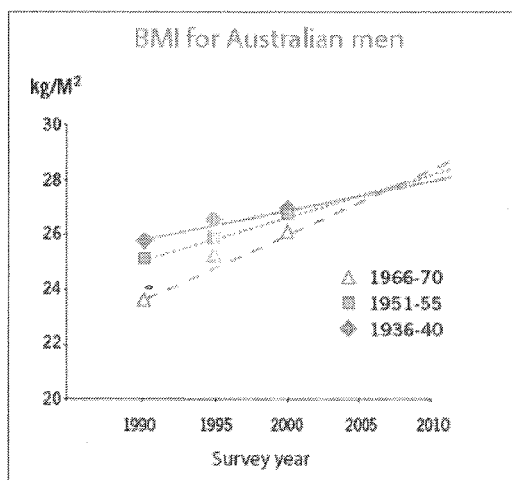


Fig 5A.

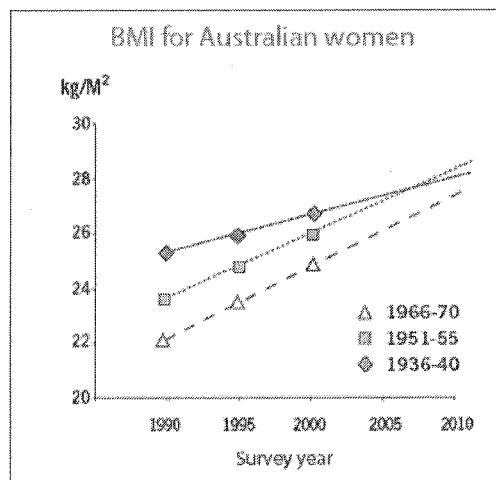


Fig 5B.

Source: NSW Centre for Overweight and Obesity,³³ Weight of Time series

Middle aged and older Australians

The heaviest sub-groups in the population have put on disproportionately more weight (around 7 BMI units) than lighter sub groups.³⁴ This is a major contributor to the rise in mean BMI.

The AIHW reports that from 1989-90 to 2001 the prevalence of overweight but not obese increased by 13% whereas obesity increased by 76%. Not only did obesity increase considerably more than "overweight but not obese" over the 12-year period, but more and greater discrepancies were seen in the prevalence of

³³ Allman-Farinelli M, King L, Bonfiglioli C, Bauman A. (2006) *The Weight of Time: Time influences on overweight and obesity in men & The Weight of Time: Time influences on overweight and obesity in women*. NSW Centre for Overweight and Obesity: Sydney

³⁴ Walls HL, Wolfe R, Haby MM, Magliano DJ, de Courten M, Reid CM, McNeil JJ, Shaw J, Peeters A. 2008. Trends in Body Mass Index in Urban Australians, 1980-2000. /In Press/.

obesity between population subgroups than for “overweight but not obese”. For example, little difference was observed in the rates of overweight but not obese between quintiles of Relative Socioeconomic Disadvantage, whereas the prevalence of obesity varied considerably between the most and least disadvantaged groups. While a greater relative increase in the prevalence of overweight was seen for women than for men over the period 1989-90 to 2001, the relative increase in obesity was greater for men³⁵.

These studies suggest the need for specific targeting of those already at higher levels of BMI. These are predominantly people in middle age. There has been a steady and substantial increase in the number of older Australians who are obese, from 310,000 in 1980 to 940,000 in 2000, which represents an increase from 11% to 23%. About one-third of the increase in number has been as a result of the ageing of the population and two-thirds a result of the increased obesity rates.

Older Australians are about 6-7 kg heavier on average than their counterparts were 20 years ago. Australians in their 50s and 60s are now also gaining weight as they gain years, at least into their mid-70s. The number of older Australians aged 55 years or older is increasing, as is their representation in the total population. Their number is projected to increase from 4.2 million in 2001 to 7.2 million in 2021, which is an increase from 22% to 31% of the population. The combined trend of population ageing and the obesity epidemic is likely to result in continuing increases in the number of older, obese Australians.³⁶

Many of the middle aged overweight and obese population already have co-morbidities. In the National Health Surveys, the proportion of those reporting no long-term conditions is consistently significantly lower for obese than for non-obese people of both sexes. Obese men were more likely than healthy weight men to have five or more long-term conditions (26.1% compared with 19.0%). Similarly, proportionally more obese women reported five or more long-term conditions than women of healthy weight (36.6% compared with 23.1%). The results for overweight but not obese men and women were similar to the results for obesity, although the differences from those of healthy weight were not as marked.³⁷

3. PROJECTIONS OF IMPACT ON HEALTH CARE SYSTEM

It is unclear at exactly what rate the trends considered above will continue. A baseline prevalence projection by Access Economics (with no further change in age-gender prevalence rates, such that all further increases are due to demographic ageing alone) forecasts that, by 2025, a total of 4.6 million Australians (18.3% of the population) will be obese. Thus, even if obesity rates have peaked in some age groups, as some commentators suggest, the flow on trajectory of current levels will still be significant.³⁸

It should be noted, however, that Access Economics in its earlier report estimated that if obesity continued to grow at historical rates there could be as many as 7.2 million obese Australians by 2025 (28.9% of the population).³⁹ The breakdown by sex is outlined in Figure 6.

³⁵ Australian Institute of Health and Welfare (2003) *Obesity trends in older Australians* Bulletin 12, AIHW Canberra

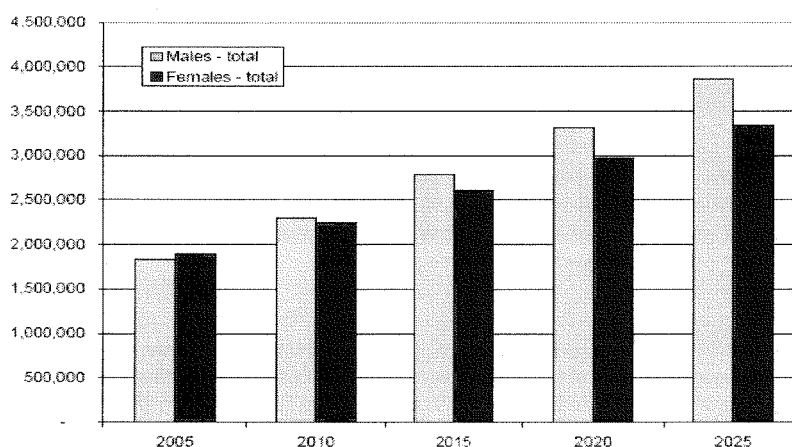
³⁶ Ibid

³⁷ AIHW: O'Brien K & Webbie K 2004. *Health, wellbeing and body weight: characteristics of overweight and obesity in Australia, 2001*. Bulletin No. 13. AIHW Cat. No. AUS 43. Canberra: AIHW.

³⁸ Access Economics (2008). *The growing cost of obesity in 2008: three years on*. A report to Diabetes Australia, Access Economics, Canberra.

³⁹ Access Economics (2006) *The Economic Costs of Obesity*, A report to Diabetes Australia, Access Economics, Canberra.

Figure 6: Prevalence projections for obesity 2005 - 2025 (if rates increase in line with recent trends)



Source: Access Economics, The Economic Costs of Obesity, A report to Diabetes Australia, Canberra, 2006: 26

Because of the profound impact of obesity on diabetes, the likely continued growth in obesity rates are projected to lead to a high future burden of diabetes and its complications, as well as significantly impacting on other conditions such as osteoarthritis.⁴⁰

Table 7 shows past and future changes in health loss, projected to the year 2023, based on analysis conducted for the Burden of Disease study. The largest projected increases are for neurological disorders, and diabetes. Health loss associated with musculoskeletal disease will also increase, but to a lesser extent.

Table 7: Past and projected future changes in health loss, by selected broad cause group, Australia, 1993-2023⁴¹

Broad cause group	Proportion of total (%)			
	1993	2003	2013	2023
Cancers	18.8%	19.0%	18.9%	18.2%
Neurological and sense organ ⁴² disorders	9.6%	11.9%	13.9%	16.4%
Cardiovascular disease	22.3%	18.0%	15.4%	13.1%
Mental disorders	13.2%	13.3%	12.9%	11.9%
Diabetes mellitus	4.1%	5.5%	7.0%	8.7%
Chronic respiratory diseases	7.1%	7.1%	6.8%	6.9%
Injuries	7.7%	7.0%	6.3%	5.4%
Musculoskeletal diseases	3.4%	4.0%	4.5%	4.9%
Other	13.8%	14.2%	14.1%	14.4%
Total	100.0%	100.0%	100.0%	100.0%

With regard to specific conditions, type 2 diabetes will move to become the leading cause of burden for males and the second leading cause for females by 2023. Ischaemic heart disease will move to second place for males by 2023, followed by anxiety and depression, while dementia will occupy third place for women (Table 8).

⁴⁰ See eg Allman-Farinelli, M, Aitken, RJ, King L and Bauman AE, (2008) Osteoarthritis – the forgotten obesity-related epidemic with worse to come MJA; 188 (5): 317

⁴¹ Based on Begg et al., 2008 (op cit).

⁴² Vision and hearing loss

Table 8: Top ten leading causes of specific burden (DALYs) in males and females, Australia, 2003 to 2023, ranked by position in 2023⁴³

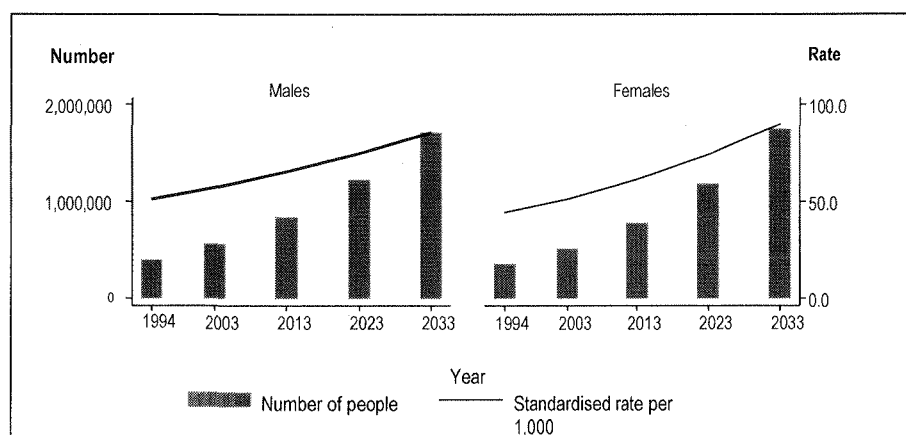
Specific cause	MALES			Specific cause	FEMALES		
	Rank	Rank	Rank		Rank	Rank	Rank
Type 2 diabetes	2	2	1	Anxiety and depression	1	1	1
Ischaemic heart disease	1	1	2	Type 2 diabetes	4	3	2
Anxiety and depression	3	3	3	Dementia	5	4	3
Dementia	11	7	4	Ischaemic heart disease	2	2	4
Adult onset hearing loss	7	7	5	Stroke	3	5	5
Lung Cancer	4	4	6	Breast cancer	6	6	6
Stroke	5	6	7	Lung Cancer	8	7	7
Prostate Cancer	9	8	8	COPD	7	8	8
Colorectal cancer	10	11	9	Asthma	9	9	9
Suicide & self inflicted injuries	8	8	10	Osteoarthritis	12	12	10

In actual numbers, the projected change for diabetes has been calculated for the period between 2003 and 2023 and is estimated to be 2.4 million prevalent cases. This represents an increase of 221% from 1.1 million to 3.5 million cases. These changes will be driven by increasing incidence due to expected increases in the prevalence of obesity over the projection period, as well as by population factors (Figure 7).⁴⁴

⁴³ Begg et al, 2007 (op cit)

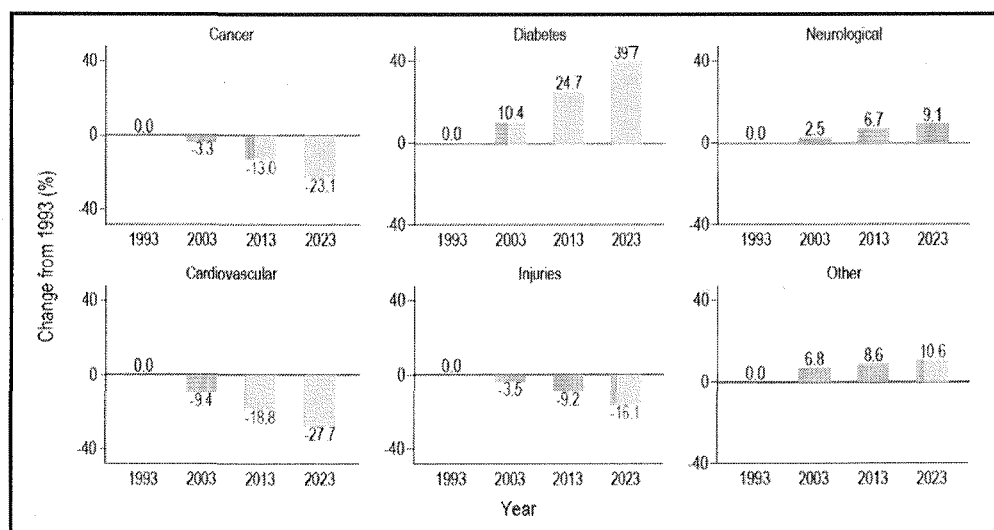
⁴⁴ Using a different methodology and assumptions, and with a seven year closer time horizon, modelled projections by Brown et al estimated an increase of type 2 diabetes from around 1 million to 1.8 million persons by 2026 (Brown, L, Harris, A, Picton, M, Thurecht, L, Yap, M (2006) Estimating the Health and Economic Impacts of the Prevention of Type 2 Diabetes in Australia - Linking Micro and Macro-Economic Models, National Centre for Social and Economic Modelling, University of Canberra. Paper presented to the 28th Australian Conference of Health Economists, 28-29 September 2006, Perth.).

Figure 7: Change in prevalence (numbers and standardised rates) for diabetes, 1994 to 2033⁴⁵



Diabetes will also cause the largest growth in prevalent disability in the elderly, together with neurological conditions. Disability from diabetes grew 10.4% in the decade to 2003, and will grow by a further 29.3% (to 39.7%) by 2023 if current trends in obesity continue (Figure 7).

Figure 8: Percentage change in disability prevalence rates since 1993 for selected causes in people aged 80 years and over, Australia, 2003 to 2023⁴⁶



In absolute terms, diabetes will contribute to 9% of total prevalent disability in 2023. Vos et al suggest that disability from cardiovascular disease will decline from middle age onwards over this period but this decline will be more than offset by increases from diabetes. However, a US study suggests that recent cardiovascular improvements have not been accompanied by reduced disability within the obese older

⁴⁵ Source: Vos T, Goss J, Begg S & Mann N 2007. *Projection of health care expenditure by disease: a case study from Australia*. Centre for Burden of Disease and Cost-effectiveness, School of Population Health, University of Queensland & Australian Institute of Health and Welfare. Report prepared for UN World Economic and Social Survey 2007 United Nations World Economic and Social Survey 2007 report on 'Development in an Ageing World' Accessed at www.un.org/esa/policy/wess/wess2007files/backgroundpapers/australia.pdf. The Vos et al projections are based on projected obesity rates, and may overestimate the number of diabetes cases, depending on how obesity trends play out over the next 25 years. Currently however, this report is the only published source of long range estimates of health system impact for the major disease groups.

⁴⁶ Source: Begg et al. 2007 (op cit)

population. Rather, obese participants surveyed during 1999-2004 were more likely to report functional impairments than obese participants surveyed during 1988-1994, and reductions in activities of daily living (ADL) impairment observed for non-obese older individuals did not occur in those who were obese. The authors conclude that over time, declines in obesity-related mortality, along with a younger age at onset of obesity, could lead to an increased burden of disability within the obese older population.⁴⁷

Projected expenditure

In the modelled case study prepared for the UN cited above,⁴⁸ it was estimated that Australia's total health expenditure will increase by 127% in the period 2002-03 to 2032-33 from \$71 billion to \$162 billion – an increase of \$91 billion.

Table 9 shows the projected changes in expenditure for a number of selected groupings of chronic diseases, mental disorders and injuries. This shows that diabetes has by far the greatest *relative* projected increase (401%), followed by neurological disorders (280%), and musculoskeletal conditions (164%). Nevertheless, cardiovascular disease is projected to continue to be responsible for the highest proportion of health expenditure by 2033 and for the greatest *absolute* increase in health costs in the study period.

Table 9: Projected change in health care expenditure (billions of 2002-03 dollars) for selected disease groups (ranked by costs in 2032-33)⁴⁹

Disease category	2002-03 cost	2032-33 cost	% of change in cost
Cardiovascular	7.91	16.18	105%
Neurological	3.98	15.13	280%
Respiratory	5.92	12.62	113%
Musculoskeletal	3.74	9.86	164%
Injuries	5.59	9.36	67%
Mental	4.30	8.48	97%
Diabetes	1.39	6.97	401%
Cancers	2.81	5.17	84%

There are notable differences in the drivers of expenditure increases across these conditions, with past, current or projected risk exposure playing a far larger role in relation to some conditions than others.

It is estimated that the two demographic factors – ageing and overall population increase – will contribute two-thirds of the projected increase in health care costs in Australia over the next 30 years. Ageing will account overall for 32% of the growth in expenditure, and for some diseases, for more than 40% of the growth in expenditure: for example, neurological disorders such as dementia and Parkinson's disease, sense disorders (vision and hearing loss), cancer, musculoskeletal disorders, cardiovascular treatment and COPD (chronic obstructive pulmonary disorder).

For other conditions, in particular diabetes, increased incidence associated with high risk factor prevalence (primarily obesity) is projected to play a major role. Chronic respiratory diseases (primarily COPD) will continue as one of the higher cost conditions as a result of the longer term impact of past and current smoking rates combined with population ageing. However, overall incidence of COPD will eventually decline consistent with the reductions in tobacco consumption. In the case of cardiovascular disease (CVD), while incidence will continue to decline, one of the factors driving increased expenditure will be a 96% increase (\$0.6b) in the proportion of those with the CVD risk factors of hypertension and hyperlipidemia (also associated with obesity, poor diet and sedentary lifestyle) being treated with blood pressure and lipid lowering drugs to prevent cardiovascular events.

⁴⁷ Alley, D and Chang, V (2007) The Changing Relationship of Obesity and Disability 1988-2004 JAMA; 298(17):2020-2027 (doi:10.1001/jama.298.17.2020)

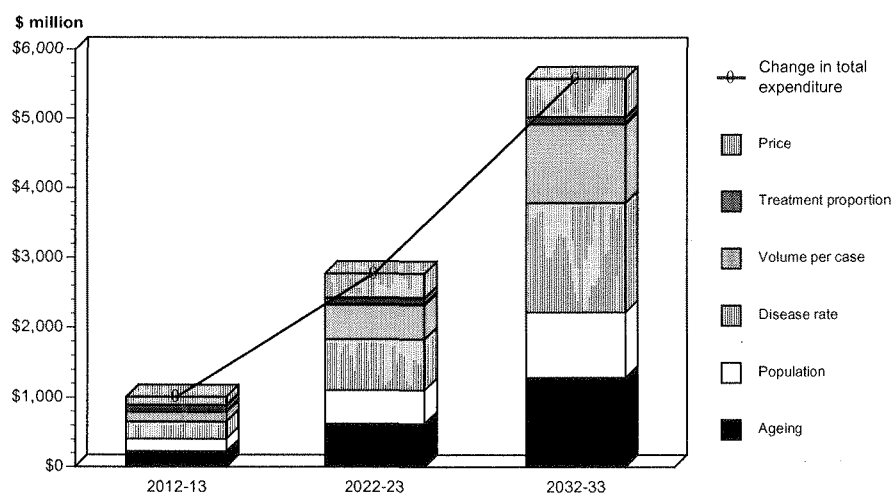
⁴⁸ Vos T et al (2007) Projection of health care expenditure by disease (op cit)

⁴⁹ Source: Vos et al 2007 (op cit)

Type 2 diabetes is a major risk factor for CVD (eg coronary heart disease incidence in middle aged diabetic patients is 2 to 4 times that of non-diabetics), and the risk of type 2 diabetes is five to ten times higher in those classified as obese, compared with those within a healthy weight range. Therefore, the projected growth in obesity has the potential to reverse reductions in heart disease mortality achieved over the past two to three decades.⁵⁰

The contribution of the change in disease rate in relation to the other drivers of the growth in diabetes is shown in Figure 9.

Figure 9: Projected change in health expenditure for diabetes⁵¹



Of note is that of the disease groups showing significant projected increases:

- type 2 diabetes is a largely preventable condition, unlike, for example, neurological disorders which on the basis of current knowledge are not preventable;
- of the projected increases in costs for CVD, \$0.6 billion is for preventive medications, a proportion of which could be reduced by healthier lifestyles;
- CVD (including high blood pressure and hyperlipidemia) and type 2 diabetes share common risk factors of poor diet, physical inactivity and unhealthy weight.

In 2008, using new obesity prevalence estimates, attributable fractions and unit cost data, Access Economics estimated that the total financial cost of obesity was \$8.283 billion. Of this, productivity costs were estimated as \$3.6 billion (44%), health system costs were \$2.0 billion (24%) and carer costs were \$1.9 billion (23%).⁵²

International modelling studies also give some indication of likely future impacts of obesity on health costs.

⁵⁰ Folsom AR, Chambless LE, Duncan BB, Gilbert AC, Pankow JS (2003) Prediction of coronary heart disease in middle-aged adults with diabetes. *Diabetes Care* (26) 10 2777-84; Allender, S, Scarborough, P, O'Flaherty M. and Capewell S, (2008) Patterns of coronary heart disease mortality over the 20th century in England and Wales: Possible plateaus in the rate of decline. *BMC Public Health* 2008, 8:148doi:10.1186/1471-2458-8-148; Olshansky SJ, Passaro DJ, Hershov RC, Layden J, Carnes BA, Brody J, Hayflick L, Butler RN, Allison DB, Ludwig DS. (2005) A potential decline in life expectancy in the United States in the 21st century. *N Engl J Med*. Mar 17;352(11):1138-45; Australian Institute of Health and Welfare (2004). *Australia's Health 2004*: Canberra: AIHW. Zimmet P (1999). Diabetes epidemiology as a trigger to diabetes research. *Diabetologia* 42: 499-518 ;

⁵¹ Vos et al 2007 (op cit)

⁵² Access Economics (2008) *The growing cost of obesity in 2008: three years on*. Report by Access Economics Pty Limited to Diabetes Australia.

4. RESULTS OF INTERNATIONAL MODELLING

Modelling commissioned for the Foresight study in the UK⁵³ is considered in some detail below as it is likely that the Australian situation would be broadly comparable with UK scenarios.⁵⁴ This needs to be tested using Australian data.

Under the Foresight exercise a number of simulated interventions were developed, some targeted, and some focused on the population as a whole, and compared to baseline (business as usual, no new intervention). The simulations varied in the level of impact (hypothetical reductions) on BMI achieved by the (hypothetical) interventions.

Having simulated an average BMI reduction overall, or a BMI cap on a targeted part of the population, the Foresight model calculates the impact of these reductions in BMI on obesity-related disease rates, and then the aggregate costs (direct costs) to the National Health Service (NHS). The simulations were run for the period to 2050, with 2004 as the baseline for NHS costs.

Table 10 shows an overview of five population simulations compared to baseline (2007). Under the baseline simulation no reductions in average population BMI are achieved. Four of the simulations target the age group 15-50, whereas simulation 5 targets all adults 15 and over. The costs shown are the total costs to the NHS of obesity related conditions (not the fraction of costs attributable to obesity). All costs other than those attributable to obesity are kept constant (see footnote).⁵⁵ Therefore all the changes in costs shown are the excess costs contributed by changes in obesity rates. The increasing levels of BMI predicted by the model are projected to add £5.0 billion - £5.5 billion (at current prices) to the annual total cost of the NHS by 2050.⁵⁶

Table 10 demonstrates that 2050 costs are kept to 2007 levels only in simulations where an average reduction of 8 BMI units is achieved across the life span (eg a reduction in average BMI from 29kg/m² to 21kg/m²).

⁵³ Foresight Programme (2007) *Tackling Obesities: Future Choices – Project Report*, Government Office for Science, London; Foresight Programme (2008) *Modelling Future Trends in Obesity & Their Impact on Health*, 2nd Ed, Government Office for Science, London;

⁵⁴ The mean BMI of UK adults was 27kg/m² in 2003/2004; the BMI of the average adult Australian is 26.5kg/m².

⁵⁵ For the purposes of the project, the microsimulation model forecast costs solely on the basis of anticipated additional morbidity arising from increasing prevalence of obesity. Factors other than BMI, including the costs of disease, were fixed at current levels. The cost comparisons use the Health Select Committee's estimate of the current total costs attributable to overweight and obesity, namely £7 billion per year, of which £1 billion is direct health service costs.

⁵⁶ Shown in the baseline scenario in Table 2 as an increase from £17.5 billion in 2007 to £22.5 billion in 2050 ie £5.0 billion, but elsewhere in the report as an increase from £17.4 billion to £22.9 billion. Foresight has recently revised the estimated total cost –to business and society – of people being overweight or obese by 2050 to £49.9 billion from the original estimate of £45.5 billion.

Table 10: Five simulations and their impact on total NHS costs for all obesity related conditions (£ billion per year)

BMI reduction	0 units	2 units	4 units	6 units	8 units	8 units
Target age:	15-50	15-50	15-50	15-50	15-50	15-100
Simulation	Sim 0	Sim 1	Sim 2	Sim 3	Sim 4	Sim 5
2007	17.5	17.5	17.4	17.4	17.4	17.4
2015	19.3	19.2	19.2	19.1	18.7	17.5
2025	21.4	20.7	20.6	20.3	20.1	18.0
2050	22.5	20.7	19.4	18.5	17.6	17.6

Source: Foresight Programme (2007)

In Table 11, a further sample of simulations (2 targeted and 1 population-wide intervention) and their effect on BMI is shown (the population intervention is a variation of simulation 2 in Table 10). Simulation 1 has a childhood obesity focus; simulation 2 targets those who are overweight, and simulation 3 is a population approach. The impact of each simulation on NHS costs to 2050 is shown in Figure 10.

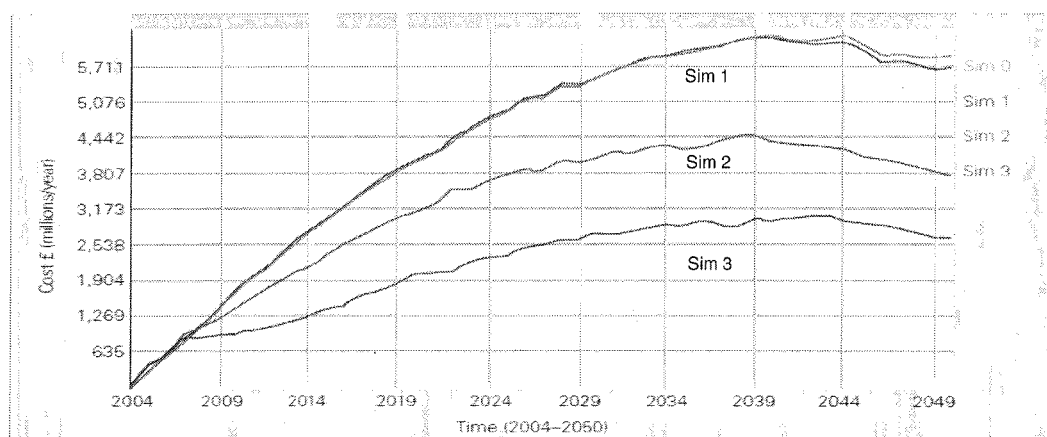
It is clear from Figure 10 that even with highly successful interventions and the achievement of ambitious targets, obesity related costs continue to rise. The effect of intervention is to moderate these increases. It is notable that the effect of childhood obesity interventions on costs has little impact until around 2040 as the avoidance of disease only becomes visible when they reach middle and older age.

Table 11: Sample of Foresight targeted and population simulated interventions.

Simulation intervention	Intervention effect on BMI.
Simulation 0 Baseline	No intervention (baseline BMI trends).
Simulation 1 Childhood obesity focus	Capping BMI for children aged 6-10 from 2010 (equivalent to current UK Public Service Agreement target).
Simulation 2 Targeted approach	Preventing 50% of the population at risk of moving from overweight (BMI 25-30) into the obese category (BMI>30) from doing so. All age groups targeted.
Simulation 3 Population approach	Reducing mean population BMI by 4 units in those aged 18-100 (equivalent to a reduction in mean BMI from 27 to 23).

Source: Foresight Programme (2007): 112

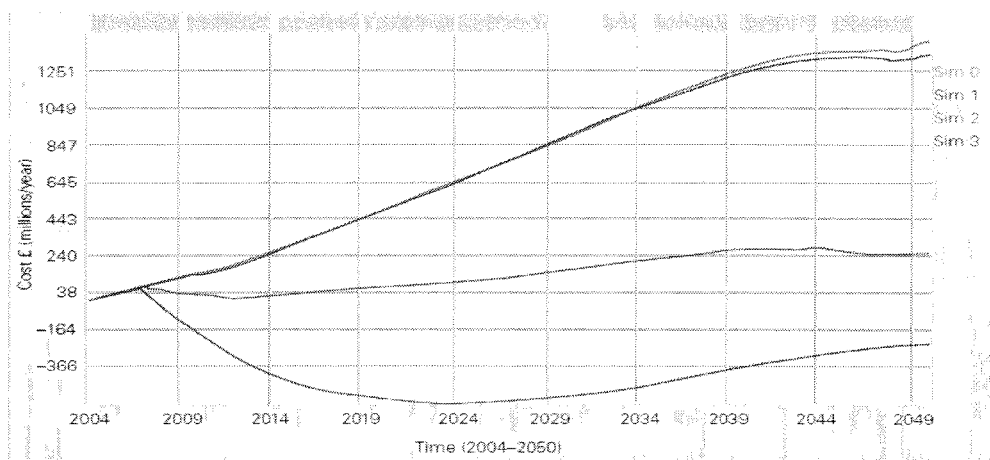
Figure 10: The increase in obesity-attributable NHS costs to 2050⁵⁷



Source: Foresight Programme (2007):113

However, the diseases that contribute to the aggregate picture have different profiles. For example, as the Foresight report notes, the prevalence of diabetes is particularly sensitive to variations in the population's BMI hence the widely separated cost trajectories and the dramatic reduction in costs seen in Simulation 3, where the average population BMI is reduced, and considerable capping of costs with Simulation 2. This is shown in Figure 11 below.

Figure 11: Obesity-attributable costs of diabetes



Source: Foresight Programme (2007):114

The authors of the Foresight study make a number of observations based on the results of the modelling exercise. In summary these are:

- The baseline projections indicate that, left unchecked, the health costs associated with overweight and obesity may become insupportable.

⁵⁷ Above 2004 levels at current process – in the baseline case and in each of the simulations in Table 1.3

- The modelling highlights the scale of success needed to bring obesity-related costs back down to levels close to those of today by 2050. Achieving a reduction of four units in average population BMI (Simulation 3) is considered by experts to be very ambitious, yet it would still see more than a doubling in the NHS costs attributable to obesity by the end of the simulation period.
- A sustained approach is essential, given BMI effects across the lifespan and the time lags between weight gain and associated disease onset. The simulations point to the need for a comprehensive strategy that targets those at immediate risk, as well as tackling the underlying upward drift in average population BMI. This in turn implies a mix of treatment- to provoke and maintain weight loss - and prevention to help stop those who are overweight becoming obese and to set more young people on a trajectory to healthy adult weight.

The priorities for 'success' will influence the mix of interventions. Immediate effects require interventions that make an impact on those most immediately at risk of manifesting disease - the over-50s. Highly successful targeted interventions, if they can be achieved, could make a more significant impact on costs in the short to medium term than modest population-wide successes. Yet population-wide approaches, if successful, deliver sustained and long-term benefits and, in respect of diabetes, also have significant shorter-term impact.

Another example of modelling a national approach to obesity control is provided by a Dutch study. In an attempt to develop a basis for policy targets for a possible Dutch national plan of action on overweight and physical inactivity, researchers simulated the cost-effectiveness of a population level community-based intervention to 13.3 million people over five years. The results suggested that if such an intervention, consisting of social marketing and mass media strategies, self-help support groups, risk factor screening and/or counselling in various settings was offered to 90% of the population, and an intensive lifestyle or multi-component weight loss program was offered to 10% of overweight adults, the prevalence rate of moderate overweight (currently 36.1%) could be reduced by 1.6 percentage points and obesity (currently 11%) by 1.2 percentage points. Further, the prevalence rate of physical inactivity (currently 11%) could be decreased by 2 percentage points. The cost of the intervention, based on two existing Dutch projects, would be 470 million (AUD731.2 million) or 7 euros (AUD 11) per adult per year. At this level of funding, using a conservative methodology, the study found that costs per QALY gained were far below those reported for intensive glycemetic control and a reduction in serum cholesterol levels in diabetics.⁵⁸

The U.S. Centers for Disease Control and Prevention (CDC) has also commissioned a dynamic simulation model of diabetes prevalence and complications for use in designing and evaluating intervention strategies.

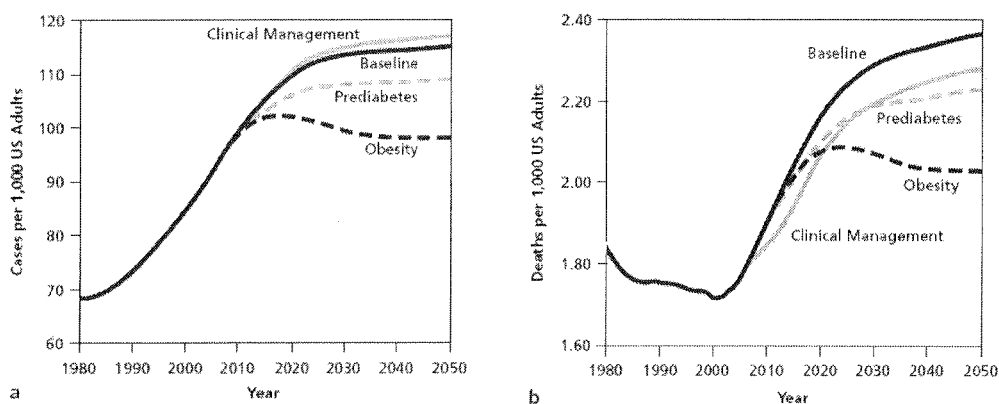
One of the published outputs of this exercise involved the modelling of the impact of 3 scenarios on diabetes rates to 2050 for the US (Jones and Jack et al. 2006). The three scenarios were:

- enhanced clinical management
- increased management of prediabetes
- reduced obesity prevalence (primary prevention).

The first scenario was shown to lead to slightly higher prevalence than baseline due to a reduction in deaths; under the second, diabetes prevalence rises by 17% compared with 23.5% under the baseline scenario; under the third scenario prevalence rises to only 5.5%. This is because the prediabetes scenario does nothing to reduce the onset of prediabetes in the first place, there is a "backing up" of people in the prediabetes category, and a proportion of cases of diabetes are only delayed, not prevented. It is only the obesity reduction scenario that "turns off the tap". The modelling results are presented in the graphs below:

⁵⁸ W Bemelmans, P van Baal, W Wendal-Vos J Schuit et al. (2007), 'The costs, effects and cost-effectiveness of counteracting overweight on a population level. A scientific base for policy targets for the Dutch national plan of action' *Preventive Medicine* doi:10.1016/j.jpmed.2007.07.029

Figure 12: Model output for 3 intervention scenarios compared with the baseline scenario for diabetes prevalence (a) and complication-related deaths (b).



Source: Jones & Homer 2006

5. DRIVERS OF THE GROWTH IN OBESITY

The causes of the growth in obesity are complex, and many theories of what is causing its growth have been advanced. Weight gain is essentially due to the energy intake from the diet being greater than the energy expended through physical activity. Generally, there is wide agreement that over time technological change and other aspects of the modern environment – for example, through providing an abundance of cheap energy dense food, motorised transport, labour saving devices and sedentary lifestyles – have led to sustained period of energy imbalance and gradual but constant weight gain in a substantial proportion of the population. This gradual process, or ‘passive obesity’ – recognises weight gain, for some, as a normal biological response to today’s lifestyle patterns.^{59, 60} The most disadvantaged, and those genetically predisposed to weight gain, can be especially vulnerable to these circumstances.

The average weight of Australian adults (age 18–70) increased by around 0.5–1 kg per year over the last 20 years.⁶¹ It is estimated that the mean energy imbalance of Australian adults between 1983 and 1995, was about 100 kcal/day (420 kJ/day), sufficient to account for weight gain of about 1 kg per year.⁶² This is equivalent to a slice of bread, a soft drink or 30 minutes of sitting instead of brisk walking.⁶³ Small annual gains in weight may not be noticeable to individuals, but over 20 years, for many, these gains can amount to an average increase of 10–20 kg.⁶⁴

⁵⁹ Lakdawalla, D & Philipson, T (2002) *The Growth of Obesity and Technological Change: A Theoretical and Empirical Examination* NBER Working Papers 8946, National Bureau of Economic Research, Inc.

⁶⁰ Foresight Programme (2007), *Tackling Obesities: Future Choices*, Government Office for Science, London

⁶¹ Brown WJ, Williams L, Ford JH, et al. Identifying the energy gap: Magnitude and determinants of 5-year weight gain in mid-age women. *Obesity Res* 2005;13:1431–41. Cook T, Rutishauser I, Seelig M, Australian Food and Nutrition Monitoring Unit. Comparable Data on Food and Nutrient Intake and Physical Measurements from the 1983, 1985 and 1995 National Nutrition Surveys. Canberra: Commonwealth Department of Health and Ageing, 2001. The Australian Longitudinal Study on Women’s Health has shown that on average, younger women gained 649 g a year over the course of the study, compared with 494 g in the mid-age group.

⁶² Clearly the degree of energy imbalance was not distributed evenly across the population, and overall, those who are gaining weight are likely to be gaining weight at a higher rate than the average because not everyone is gaining weight.

⁶³ Australian Institute of Health and Welfare (2003) *Obesity trends in older Australians* Bulletin 12, AIHW Canberra

⁶⁴ Brown WJ, Williams L, Ford JH, et al. Identifying the energy gap: Magnitude and determinants of 5-year weight gain in mid-age women. *Obesity Res* 2005;13:1431–41.

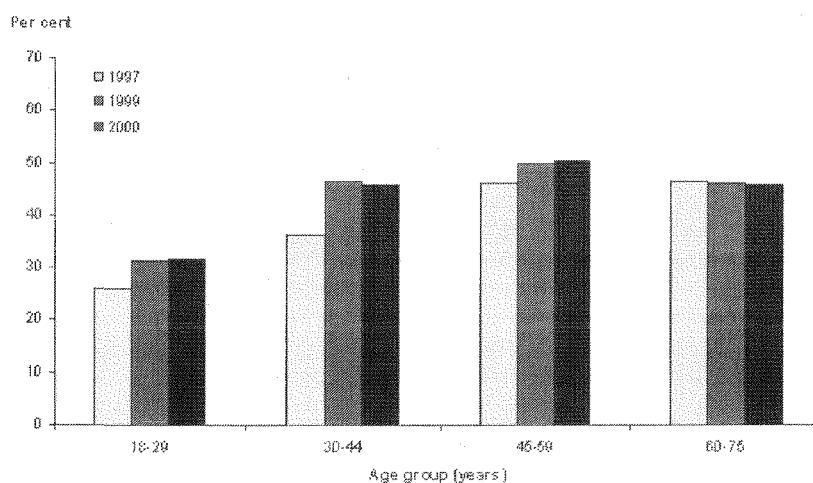
An example of the gradual environmental and behavioural changes that have occurred is seen in a recent analysis of household travel surveys in NSW. This study found that the percentage of children aged 5–9 that walked to school was 57.7, 44.5, 35.3 and 25.5 in 1971, 1981, 1991 and 1999–2003, respectively, whereas the percentage of children aged 5–9 that were driven to school by car in the four surveys was 22.8, 37.3, 53.9 and 66.6, respectively.⁶⁵ This suggests a complete reversal of the proportion walking versus driving occurred over a period of thirty years.

Physical activity

The evidence on trends in physical activity levels in Australian children and adults is mixed. Since the 1989–90 National Health Survey (NHS), the proportion of adults who do not do enough exercise to confer a health benefit has remained stable.⁶⁶ In 2004–05, according to the results of the NHS, 70% of Australians (aged 15 years and over) reported being sedentary or having low levels of physical exercise – a proportion virtually unchanged since 1995.⁶⁷

The Active Australia Surveys, conducted between 1997 and 2000, also found no change or a slight increase in inactivity levels for some age groups. Levels of insufficient activity peaked in the 45–69 year age group, and little difference was seen between rates of inactivity across different age groups (Fig 13).

Figure 13: Trends in insufficient or no physical activity among Australians aged 18–75, 1997–2000



Source: AIHW, derived from Bauman et al. 2001. Trends in population levels of reported physical activity in Australia, 1997, 1999 and 2000. Canberra: Australian Sports Commission.

Nevertheless, some commentators have suggested that physical inactivity may now be decreasing, as some in the population appear to be walking more.⁶⁸

Data from the 2007 Australian National Children's Nutrition and Physical Activity Survey show that the majority of children aged 9–16 years met national guidelines for moderate to vigorous physical activity. On any given day, there was a 69% chance that any given child would get at least 60 minutes of moderate

⁶⁵ Hidde P. van der Ploeg, Dafna Merom, Grace Corpuz, Adrian E. Bauman Trends in Australian children travelling to school 1971–2003: Burning petrol or carbohydrates? *Preventive Medicine* Volume 46, Issue 1, 60–62

⁶⁶ Australian Institute of Health and Welfare (2008) Indicators for chronic diseases and their determinants, AIHW Canberra

⁶⁷ Australian Bureau of Statistics, (2006) 'Physical activity in Australia: a snapshot' 4835.0.55.001: ABS, Canberra

⁶⁸ Chau J, Bauman A, Merom D, Eyeson-Annan M, Chey T, Farrell L. 2008 Recent trends in physical activity in New South Wales. Is the tide of inactivity turning? *Australia New Zealand Journal of Public Health* (32) 1 82–85

to vigorous physical activity. However, adolescent girls achieved lower levels of physical activity than boys and fewer girls aged 14–16 years complied with the physical activity guidelines than boys.

These findings appear consistent with an earlier study which compared participation in physical activity between 1985 and 2004 among 12- to 15-year-old adolescents from NSW. This showed that the prevalence of meeting physical activity recommendations (using criteria of participating for 90 min/day or longer, and the time spent in moderate-to-vigorous physical activity) has markedly increased.⁶⁹ ABS has also reported an increase in bike riding by children: between April 2003 and April 2006, there was an increase in bike riding by girls with the participation increasing from 53.3% to 61.9%. For boys there was a smaller increase in bike riding over the same period (70.5% to 73.4%).⁷⁰

These results differ somewhat from a national study conducted in 2005 (all states except WA) which found that only 14% of surveyed Australian secondary school students engaged in recommended levels of physical activity.⁷¹ Nevertheless, it would appear that, with some exceptions, a high proportion of Australian children are meeting physical activity guidelines.

Sport and physical recreation

Surveys of sports participation provide another indicator of physical activity levels in the community but generally do not provide information on whether the level of activity of participating individuals is consistent with that required to confer a health benefit.

In 2005–06, 10.5 million Australians aged 15 years and over (66%) reported taking part in sports and physical recreation at least once a week. A similar proportion of males and females participated during this period. Almost one in three of the population aged 15 years and over participated in sports and physical activity twice per week (32% of females and 27% males). However, approximately 5.5 million people (34%), reported that they did not participate in any such activity in the 12 months before interview.⁷²

Similar numbers are reported by the *Participation in Exercise, Recreation and Sport Survey (ERASS)*.⁷³ This quarterly survey found that 42.8% of people exercised 3 times a week or more in 2006. This was an increase from 2001 (37%), but lower than the peak of 47% in 2004 (Table 12). 19.5% reported no participation in 2006. This was lower than 2002, but above that reported between 2003 and 2005.

Table 12: Frequency of participation in physical activity 2001-2006 (%)

	Three times per week or more	No physical activity	Organised physical activity
2001	37.2	22.2	39.9
2002	38.8	22.2	40.9
2003	45.8	17.5	42.8
2004	47.2	17.2	42.7
2005	44.2	16.7	41.8
2006	42.8	19.5	39.1

Source: ERASS 2006

The activity patterns of children and adolescents have changed over the years with decreasing free/play time, less school sport and physical education, and more academic time. These changes reflect social and

⁶⁹ Okely AD; Booth, ML; Hardy, L; Dobbins, T; Denney-Wilson, E (2008) Changes in Physical Activity Participation from 1985 to 2004 in a Statewide Survey of Australian Adolescents *Arch Pediatr Adolesc Med.* 162(2):176-180.

⁷⁰ ABS (2008) *Sports and Physical Recreation: A Statistical Overview, Australia*, Cat No 4156.0: ABS Canberra

⁷¹ Scully, M., Dixon H., White, V., & Beckmann, K. (2007). Dietary, physical activity and sedentary behaviour among Australian secondary students in 2005. *Health Promotion International*, 22(3).

⁷² ABS (2007) *Participation in Sports and Physical Recreation Australia 2005-2006*, Cat No: 4177.0, ABS Canberra

⁷³ Standing Committee on Recreation and Sport (2007) *Participation in Exercise, Recreation and Sport Survey 2006 Annual Report*, ASC, Commonwealth of Australia: Canberra.

technological changes, however increased parental fear about unsupervised outdoor play (and the journey to school) for children may also be a factor.⁷⁴ The relative impact of each of these changes and the balance between active and sedentary behaviour is unresolved in the literature.

A 2007 ABS report examined patterns of participation of children aged 5-14 years in sport and other recreational activities and found that children's participation in organised sport increased between 2000 (64%) and 2003 (67%) with little change reported in 2006 (68%).⁷⁵ However, the report also found that there was an increase in the average hours of participation by children in organised sport between 2003 (5.2 hours) and 2006 (6.4 hours).⁷⁶ This increase occurred for both boys and girls and for children of all age groups.

Diet

Less information is available on diet than physical activity as there has been no national nutrition survey of children and adults conducted since 1995. However, the 2007 Australian National Children's Nutrition and Physical Activity Survey now provides good quality data on dietary patterns in children aged 2-16 years. As yet however, the findings of this survey have not been subject to comparative analysis with previous surveys, and it is therefore not possible in this Submission to provide further insights with regard to trends.

Proxy measures, such as self-reported consumption of fruit and vegetables (which can be an indicator of overall nutritional quality of the diet), are used to give some guide to changes in eating habits over time. The evidence about whether energy intake has increased since 1995 is mixed,⁷⁷ but generally the question cannot be resolved in the absence of good data.

Nevertheless, it is clear that energy intake increased significantly for both adults (men and women) and children between 1983/85 and 1995. Kilojoule intake appears to have risen in people of all ages, and especially in children. Between 1985 and 1995, in children aged 10-15 years, kilojoule intake increased by 1420 kJ for boys and 900 kJ for girls.⁷⁸ This was largely due to a 20% increase in total carbohydrate intake and 20% increase in total sugar intake apparently due to consumption of confectionary and soft drinks.⁷⁹ Total fat intake appeared to have decreased.

The 2007 national children's survey shows that carbohydrates contributed just less than half of total energy. The proportion contributed by carbohydrates was similar for all age groups (48-49.5%). Of the carbohydrates consumed, starch and sugars contributed to total energy intake in varying proportions. In the younger age group (2-3 years), there was more energy coming from sugars (25.6-26.1%) than starch (22.6-22.7%), but this situation was reversed in the older age groups such that for the 14-16 year old children, starch (24.6-25.2%) contributed more to total energy than dietary sugars (22.1-23.6%).

The Heart Foundation reported in 2003 that intake of total dietary fat and polyunsaturated fatty acids in the Australian diet appeared to have decreased since 1983, while intake of total energy and saturated fatty acids has increased.⁸⁰ Average intakes of saturated and polyunsaturated fatty acids (12.7% and 4.9% energy

⁷⁴ Foresight Programme *Tackling Obesities*

⁷⁵ ABS Children's Participation in Cultural and Leisure Activities. Cat. no. 4901.0:

[http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/1990AABC35D27297CA257361001F7C3F/\\$File/49010_tmeseries_table1.xls#Table 1.3!A1](http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/1990AABC35D27297CA257361001F7C3F/$File/49010_tmeseries_table1.xls#Table 1.3!A1)

⁷⁶ ABS Children's Participation in Cultural and Leisure Activities. Cat. no. 4901.0:

[http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/1990AABC35D27297CA257361001F7C3F/\\$File/49010_tmeseries_table1.xls#Table 1.2!A1](http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/1990AABC35D27297CA257361001F7C3F/$File/49010_tmeseries_table1.xls#Table 1.2!A1)

⁷⁷ C Stubbs & A Lee, (2004) 'The obesity epidemic: both energy intake and physical activity contribute (2004) *MJA of Australia*. 181(9): 489-91

⁷⁸ Cook P, Rutishauser IHE, Seelig M. (2001) Comparable data on food and nutrient intakes and physical measurements from the 1983, 1985 and 1995 national nutrition surveys. Brisbane: Australian Food and Nutrition Monitoring Unit.

⁷⁹ C Stubbs & A Lee, 2004 op cit

⁸⁰ National Heart Foundation of Australia (2003) Position statement on dietary fat and overweight/obesity *Nutrition & Dietetics* (2003) 60:3. See also NHMRC (2003) *Dietary Guidelines for Australian Adults* Commonwealth of Australia. The Guidelines suggest a saturated fat intake of 10 per cent of energy as a feasible target for the Australian average.

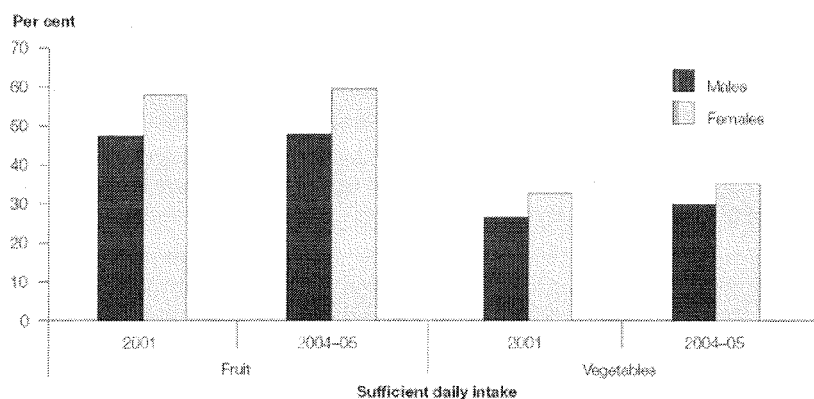
from fat, respectively) were not consistent with the Heart Foundation's policy on dietary fat (8% energy from saturated fat and 8 to 10% from polyunsaturated).

The proportion of people reporting that they usually consumed a sufficient intake of vegetables rose slightly for both males and females, from 27% of males and 33% of females in 2001 to 30% and 35% respectively in 2004-05. Rates for people reporting that they usually eat sufficient serves of fruit have remained stable for 2001 and 2004-05 (Figure 14). For both years, more females than males reported usually consuming 2 or more serves of fruit per day (59% compared with 48%).⁸¹

In 2004-05, rates of people aged 12 years and over who reported eating one or less daily serves of fruit (ie insufficient fruit) were:

- higher for males (52.1%) than females (40.2%);
- if male, highest at 25-34 years (60.7%) than older (65-74 years, 39.4%);
- if female, highest at 15-24 years (48.1%) than older (65-74 years, 31.8%);
- higher for those speaking English (46.7%) at home, than a language other than English (39.5%); and born in Australia (47.8%) than in Southern and Eastern Europe (29.4%);
- higher for those with no school qualification (47.8%) than with a tertiary degree or diploma (39.3%); and higher for those unemployed (55.7%), than employed (48.9%) or not in the labour force (44.8%);
- higher for those living in outer regional Australia (50.1%) than in a major city (45.5%); and higher for those living in the most disadvantaged areas (51.1%) than in the least disadvantaged areas (40.8%).⁸²

Figure 14: Persons aged 12 years and over who report usually consuming sufficient serves of fruit or vegetables, 2001 and 2004-05⁸³



Notes

1. Based on self-reported data.
 2. Sufficient intake is based on 2 or more serves of fruit and 4 or more serves of vegetables.
 3. Age-standardised to the 2001 Australian population.
- Sources: ABS National Health Surveys, 2001 and 2004-05.

For children, the 2007 survey shows that, in general, intake of fruit and vegetables was generally lower than recommended. Intake declined with age, with only 1% of children aged 14-16 consuming the recommended intake of fruit, and 5% consuming the recommended intake of vegetables. When potato

⁸¹ Australian Institute of Health and Welfare (2008) *Indicators for chronic diseases and their determinants, 2008* Canberra.

⁸² Australian Bureau of Statistics 2006. 2004-05 National Health Survey: Summary of Results. ABS Cat. No. 4364.0, ABS: Canberra. It should be noted that this data is only 'reported' intake and as such does not have the validity of more comprehensive dietary intake measurements.

⁸³ AIHW (2008) op cit

was excluded from the analysis of vegetable intake, only 3% of 4-8 year olds and 0% of 14-16 year olds, on average, consumed the recommended 2-4 serves of vegetables.

Food marketing

The period in which rates of overweight and obesity have increased has seen major changes in the food supply and the marketing of food.

There is mixed evidence regarding the impact of food advertising on children's dietary behaviours. A review by the United States Institute of Medicine, for example, found strong evidence that advertising had an impact on overall diet in the short term for children aged 2-11 years, but the evidence for older children was insufficient.⁸⁴ The review also noted strong statistical evidence that linked higher exposure to television advertising and obesity in children aged 2-11 and in young people aged 12-18.

A review of the research evidence conducted for Ofcom, the independent regulator and competition authority for the UK communications industries, found that multiple factors account for childhood obesity, and that television viewing/advertising is one among many influences on children's food choices. These other factors include individual, social, environmental and cultural factors, all of which "interact in complex ways not yet well understood". However, the review's author suggests that: "Given most food advertising to children is for products high in salt, sugar and fat, this influence is likely to be harmful to children's health ... In both experimental and survey studies, the measured effects of advertising/television are small ... Although small in statistical terms, cumulatively this may make an appreciable difference to the number of children who fall into the 'obese category', and may be no smaller than some other important influences on BMI".⁸⁵

On the other hand, the literature review conducted for the Australian Communication and Media Authority concluded that "there was a correlation between advertising and children's knowledge about the nutritional value of foods, their food preferences and their requests for certain types of food. There was also a correlation between television viewing (as distinct from television advertising specifically) and obesity in children. However, [the review] found that existing research did not clearly demonstrate that any of these relationships were causal. The relative contribution of food advertising to childhood obesity has therefore not been isolated in the current research".⁸⁶

In Australia, advertising of fast-food restaurants and breakfast cereals during children's programmes on Australian television is relatively high compared to other countries, and that of confectionery is around average (but below that of France) (Figure 16).

A recent study of advertising on Sydney commercial television found that there was a slight percentage drop in the number of food advertisements (including high fat/high sugar food advertisements) between 2006 and 2007, however, 72.5% of food advertisements broadcast during the most popular programs with 5-12 year olds were for high fat/high sugar products. This represented a 6% increase (from 66% in 2006).⁸⁷

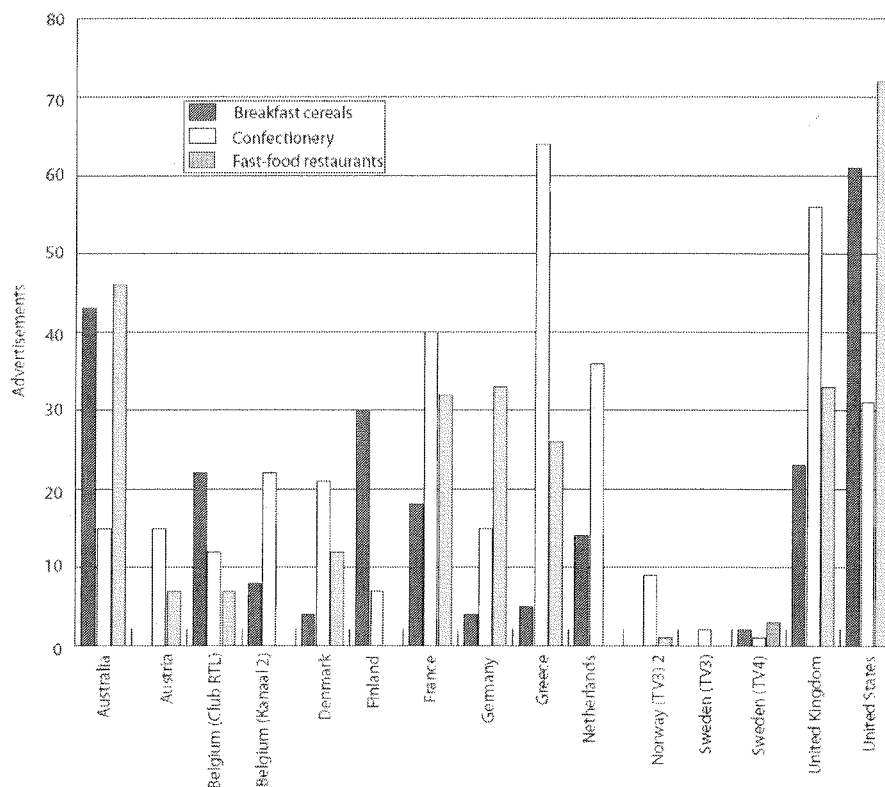
⁸⁴ Institute of Medicine (2005) *Food Marketing to Children and Youth: Threat or Opportunity?* The National Academies Press, Washington, D.C.

⁸⁵ Livingstone, S. (2006) *New Research On Advertising Foods To Children: An Updated Review Of The Literature*. Annex 9, Television advertising of food and drink products to children, Consultation Report, Ofcom: London.

⁸⁶ Brand, JE (2007) *Television Advertising to Children: A review of contemporary research on the influence of television advertising to children*, ACMA: Canberra.

⁸⁷ L Hattersley, B Kelly & L King, *Food Advertising on Sydney Commercial Television: The Extent and Nature Of Children's Exposure 2006-2007: Summary of findings*, NSW Centre for Overweight and Obesity, University of Sydney, July 13th 2007. Note that the quantity of food advertising on free-to-air television in Australia appears to have been dropping since 2002 and the comparison shown in Fig 15 may not reflect this as it is based on a paper published in 2004.

Fig 16: Number of television advertisements for fast-food restaurants, confectionery and breakfast cereals per 20 hours of children's programmes in selected countries⁸⁸



If children watch one hour of commercial television a day they are exposed to approximately 63 advertisements per week for high fat/sugar foods.⁸⁹ Some commentators suggest that it is likely that it is the cumulative effect of a large number of food advertisements rather than a single advertisement that will affect children's eating habits.⁹⁰

Fast-food consumption

A third of the Australian food dollar is now spent on foods purchased and consumed away from home. These foods usually have more fat than foods prepared at home or those sold in the past. A fast-food burger has 24–42 g of fat, which, it has been argued, is about twice the level in burgers from independent shops 20 years ago.⁹¹

'Fast food' consumption is not necessarily a contributor to overweight and obesity – for example, such meals may be eaten infrequently, consumers may make lower energy choices, and many consumers may also be physically active. Nevertheless, many studies suggest fast food consumption, large portion sizes, and consumption of beverages with added sugar are associated with weight gain and obesity.⁹²

⁸⁸ Branca et al (2007) *ibid*

⁸⁹ Australian Centre for Health Promotion (2006) *Food advertising on Sydney television: the extent of children's exposure: a report to NSW Health*, University of Sydney, Sydney

⁹⁰ Dixon, H, Scully, M, Wakefield, M, White, V & D Crawford, D (2007), 'The effects of television advertisements for junk food versus nutritious food on children's food attitudes and preferences', *Social Science & Medicine*, 65(7):1311-23

⁹¹ Stanton, R (2006) Nutrition problems in an obesogenic environment *MJA*: 184: 76–79. The paper does not clarify whether the proportion of energy from fat changed, or it is the portion sizes that have increased.

⁹² See for example, Greenwood, Jessica L. J., Stanford, Joseph B. (2008) Preventing or Improving Obesity by Addressing Specific Eating Patterns *J Am Board Fam Med* 21: 135-140

The prevalence of fast food consumption in the community may therefore be an indicator of one possible diet related driver of weight gain. It is therefore notable that a recent Australian national study of fast-food consumption found that almost one-third of respondents reported eating-in at a fast food restaurant several times a week (this included all meal times). The study found an association of higher-frequency consumption with relative youth, especially for take-away consumption (Table 13).⁹³

Table 13: Percentages of 'several times per week' responses for eat-in frequency and take-away frequency in each age category for fast food

Age (years)	Eat in	Take away
14–17	40.5	9.3
18–24	39.1	16.3
25–29	37.8	13.4
30–34	36.0	10.2
35–39	37.6	7.7
40–44	38.5	7.9
45–49	36.7	6.2
50–54	34.0	4.0
55–59	29.1	2.2
60–64	25.4	1.9
65+	19.8	1.4

The authors suggest that the “effect for age ... appears likely to reflect a cultural shift in eating practices”. If this finding is correct, the authors comment, it suggests a major challenge lies ahead if this shift is to be reoriented towards healthier eating patterns.

Time constraints and working hours

Changes in time use appear to have contributed to weight gain in the Australian population.⁹⁴ ABS analysis of the 2004-05 National Health Survey, shows that the likelihood of being overweight or obese was related to the number of hours a person usually worked each week, with the proportion of workers aged 18–64 years who were overweight or obese increasing in line with the number of hours reported. As the hours worked increased so did the level of sedentary or low physical activity and the likelihood of consuming inadequate amounts of fruit and vegetables recorded by these people. This pattern was particularly true for men. The proportion who were overweight or obese increased from 48% among men working less than 25 hours to 70% among those working 49 hours or more. To some extent, this reflects the much greater likelihood of men to work part time when they are younger. Women are more likely than men to work part time through their working lives. Consistent with this, among women the proportion who were overweight or obese was similar regardless of the hours worked. The proportions of women in each hours worked grouping who were overweight or obese ranged between 41% and 44% across the different age groups.⁹⁵

There have been major shifts in the nature of employment over the past three decades. While manufacturing remains a significant industry, the services sector now makes the highest relative contribution to GDP. Significantly fewer Australians are now employed in jobs requiring any form of manual labour, and many are working longer hours. In 2004-05, a third of fathers of children under 15 worked more than 50 hours per week. There is a higher proportion of women in the workforce. This has led to major changes in work and family life, with less time for meal preparation and increasingly

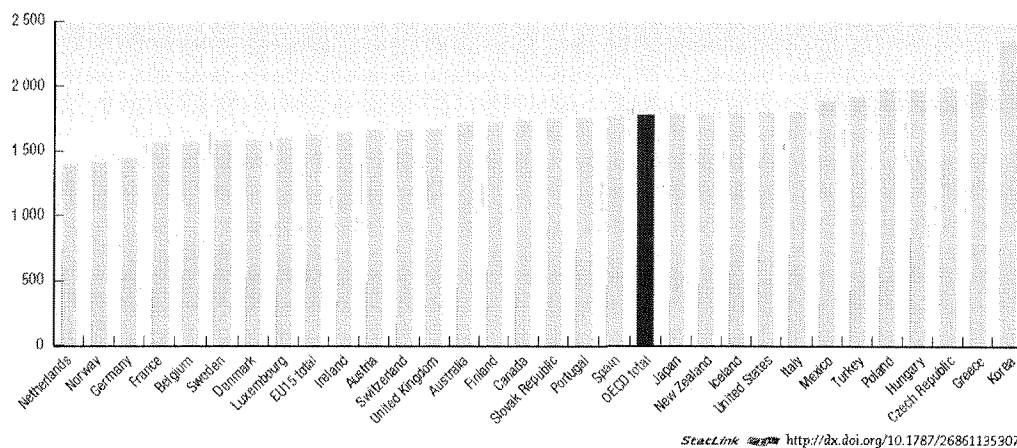
⁹³ Mohr P, Wilson C, Dunn K, Brindal E and Wittert, G (2007) Personal and lifestyle characteristics predictive of the consumption of fast foods in Australia. *Public Health Nutrition* DOI: 10.1017/S1368980007000109

⁹⁴ Broom, D and Strazdins, L (2007) *The harried environment Is time pressure making us fat?* in Dixon, J and Broom, D (2007) *The Seven Deadly Sins of Obesity* UNSW Press isbn/9780868409559

⁹⁵ ABS (2008) *Overweight and Obesity in Adults* Cat. No. 4719.0 Canberra

sedentary lifestyles. Average hours worked in Australia are below the OECD average but above many of the countries which show lower than average obesity rates, such as France and Sweden.

Figure 17: Comparisons of average hours actually worked for OECD countries



Source: OECD *Factbook* 2008

Note: data based on hours per year per person in employment, 2005 or latest available year

The most recent ABS time use survey shows that time spent on recreation and leisure activities has decreased by 1 hour 45 minutes per week since 1997 (to 29 hours 31 minutes a week) and time spent on sport and outdoor activity has decreased by nearly an hour compared to an average week in 1997 (to an average 2 hours 13 minutes a week in 2006). On average an extra hour a week is being spent on activities such as watching television and using the Internet than was spent in 1997.⁹⁶

Other drivers

Many other drivers of changes in physical activity levels and dietary behaviour have been identified, including, as noted above, many facets of technological change. This paper is not intended to provide a comprehensive review of all of these factors, which have been well documented in what is now a vast literature dealing with these topics. This includes the UK Foresight project, noted earlier; the *Policy Options for Responding to the Growing Challenge of Obesity Research Project* (PorGrow) conducted for the European Union; and various reports of the Institute of Medicine and the National Bureau of Economic research in the United States, two of which have been cited above. The term the "obesogenic environment" was coined in the 1990s to describe many of these environmental drivers of the growth in obesity.⁹⁷

⁹⁶ ABS (2008) *How Australians Use Their Time*, 2006 Cat No 4153.0; Canberra.

⁹⁷ Egger G, Swinburn B. An ecological approach to the obesity pandemic. *BMJ* 1997; 315: 477-480

PART TWO

6. AUSTRALIA'S POLICY AND PROGRAM RESPONSE

Australian governments have taken a range of steps towards tackling the obesity challenge and Australia has been seen at times as a world leader in this area. For example, Australia released the world's first strategic plan for obesity prevention in 1997.⁹⁸ Since then several landmark reports, strategies and action agendas⁹⁹ have been produced, both nationally and at the state level, and various mechanisms to coordinate and lead action have been established. These include the National Obesity Taskforce (now disbanded) and the Healthy Living Ministerial Task Force (also disbanded). A major focus has been to promote healthy eating and increased physical activity for children and young people, in light of the benefits of setting healthy habits early in life.

In recognition that obesity is a significant health challenge and a risk factor for chronic disease, the promotion of 'healthy weight' has also more recently been a focus of activities under the Council of Australian Governments (COAG), including through the Australian Better Health Initiative (ABHI), and most recently, the National Partnership Agreement on Preventive Health agreed by COAG on 29 November 2008, a principal focus of which will be healthy weight. The Partnership will help establish the enabling infrastructure and funding platform on which to build a more sustained, comprehensive and effective national approach to fighting obesity.

In 2006, Health Ministers agreed that the National Obesity Taskforce's reports, *Healthy Weight for Adults and Older Australians* and *Healthy Weight 2008: Australia's Future* (national action agenda for children, young people and their families) provided a whole of population approach to maintaining healthy weight. Together these action agendas were seen to provide a national framework for co-ordinated action across all levels of government. Ministers agreed that the approach set out in these reports would complement actions under the COAG *Australian Better Health Initiative* (ABHI).

In mid 2006, the Australian Population Health Development Principal Committee (APHDPC)¹⁰⁰ took over the responsibilities of the National Obesity Taskforce and most of the responsibilities of the previous National Public Health Partnership, which included coordination of national strategies on nutrition and physical activity.

Associated with the release of these various plans and initiatives, has been the successful implementation of a number of national programs and activities. In the past three years, there has been a significant increase in resources allocated to lifestyle change. Of these, the largest resource commitments have arisen from the COAG initiatives. Many of the major Commonwealth activities were implemented under the *Building a Healthy Active Australia* banner.¹⁰¹ Some of the key recent and current Commonwealth funded or supported initiatives, prior to the new commitments of the new government, include:

Primary prevention: promoting healthy eating and physical activity

- National information and awareness initiatives: these included social marketing campaigns promoting for example fruit and vegetable consumption (*Go for 2 & 5 fruit and vegetable campaign*: targeting parents and extended through additional advertising and public relations activity by most states and territories), and physical activity (*Get Moving campaign*: targeting children). These initiatives have been evaluated and key learnings have informed a new social marketing campaign under ABHI that was launched on 17 October 2008. The *Measure Up* campaign is aimed at adults and focuses on waistline measurement to raise awareness of healthy lifestyle choices, such as the importance of physical activity

⁹⁸ NHMRC Acting on Australia's Weight: a Strategic Plan for the Prevention of Overweight and Obesity (1997)

⁹⁹ eg *Healthy Weight 2008 - Australia's Future* - The National Action Agenda for Children and Young People and their Families; *Healthy Weight for Adults and Older Australians*

¹⁰⁰ APHDPC is a Committee under the Australian Health Ministers' Advisory Council, which is the principle advisory council of the Australian Health Ministers' Council.

¹⁰¹ Prime Minister's *Building a Healthy, Active Australia* package of initiatives was announced in 2004.

and nutrition as well as the links between lifestyle behaviours and the risk of chronic disease. The campaign will be extended by state and territory supporting activities. Other national awareness raising activities include the Walk to Work, Ride to Work, and Walk Safely to School days.

- School based activities: these include the Australian Sports Commission's *Active After-school Communities* program which encourages participation in after-school physical activity and the Department of Education, Science and Training's *Active School Curriculum* initiative (which requires education authorities to include at least two hours of physical activity per week in their curriculum for children in primary school and junior high school as a condition of school funding). Generally, these initiatives have been very well received, and there is some evidence of effectiveness, particularly from the Active After School Communities program, which has now been running for 4 years. A schools resource kit to promote healthy eating and physical activity in Australian primary schools has been widely disseminated and the *Around Australian in 40 Days Small Steps to Big Things Walking Challenge* for junior high school students in years 7, 8 and 9 obtained good participation rates and feedback from participating schools. Work is also underway on developing *National Healthy School Canteen Guidelines*.
- Community engagement initiatives: these include the *Healthy Active Australia Community and School* grants program (part of the Australian Better Health Initiative) to encourage the development of local strategies to promote healthy weight and improve nutrition and physical activity. A wide and diverse range of activities are likely to occur under this initiative; however, as it currently stands, it is likely that it will be hard to gauge its effectiveness. Some promising, larger whole-of-community projects such as the WellingTonne Challenge, Rockhampton's 10,000 Steps, and projects under the Sentinel Site for Obesity Prevention in the Barwon-South West region, have been evaluated. The Commonwealth also supports the National Heart Foundation to promote and gain greater participation in their Walking Groups Program. Support has also been provided to the Breast Feeding Association to increase the breast feeding rates and duration in recognition of the link between breast feeding and obesity.
- Food policy initiatives: this includes work undertaken through Food Standards Australia New Zealand such as the food labelling provisions introduced in December 2002, which required a nutrition information panel to be listed on nearly all packaged foods sold in Australia, and the development of a standard for health, nutrition and related claims. The Australia New Zealand Collaboration on Trans Fats was established in early 2007, which includes representatives from the National Heart Foundation of Australia, the Dietitians Association of Australia, the Australian Food and Grocery Council, and New Zealand counterparts. The Collaboration may provide a model for other initiatives.

Obesity management

- Individual interventions for people who are overweight or obese and are at risk of or who have a chronic condition through reforms to Medicare. These include:
 - Enhanced Primary Care (EPC) Chronic Disease Management (CDM) care plans - available to people with chronic medical conditions and complex care needs, including people who may also be overweight or obese, who can access a range of allied health services, including dietitians and exercise physiologists. Group-based allied health services for patients with type 2 diabetes have also been introduced under the MBS.
 - 45 year old MBS funded health check under the ABHI.
 - Indigenous health checks for children aged 0 - 4 (annually); adults aged 15 - 54 (biannually) and older people aged 55 plus (annually).
 - the COAG diabetes measure (MBS item for a "diabetes risk plan" and referral to an accredited subsidised lifestyle modification program) which is focused on helping participants achieve weight loss goals, along with improvements in related risk factors.

- Clinician tools and guidelines: these include the NHMRC clinical practice guidelines for the management of overweight and obesity in adults, and in children and adolescents; the SNAP guide for General Practice, Lifescripts and Pregnancy Lifescripts.

Knowledge development and infrastructure

- Research, information and monitoring infrastructure development activities: this includes the new national nutrition and physical activity survey program which will provide reliable data on food and nutrition intake, rates of overweight and obesity and participation in physical activity the development of the Nutrient Reference Values for Australia and New Zealand, including Recommended Dietary Intakes; and the development and/or review of national dietary and physical activity guidelines.

Other relevant initiatives

- A number of relevant activities and programs have also been initiated through the Divisions of General Practice (such as the Osborne Division's community based obesity intervention program), by the non-government sector (such as the Heart Foundation's *HeartMoves* program), through academic centres (such as the World Health Organisation Collaborating Centre for Obesity Prevention, at Deakin University). The food industry has also taken some actions such as the voluntary commitment to reduce trans fats (referred to above) and reduce salt.
- There have been calls to ban advertising of 'junk food' on TV, particularly during children's viewing times. The Australian Communication and Media Authority (ACMA) is currently undertaking a review of the Children's Television Standards and draft recommendations were released for comment in August 2008. The final recommendations are anticipated to be released in early 2009. The Government will await the outcomes of the review by the ACMA into children's advertising code to inform its future policy in this matter.
- Many important initiatives have also been funded by the states and territories. These include Victoria's *Go for your life* community-based programs and the recently announced WorkHealth initiative. NSW funds a large child obesity prevention trial in the Hunter New England Region. Most recently the SA Government has announced it will canvass options for banning TV advertisements promoting unhealthy food to young children, if voluntary national action does not produce improvements. SA has also announced it will introduce a version of the French child obesity prevention program (EPODE) in up to 20 sites across the state, likely to be local government regions, which will become Eat Well Be Active Communities over the next four years.

New Australian government commitments

The current Government introduced a suite of new measures in the 2008-09 Budget measures, including:

- Healthy Kids Check for all four year olds, claimable under Medicare, to help ensure they are healthy, fit and ready to learn when they start school;
- Get Set 4 Life - Habit for Healthy Kids guide which provides information about healthy diet, regular exercise, sun protection and hygiene for parents or 4 year olds receiving the Healthy Kids Check;
- Guidelines on healthy eating and physical activity in early childhood settings;
- Stephanie Alexander Kitchen Garden pilot in up to 190 government primary schools nationally to provide children with first hand appreciation of growing, cooking and eating healthy food;
- A project to identify and analyse learnings from successful community initiatives aimed at preventing obesity in order to share the knowledge gained with new and developing projects (Deakin University);

- Healthy Places, Healthy Spaces, A national planning guide with practical tools, case studies and guidelines on designing healthy built environments (Planning Institute of Australia, Australian Local Government Association and National Heart Foundation);
- Osborne Division of General Practice Healthy Families for Happy Futures Obesity Program – a community based intervention to reduce overweight and obesity.

In addition, Australian Health Ministers agreed to obesity becoming a National Health Priority Area at their April 2008 meeting; and support for the national nutrition and physical activity survey has been confirmed. Opportunities to strengthen obesity prevention and management through primary health care may be available through the service mix provided by GP Super Clinics to meet local health needs and priorities in each of the 31 localities in which GP Super Clinics will be implemented.

The Government has also appointed the new National Preventative Health Taskforce and its members have been asked to provide evidence-based advice to government and health providers as well as develop a National Preventative Health Strategy by June 2009. Obesity is among the first priority issues (along with tobacco and excessive alcohol consumption) referred to the Taskforce. The Taskforce will also help develop the vision for a longer-term National Preventative Health Strategy, which may have major implications for the national obesity effort. The Taskforce's discussion paper, *Australia: the healthiest country by 2020* was released in October 2008 along with a technical paper on obesity.

COAG's agreement on 29 November 2008 to a National Partnership Agreement on Preventive Health adds an important new dimension to the Government's investment in fighting obesity. Providing \$872.1 million over six years, the Agreement provides major new impetus for engaging individuals in healthy weight programs with peer support in the settings of their schools, workplaces and communities, supported by sustained social marketing, industry partnerships, surveillance, research and a preventive health agency.

The suite of new program commitments outlined above will add to and strengthen the national effort, with potential for further development in the future through the Preventative Health Taskforce.

The new and current commitments are detailed, with allocations, at Appendix A.

7. INTERNATIONAL DEVELOPMENTS

No country has yet succeeded in reversing the trend of increasing numbers of obese and overweight individuals. However, there may be lessons to be learnt from approaches internationally, and from a wide range of Australian and international evidence of the effectiveness of specific interventions. Appendix B summarises approaches taken by the European Union, World Health Organization, the UK, Finland, France, Japan and Singapore.

Appendix B highlights some lessons from the new £372 million (AUD\$808m) cross-government obesity strategy for England "Healthy Weight, Healthy Lives". For example, the British Government has:

- Set a clear goal: "by 2020 we will have reduced the proportion of overweight and obese children to 2000 levels".
- Established a mechanism for cross-government coordination and leadership
- Based the approach to the Strategy on the principle of "learning by doing", with systematic mechanisms for monitoring and reviewing progress, including a new public health obesity observatory, annual reviews by a panel of experts, and plans to publish an annual assessment of progress. This approach enables further development and intensification of the policy focus, as evidence strengthens on what works and on whether various activities are successful or not.

There are also lessons to be learnt from some of the specific initiatives under the Strategy.

International programs such as the UK experience are likely to be considered by the National Preventative Health Taskforce and might inform the National Preventative Health Strategy.

APPENDIX A

New and current commitments

2009-10 to 2014-15 National Partnership Agreement on Preventive Health

The Commonwealth and the States agreed on 29 November 2008 to a National Partnership Agreement on Preventive Health with the Commonwealth providing funding of \$448.1 million over four years, and \$872.1 million over six years starting from 2009-10 to improve the health of all Australians. Governments committed to:

- increasing the proportion of adults and children with healthy body weight, reduce rates of obesity and avert new cases of diabetes in adults each year;
- increasing the proportion of children and adults meeting national guidelines for physical activity and healthy eating; and
- reducing the proportion of adults smoking daily, averting premature deaths and ameliorating costs.

The funding could support the following elements:

- increased access to services for children to increase physical activity and improve nutrition;
- provision of incentives for workplaces and local communities to provide physical activity and other risk modification and healthy living programs;
- increased public awareness of the risks associated with lifestyle behaviour and its links to chronic disease;
- a national social marketing campaign; and
- enabling infrastructure, including a national preventative health agency, surveillance program, workforce audit, eating disorders collaboration, partnerships with industry and a preventative health research fund, leading to better oversight and research into prevention, leading to improved outcomes.

2008-09 Budget measures

Program/activity	Description	Budget 2008-09
Healthy Kids Check	Health check for all 4 year olds before they start school	\$7.3m
Get Set 4 Life – Healthy Habits for Healthy Kids	The objective of this measure is to provide parents with practical and accessible information about healthy living habits for young children, and will support learning and development outcomes in early childhood	\$1.5m
Guidelines on healthy eating and physical activity in early childhood settings	The development and distribution of guidelines on healthy eating and physical activity in early childhood settings such as childcare centres, family day care and preschools	\$1m
Stephanie Alexander Kitchen Gardens	The Stephanie Alexander Kitchen Garden Foundation will be funded to establish the Stephanie Alexander Kitchen Garden pilot	\$3.2m

	project in up to 190 government primary schools nationally to encourage healthy eating	
Learning from Successful Community Obesity Initiatives (Deakin University, WHO Collaborative Centre)	This initiative will analyse the lessons learned from major community projects aimed at preventing obesity, to identify best practice and share the knowledge, resources and training with new initiatives addressing obesity.	\$0.4m
<i>Healthy Places and Spaces</i> (Planning Institute of Australia, ALGA and Heart Foundation)	National guidelines for town planners on designing communities which encourage healthy lifestyles. The planning guide will identify key planning and design elements that can lead to greater health and social benefits for the community and link to planning codes and regulations in each state and territory	\$0.7m
GP Super Clinics	Funding in 2008-09 to establish GP Super Clinics may lead to those clinics offering services that could include nutrition, diabetes-related, and lifestyle modification advisory services to help patients exercise regularly, eat more healthily, and live better lifestyles	\$76.6m
Osborne Division of General Practice Obesity Program	Funding to support the continuation of the Osborne Division of General Practice Obesity Program: a family-based lifestyle intervention program for 6-12 year old children who are at risk of overweight or obesity and their families	\$0.07m
Support for Breastfeeding Mums	Upgrade the Australian Breastfeeding Association's (ABA) telephone counselling service to a national toll free 24 hour helpline	\$0.5m
Sports and recreation facilities	The Government will provide \$23.9 million in 2008-09 to upgrade and establish a number of sport and recreation facilities (including cycleways and walking trails), consistent with election commitments. These projects range from small community facilities in regional and urban areas to major sporting venues and will help facilitate greater participation through the use of the facilities by sporting groups and the broader community. The facilities are located throughout Australia and will directly benefit those involved in a range of sports including hockey, swimming, soccer, netball, tennis, softball, rugby league, Aussie rules, boxing, athletics and motor sport. In many cases, contributions will also be made by private and community sector organisations.	\$23.9 million
National RecLink program	The measure will provide \$2.8 million over 5 years commencing 2008-09 to RecLink Australia to expand its programs beyond Victoria to all states and territories in Australia. RecLink programs facilitate access to sporting, recreational and cultural activities with the aim of improving community connectedness and health and wellbeing for people experiencing homelessness, drug and alcohol issues, disability, mental health issues, juvenile justice and social and economic isolation.	\$0.56 million

Big Issue Community Street Soccer	This program will provide \$3 million over 3 years from 2007-08 to create opportunities for homeless and disadvantaged children to participate in physical activities through soccer.	\$1.08 million
World Masters Games	This measure will provide support for the staging of the World Masters Games in Sydney in October 2008. Australian Government support will help ensure the success of the event, reinforcing Australia's reputation as a world class host of major international sporting events and increasing the likelihood of Australia hosting similar events in the future.	\$8.5m

Previous budget measures continuing in 2008-09

Program/activity	Description	Budget 2008-09
COAG initiatives		
ABHI - Healthy Active Australia Community and School grants program	Grants program to encourage healthy eating and physical activity at the local level	\$55m
ABHI - Rolling Social Marketing Campaigns	To commence with a campaign for adults promoting healthy weight and the benefits of a healthy lifestyle	\$5.743
ABHI - National Healthy School Canteens Project	This Project will assist school canteens to provide healthy food choices and as a consequence, promote good health by delivering a national food categorisation system for school canteens; training materials for canteen staff; and an evaluation framework	\$0.8m
COAG Diabetes Initiative <i>'Reducing the risk of type 2 diabetes'</i>	Access to subsidised lifestyle modification programs via GP referral for people aged 40-49 years at high risk of type 2 diabetes. Includes new MBS item, development of Australian Diabetes Risk Assessment Tool and Standards and Accreditation for Lifestyle Modification Programs	\$11.9m
Indigenous		
The National Aboriginal and Torres Strait Islander Nutrition Strategy (NATSINSAP)	Funding provided supports a national project officer to develop and implement strategies to improve Indigenous Australians' health and wellbeing through better nutrition	\$0.04m
Communications through Vibe Australia (targeting Aboriginal and Torres Strait Islander people) re numerous health issues.	Funding provided for production of magazines, a radio program, basketball competitions, and sponsorship of an awards show	\$1.7m
Indigenous Sport and Recreation Program	Funding to community groups, organisations and the Australian Sports Commission to deliver enhanced opportunities for Indigenous Australians to participate in sport and physical recreation programs	\$12.507m

OTHER		
Breastfeeding Education and Support Program	Aims to increase breastfeeding initiation and duration rates	\$2.6m
Active After-School Communities (AASC) Program (Administered by the Australian Sports Commission (ASC))	The AASC program is delivering to over 3,200 schools and Out of School Hour Care Services (OSHCS) around Australia and reaches around 150,000 primary school-aged children. * The former Prime Minister approved the diversion of \$13.7 million from other ASC participation initiatives into the AASC program over the period.	\$41.6m
Walk Safely to School and Walk to Work*	Support to the Pedestrian Council to promote both events nationally	\$0.8m
National Nutrition and Physical Activity Survey	An ongoing program of surveys that collect the information about food intake, physical activity, participation and physical measures.	\$2.8m
Lifescrpts Initiative	Providing primary health care services with resources and skills to assist patients to reduce lifestyle risk factors for chronic disease (smoking, nutrition, alcohol, physical activity and weight management), including Indigenous-specific resources.	\$1.1m

* Funded under Australian Better Health Initiative (ABHI)

APPENDIX B

Selected international developments of relevance to Australia

European Commission

The European Commission adopted a new Health Strategy, 'Together for Health: A Strategic Approach for the European Union 2008-2013' in October 2007. The Strategy aims to provide an overarching strategic framework spanning core issues in health as well as health in all policies and global health issues.

The European Commission has developed a number of significant preventive health policy platforms and strategies in recent years including a 'Strategy for Europe on nutrition, overweight and obesity related health issues.'

The European Union Platform on Diet, Physical Activity and Health was launched in 2005, and provides a network of experts to assist the 34 member organisations in cooperative actions directed at the problems of inactivity and overeating. The platform identifies food labelling, portion size, consumer education, marketing, advertising, and the promotion of activity as its fields of action. Participants have agreed to monitor, commit to the platform, and review their actions.

World Health Organization

WHO has also taken the view that **unhealthy diets and physical inactivity** are two of the main modifiable risk factors for most of the main chronic diseases requiring urgent attention by member states. It has suggested that childhood obesity is one of the most serious public health challenges of the 21st century. **Obesity** is now seen to have reached epidemic proportions globally.

The *Global Strategy on Diet, Physical Activity and Health* was adopted by the World Health Assembly in 2004. It has four main objectives:

- *Reduce risk factors for chronic diseases that stem from unhealthy diets and physical inactivity through public health actions.*
- *Increase awareness and understanding of the influences of diet and physical activity on health and the positive impact of preventive interventions.*
- *Develop, strengthen and implement global, regional, national policies and action plans to improve diets and increase physical activity that are sustainable, comprehensive and actively engage all sectors.*
- *Monitor science and promote research on diet and physical activity.*

In 2006, the WHO Regional Office for Europe in collaboration with the European Commission organized the **European Ministerial Conference on Counteracting Obesity**, hosted by the Turkish Government. This led to the unanimous adoption of the **European Charter on Counteracting Obesity**. Ministers agreed that:

"The obesity epidemic is reversible. We believe that it is possible to reverse the trend and bring the epidemic under control. This can only be done by comprehensive action, since the root of the problem lies in the rapidly changing social, economic and environmental determinants of people's lifestyles. The vision is to shape societies where healthy lifestyles related to diet and physical activity are the norm, where health goals are aligned with those related to the economy, society and culture and where healthy choices are made easy for individuals".

Organisation on Economic Development

OECD has developed a major project on the Economics of Prevention¹⁰² that aims at:

- Developing a conceptual framework on the economics of non-communicable disease prevention, through which the scope and potential for government intervention will be explored;
- Devising appropriate methods for assessing prevention programmes, taking into account the strengths and weaknesses of conventional methods (e.g. cost-effectiveness analysis) in the area of prevention;
- Applying the conceptual framework and assessment methods to the analysis of issues and policies in the prevention of conditions linked to diet and physical activity.

England

England, and the UK more widely, face many similar problems to Australia and share both language and cultural similarities.

Obesity

As shown in international comparative data, the UK has the second highest level of obesity in OECD countries after the United States. Almost two thirds of adults and a third of children are either overweight or obese. In recognition that little headway was being made in addressing this problem, the Government Office for Science Foresight programme was commissioned in 2005 to undertake a two year project to “produce a long-term vision of how to deliver a sustainable response to obesity in the UK over the next 40 years”. The project “Tackling Obesities: Future Choices” gathered scientific evidence from across a wide range of disciplines to inform a strategic view of this issue. The project launched its findings on 17th October 2007. The report suggested that the UK was facing a public health problem comparable with climate change in both its scale and complexity, which could lead to overwhelming future demand on the NHS unless addressed in a manner which was “comprehensive, consistent and sustained”.

Following the release of the Foresight report, in January 2008 the Health Secretary and the Secretary of State for Children, Schools and Families launched a 3 year, £372 million cross-government strategy “Healthy Weight, Healthy Lives”. This funding is over and above a £1.3 billion investment in school food, sport and play and a further £140 million in funding for Cycling England. The strategy is also complemented by other measures such as restrictions on broadcast food and drink advertising to children. The Government’s ambition as described in the strategy is “of being the first major country to reverse the rising tide of obesity and overweight in the population by ensuring that all individuals are able to maintain a healthy weight. Our initial focus is on children: by 2020 we will have reduced the proportion of overweight and obese children to 2000 levels”. This goal forms part of the Government’s new Public Service Agreement (PSA) on Child Health and Well-being. To lead implementation a Cross-government Obesity Unit has been created in the Department of Health. A new public health obesity observatory will be established that will develop an understanding of what changes behaviour, support monitoring of the strategy’s effectiveness and contribute to new ideas and recommendations for action.

Based in part on the Foresight recommendations, the strategy contains five key elements, each encompassing a range of new actions (which in some cases build on or strengthen previous initiatives).

Importantly, “Healthy Weight, Healthy Lives” recognises that “because no country has yet succeeded in reversing the trend of increasing numbers of obese and overweight individuals, the evidence on what works effectively in each of the strategy’s five elements to tackle the rise in excess weight is less developed than, say, policies to tackle climate change”. The strategy is therefore seen as setting out only the “first steps” in realising the Government’s ambition. An annual assessment of progress will be published, with reviews by a panel of experts (with input from the observatory), and this annual assessment will be used

¹⁰² available at www.oecd.org/health/prevention

to develop and intensify the policy focus, as evidence strengthens on what works and on whether various activities are successful or not.

The key elements of the new strategy are:

Healthy growth and development of children

- Early identification of at risk families and plans to make breastfeeding the default option for mothers.
- Investment in healthy schools, increasing participation in physical activity, and making cooking a compulsory part of the national curriculum.
- A £75 million marketing campaign to support and empower parents to make changes to their children's diet and increase levels of physical activity.
- A National Child Measurement Programme.

Promoting healthier food choices

- Setting out a Healthy Food Code of Good Practice to be finalised in partnership with the food and drink industry, including proposals to develop a single, simple and effective approach to food labelling, and to challenge the industry (including restaurants and food outlets) to support individuals and families reduce their consumption of saturated fat, salt and sugar.
- OFCOM [the independent regulator and competition authority for the UK communications industries] to bring forward its review of the restrictions already introduced on the advertising of unhealthy foods to children (see section below).
- Promote Local Authority planning powers to limit the spread of fast food outlets in particular areas e.g. such as close to schools or parks.

Building physical activity into our lives

- Investment of £30 million in "Healthy Towns" - working with selected towns and cities to bring together the successful EPODE (*Ensemble, Prevenons L'obesite Des Enfants*) model used in Europe, using infrastructure and whole town approaches to promoting physical activity.
- Setting up a working group with the entertainment technology industry to ensure that they continue to develop tools to allow parents to manage the time that their children spend watching TV or playing sedentary games, online and much more widely.
- Reviewing the overall approach to physical activity, including the role of Sport England, with the aim of producing a fresh set of programmes to ensure that there is a clear legacy of increased physical activity before and after the 2012 Games.

Creating incentives for better health

- Stronger incentives for individuals, employers and the NHS to prioritise the long-term work of improving health.
- Working with employers and employer organisations to explore how companies can best promote good health among their staff and make healthy workplaces part of their core business model.
- Piloting and evaluating a range of different approaches to using personal financial incentives to encourage healthy living.

Personalised advice and support

- Developing the NHS Choices website so that it provides advice for diet and activity levels, with clear and consistent information on how to maintain a healthy weight.
- Increased funding over the next three years to support the commissioning of more weight management services, where people can access personalised services to support them in achieving real and sustained weight loss.

The UK obesity strategy is based on the principle of “learning by doing”. It recognises that government must act, even in the face of imperfect evidence. By building in a systematic approach to monitoring and review, the strategy provides opportunities to build the evidence base as it is implemented, to strengthen promising approaches where necessary, while offering opportunities to discard elements that are ineffective or prove inappropriate.

Food advertising to children

In 2007, the UK introduced a package of new rules aimed at reducing the impact of advertising of high fat, salt and sugar (HFSS) food and drink to children. These included restrictions on the advertising of HFSS food and drink in or around television programs specifically made for children (including pre-school children) and of particular appeal to children under 16. Restrictions were also introduced on the use of licensed characters, celebrities, promotional offers and health claims in advertisements.

In February 2008, Ofcom (Office of Communication, the independent regulator and competition authority for the UK communications industries) provided an update on the impact of these restrictions on food and drink advertising to children.

Background

Based on the growing body of research indicating that obesity was an increasing risk to the health of children and young people, the Government asked Ofcom in December 2003 to consider strengthening rules on advertising food products to children. Towards the end of 2005, the Food Standards Agency (FSA) completed work on a nutrient profiling model designed with independent scientific input to help distinguish less healthy food and drink products from more healthy products for the purposes of distinguishing which products might be made subject to advertising restrictions.

Ofcom carried out wide-ranging research and in March 2006, published a consultation paper setting out in detail why it considered targeted action on food advertising was appropriate. It consulted on several options, including restrictions based on all foods or just those profiled as less healthy.

After reviewing all responses to the consultation, Ofcom took the view that nutrient profiling based restrictions were the most appropriate and proportionate response. It also decided that changes should be made to the ASA’s Code on Advertising Practice, to restrict the use of techniques that might make advertising of HFSS products particularly attractive to children.

In February 2007, Ofcom reached its final decision and announced that the scheduling restrictions would come into effect on a phased basis with effect from April 2007.

Phase 1 (April 2007) comprised a total ban on HFSS advertisements in programmes aimed at children aged 4-9, or attracting disproportionately high child audiences. As a transitional measure, children’s channels were required to scale back HFSS advertising to 75% of 2005 levels. With immediate effect restrictions were introduced on advertising techniques in new promotions that might make HFSS advertising attractive to children at other times; they applied to all existing promotions with effect from 1 July 2007.

Phase 2 (January 2008) saw the ban extended to children aged 4-15, and HFSS advertising on children’s channels scaled back to 50% of 2005 levels. Phase 3 (from January 2009) will ban all HFSS advertising on children’s channels.

While it states it is still too early to come to any firm conclusions about the success or otherwise of the new rules, Ofcom has concluded there are clear signs that the new rules are having the intended effect on reducing the amount of food and drink advertising that children are exposed to on television.

The interim data reflects the partial introduction of the restrictions to date:

- The amount of HFSS advertising that children see has declined in line with Ofcom’s predicted forecasts;
- Television share of total core category advertising spend has fallen from 68% to 64% since 2005;

- The greatest decline in impacts has been in relation to children aged 4-9 years (down 27% since 2005) and down 57% in children's airtime;
- Core category 4-15 year olds impacts on television fell by 20% between April and September 2005 and the corresponding period in 2007. This was driven by a 59% decline in impacts delivered during children's airtime, most of which (53%) has taken place between 2006 and 2007, since the rules were introduced;
- Core category advertising on terrestrial children's programming has fallen to negligible levels, and is declining markedly on dedicated children's channels. The decline on dedicated children's channels has been greater than the reduction required under Ofcom's phased rules.
- Impacts on dedicated children's channels fell by 49% from 2005 to 2007.
- Within that overall reduction, there has been an increase in 4-15 year olds core category impacts in "adult" non-terrestrial airtime (up 26% since 2005), leading to an overall 2% increase in impacts delivered across all adult airtime. This reflects increased viewing of non-terrestrial 'adult' targeted channels by children.

Related initiatives

The *Healthy Start program* provides low-income and disadvantaged families with vouchers, worth £2.80 (AUD 6), to purchase milk and fresh fruit and vegetables with registered businesses. The program, aimed at pregnant women, also encourages early prenatal contact with health professionals that will continue into early childhood to ensure healthy eating habits are commenced in children. Results have demonstrated appropriate use of vouchers for healthy food and increased purchasing of fresh fruit and vegetables by 9000 participants (Healthy Start 2006).

The *National Child Measurement Programme* has collected weight and height data on 4-5 and 10-11 year old students since 2004. This forms the basis of the National Childhood Obesity Database by which the Government hopes to demonstrate a halving of childhood obesity in 11 year olds by 2010. Volunteer children are measured during the school year and the intention is to make results available to parents unless they request otherwise.

The database is the largest of its kind in the world and has the potential to become a tool for both tracking and analysing trends in childhood obesity and guiding evidence-based interventions.

Finland

Based on evidence from the Finnish Diabetes Prevention Study (DPS), Finland established the world's first national prevention strategy for diabetes, the *National Programme for the Prevention of Type 2 Diabetes*. This comprises three concurrent strategies:

- The *Population Strategy* is aimed at promoting the health of the entire population by means of nutritional interventions and increased physical activity so that the risk factors for type 2 diabetes, such as obesity and metabolic syndrome, are reduced in all age groups. This strategy comprises both society-oriented measures and measures targeting individuals with the important aim of preventing obesity.
- In the *High-Risk Strategy*, individual-oriented measures are targeted at individuals at a particularly high risk of developing type 2 diabetes. This strategy provides a systematic model for the screening, education and monitoring of people at risk. Those at high risk are identified using the paper or web based *Type 2 Diabetes Risk Assessment Form*.
- The *Strategy of Early Diagnosis and Management* is directed at persons with newly diagnosed type 2 diabetes. Its aim is to bring these people into the sphere of systematic treatment, thus preventing the development of diabetic complications that reduce the affected person's quality of life and are expensive to manage. This strategy also offers intensive lifestyle management.

The first phase of the implementation project, known as FIN-D2D, has been conducted in 5 hospital districts, covering a population of 1.5 million, during the years 2003-2007. Primary health care and occupational settings have been the principal implementation sites.

The goals of the project are (1) to reduce the incidence and prevalence of type 2 diabetes (T2D) and prevalence of cardiovascular risk factor levels; (2) to identify individuals who are unaware of their T2D; (3) to generate regional and local models and programmes for the prevention of T2D; (4) to evaluate the effectiveness, feasibility and costs of the programme; and (5) to increase the awareness of T2D and its risk factors in the population and to support the population strategy of the diabetes prevention programme.

The feasibility, effectiveness and costs of the programme is being evaluated according to a specific evaluation plan.

The programme draws on the highly successful North Karelia Project which began in 1972 as a project to prevent cardiovascular disease among residents of Eastern Finland. The region's high rates of heart disease were reduced dramatically.

France

France revived its interest in public health in the 1990s, committing to public health campaigns and the formation of the National Institute for Prevention and Education for health (INPES) and the French Institute for Public Health Surveillance (InVS). The InVS monitors non-communicable disease, injuries, accidents and INPES concentrates upon prevention, health promotion, patient's rights and education.

EPODE Program ('Together, Let's Prevent Childhood Obesity')

EPODE is a large scale whole-of-community strategy built upon practical experience gained from a successful program in the towns of Fleurbaix and Lavantie Santé (FL) which consisted of: a school-based nutrition program (1992-97); a longitudinal study of the determinants of weight gain (1998-2002); and an ongoing whole-of-community program (2003-08). The latter component involved the whole population of both towns in community actions targeting physical activity and nutrition.

These two trials achieved a reversal of prevalence in of childhood obesity from 11.4 percent to 8.8 percent. In contrast, the prevalence increased in two control towns from 12.6 percent to 17.8 percent (Borys & Raffin 2006 and Fussenegger et al 2007).

The EPODE program commenced in 2004 and now covers 10 pilot cities in France involving around 500,000 people (including 50,000 children). The program aims to mobilise and involve all local stakeholders (i.e. media, teachers, families, professionals, restaurants, municipalities, associations, catering industry and local producers) to stop the increase in childhood obesity over a five year period.

Each year 48,000 children will have their weight and height data recorded by school doctors and nurses. This will provide incentives for parents to consult their local GP and use a personalised family coaching service (diet and physical activity) conducted by registered dietitians. Over the five-year period of the EPODE program continuous evaluation is being carried out by annual BMI calculations.

EPODE is being funded on a 50/50 basis by private partners - Assureurs Prévention Santé (French health insurance group), Foundation International CARREFOUR and Nestlé Company, who have signed a charter not to promote product brands or modify the content of the program and only to communicate with institutions about the campaign. The cost of EPODE is estimated to be 2 EUR per person per year. EPODE has been expanded to reach over 150 cities in France, and is also being implemented in Belgium and Spain.

Japan

For a number of years, Japanese policy makers have feared that a combination of low economic growth and the health needs of an aging society could bankrupt public finances to pay for medical insurance and

care. The proportion of health expenditure for lifestyle-related diseases and their complications has been increasing, and now exceeds other types of health problems in Japan.

For example, the Diabetes Field Survey 1997 - 2002 found that diabetes had risen by 7% or 500 thousand persons during the survey period. Costs associated with diabetes increased by 11.3 million yen or 11%. The 2004 National Health and Nutrition Survey found that in the 40 - 70 year old age group, one in two men and one in five women were strongly suspected of having 'Metabolic Syndrome' or were candidates for it in the future. Metabolic Syndrome is considered to exist for men with waists greater than 85 cm and women with waists larger than 90 cm, and who have one of the three conditions: high blood cholesterol, high blood pressure and high blood sugar.

The Japanese Government therefore has set lifestyle-related diseases control as the highest priority national health strategy for the 21st century. "Adult diseases" were renamed "lifestyle-related diseases".

A 10-year national plan for lifestyle-related diseases control, the National Health Promotion Movement in the 21st Century (Health Japan 21) was launched in 2000 to combat the increased chronic disease burden. Health Japan 21 is a large national project aimed at preventing lifestyle related diseases particularly focusing on obesity, smoking and physical activity. The 10-year national plan contains nine goals with 70 objectives in 9 focus areas. The nine goals are for smoking, alcohol, physical exercise, nutrition, rest and mental health, dental health, diabetes mellitus, cardiovascular diseases, and cancer.

Healthy Japan 21 is part of a wider reform of the medical care system which aims to shift the current system into a structure with a greater emphasis on disease prevention. Major reforms are being introduced across the health, medical and welfare sectors, targeting issues across health promotion, treatment and home care. The national health insurance associations will be obligated to provide health checks and guidance.

To monitor the progress of the national plan, the National Nutrition Survey was reformed to National Health and Nutrition Survey and incorporated under a new Health Promotion Act passed in 2003 which provided a legal underpinning to Health Japan 21.

The Headquarters for the Promotion of Health Japan 21 was established in the Ministry of Health, Labour and Welfare (MHLW) to facilitate the inter-departmental implementation of measures for the initiative. The National Council for Promotion of Healthy Japan 21 was launched as a central coordinating mechanism to oversee implementation of Healthy Japan 21. Officials from national and local levels meet and exchange opinions and information four times a year. The National Liaison Council for Promotion of Healthy Japan 21 comprises academic, non government and community organisations that support the initiative and serves as a means for mutual collaboration and dissemination of information.

Health Japan 21 is financed by national, prefecture, and municipal budgets through a specified fund.

However, mid-term evaluation of Health Japan 21 revealed that the many outcome indicators had not improved, and some had worsened, leading to a further concentration of effort and resources.

In 2005, Japan enacted the Basic Law on Shokuiku. 'Shokuiku is defined as acquisition of knowledge about food as well as the ability to make appropriate food choices'.¹⁰³ The concerns which led to the introduction of Shokuiku go beyond the rise in obesity and lifestyle-related diseases, although this is a primary objective. But it is also intended to address increases in irregular and nutritionally unbalanced meals (eg skipping breakfast); an excessive desire for being slim especially among young females; food safety; over-dependency on food from abroad; and, loss of traditional food culture under process of globalization. As the Shokuiku policy covers a broad range of issues, various government agencies collaborate under the leadership of the Cabinet Office, with the Ministry of Agriculture, Forestry and Fisheries focusing on the food chain itself. The plan for implementation of the Basic Law on Shokuiku sets a number of numerical targets for promotion of Shokuiku.

¹⁰³ The longer version of this definition is: 'Shokuiku is the promotion of learning on a healthy diet from an early stage, in particular on the choice of foods, so as to secure healthy living over the course of one's life'.

Singapore

Singapore may be the one country which appears to have been successful in reducing the incidence of obesity in children nationally. This success is put down to the *Trim and Fit* program introduced into Singapore's schools in 1992. Nutrition education is integrated into the formal school curriculum, food and drinks sold in school canteens are controlled, water coolers are provided in all schools, and schools that achieve good health outcomes are presented with trim and fit awards annually. Students who are overweight are required to participate in special physical exercise programmes and messages on healthier nutrition choices are reinforced. Obese students are referred to the school health service's students' health centre for more intensive follow up with doctors and dieticians.

Between 1992, when the Trim and Fit program was launched, and 2000 obesity among 11-12 year olds dropped from 16.6 percent to 14.6 percent. For 15-16 year olds it dropped from 15.5 percent to 13.1 percent over the same period. Between 1992 and 2002 the percentage of students who passed the Singapore government's National Award for Physical Fitness Test went from 58 per cent to 82 per cent.

While this program has demonstrated success there have been concerns over its impact on some students and a potential link to cases of anorexia nervosa. Parents have also complained that singling out overweight children can lead to teasing. Singapore has therefore decided to replace the programme with a holistic program that caters to all schoolchildren instead of just the overweight ones.

