



briefing paper



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Obesity

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by Edwina Schneller

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by

Edwina Schneller

NSW PARLIAMENTARY LIBRARY RESEARCH SERVICE

Gareth Griffith (BSc (Econ) (Hons), LLB (Hons), PhD),
Manager, Politics & Government/Law (02) 9230 2356

Lenny Roth (BCom, LLB),
Acting Senior Research Officer, Law (02) 9230 2768

Lynsey Blayden (BA, LLB (Hons)),
Research Officer, Law (02) 9230 3085

Talina Drabsch (BA, LLB (Hons)),
Research Officer, Social Issues/Law (02) 9230 2484

Daniel Montoya (BEnvSc (Hons), PhD),
Research Officer, Environment/Planning (02) 9230 2003

Edwina Schneller (BSc, LLB)
Research Officer, Law (02) 9230 2484

Nathan Wales (BSc/BA, PhD)
Research Officer, Environment/Planning (02) 9230 2906

John Wilkinson (MA, PhD),
Research Officer, Economics (02) 9230 2006

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SUMMARY

This Briefing Paper seeks to present an overview of the debate on obesity, presenting key statistical data, discussing the factors that contribute to obesity and reviewing the government policies, national and NSW, formulated to address the issue. The paper starts with a comment on the health and economic impacts of obesity.

Please note that a detailed technical review of obesity in terms of scientific literature, prevention options and effective initiatives undertaken both nationally and internationally is provided in the National Preventative Health Taskforce (NPHT) report, [Technical Report 1, Obesity in Australia: a need for urgent action, including addendum for October 2008 to June 2009](#). A systematic scientific literature review was recently released by the National Health and Medical Research Council (NHMRC), in support of the revision of the Australian Dietary Guidelines: [A review of the evidence to address targeted questions to inform the revision of the Australian Dietary Guidelines](#).

Issues in the obesity debate [2]: The World Health Organization (WHO) defines overweight and obesity as "abnormal or excessive fat accumulation that may impair health." The recognition of obesity as a public health problem has only occurred in recent decades. In 2005 the disease was described as a "global epidemic" and considered by WHO as a worldwide public-health crisis.

There is clinical evidence that overweight and obesity is a risk factor for a range of diseases, including cardiovascular disease, Type II diabetes, some musculoskeletal conditions and cancers. Further, the longer a person is obese, the higher the risk of premature mortality.

In 2008, the economic cost of obesity to Australia was estimated to be \$58.2 billion; with a cost of \$19 billion in NSW.

Classifying overweight and obesity [3]: Body Mass Index (BMI) is the main measure used in international obesity guidelines and is relied on by WHO as a population measure for obesity. BMI is defined as a person's weight in kilograms divided by the square of their height in meters.

Prevalence of Obesity [4]: According to the WHO 2012 report, 2.8 million people world-wide die each year as a result of being overweight or obese. In 2008, it was estimated that half a billion men and women over the age of 20 were obese, with women more likely to be obese than men. Worldwide the prevalence of obesity almost doubled between 1980 and 2008.

In 2011-12, based on measured BMI, 28.3% of Australian adults and 7.6% of children (aged 5-17) were obese. This represents a 3.3% increase of Australian adults since the last *National Health Survey 2007-08*, when there were approximately 3 million obese Australians. The national rates of overweight and obesity do not differ markedly between the States or Territories with Western Australia having the highest prevalence of overweight or obesity (63%) and the ACT the lowest (59%). Australia's obesity prevalence is comparable to Canada,

the United Kingdom and Ireland (20-24%), and reflects the same level recorded for the United States in the early 1990s.

Although obesity is widely distributed amongst the Australian population, its distribution is not even. The greatest prevalence occurs in the following population sub-groups: Aboriginal and Torres Strait Islanders peoples; those in the most disadvantaged socioeconomic groups; those living in rural and remote areas as opposed to urban areas; and people born overseas in particular in Southern & Eastern Europe, the Pacific Islands and the Middle East.

New South Wales Prevalence and Trends [5]:The NSW Adult Population Health Survey results for 2011 reveal that there has been a significant increase in the proportion of adults who are overweight or obese (41.5% in 1997 compared to 52.6% in 2011), with the prevalence being higher amongst males than females.

The NSW Child Population Health Survey for 2009-2010 reported that 18.5% of children were overweight and 10.1% were obese. The findings for NSW reflect the national trend of obesity being more prevalent amongst certain population sub-groups.

Factors Contributing to the Development of Overweight and Obesity [6]: *Australia's Health 2012* states that "A person's health and well-being is influenced by a complex interplay of societal, environmental, socio-economic, biological and lifestyle factors". Each of these is considered.

Biology [6.1]

The NHMRC acknowledges that genetics and epigenetic changes (changes in gene expression caused by mechanisms other than changes in the DNA sequence) may in part explain why some individuals have an increased risk of developing overweight and obesity than others.

Environment [6.2]

There are five key urban characteristics comprising both the natural and built environment that influence physical activity and may therefore impact on obesity:

- Transport infrastructure, foot paths and cycle ways;
- Facilities for physical activities, which may include outdoor sports facilities, playgrounds and natural green spaces such as bushland and parks.
- Street connectivity and design, which reflects the ease of travel between households, shops and places of employment.
- Mixed land uses (residential, commercial, industrial and agricultural) as well as community and recreation facilities are often associated with shorter travel distances.
- Residential density, a higher residential density may mean that there are more people to use a range of activities and institutions within a smaller area, often leading to shorter walking distances (as opposed to use of a car) to such destinations.

Lifestyle Behaviours [6.3]

The following life-style choices are modifiable risk factors for obesity: Dietary behaviours; Level of physical activity; Smoker status; and Alcohol consumption. This Briefing Paper focuses on dietary behaviours and physical activity levels at both a national and State level.

Dietary behaviours

The most current detailed national data for Australian adults' food and nutrient in-take was conducted 16 years ago in the 1995 *National Nutrition Survey* and five years ago for children aged 2-16 in the 2007 *Australian National Children's Nutrition and Physical Activity Survey*. The data is therefore "rather dated."

The *NHS 2007-08* provides the latest national data on selected dietary behaviours (the intake of fruit and vegetables). It warned that the data should be interpreted with care, as survey respondents had difficulty in estimating quantities consumed. According to the *NHS 2007-08* only (51%) of the Australian population aged 15 years and over consumed the recommended two or more serves of fruit per day; while only 1 in 11 (9%) consumed the recommended five or more serves of vegetables. The just released first results of the *AHS 2011-13* indicate a further decrease with (48.3%) of Australians consuming the recommended two or more serves of fruit per day; while only (8.3%) consumed the recommended five or more serves of vegetables.

For NSW, in 2010, 56.4% of adults consumed the recommended two serves of fruit per day. However, only 9.5% of adults consumed the recommended five serves of vegetables per day. The 2011 NSW 'Adult' Population Health Survey (persons aged 16 years and over) below shows that this consumption has further decreased, with 52% of adults consuming the recommended serves of fruit per day and only 8.6% of adults consuming the recommended serves of vegetables per day.

The 2010 Schools Physical Activity and Nutrition Survey (SPANS) Report found that 95.9% of primary school aged children and 42.1% of high school aged children met fruit consumption recommendations. However, only 43.6% of primary school aged children and 20.1% of high school aged children met recommendations for vegetable consumption.

Level of physical activity

Nationally, the *NHS 2007-08* provides the latest data about physical activity for adults and children aged 5-17 years old. The survey included questions about exercising for sport, recreation and fitness, as well as walking for transport. The Children's Survey 2007 provides data for slightly younger children aged 2-16 years. The physical activity module used in the *NHS 2007-08* is being repeated in the Australian Bureau of Statistics, *AHS 2011-2013*.

According to NSW Health, in 2011, 54% of adults undertook adequate levels of physical activity each week. More men (59.6%) than women (48.5%) reported adequate levels of physical activity. These proportions have declined slightly when compared with the *1998 NSW Health Survey*, which reported that (65%) of all males and (57%) of females undertook a minimum of 150 minutes of accumulated physical activity throughout a week.

In respect of children, the 2010 Schools Physical Activity and Nutrition Survey (SPANS Report) indicated that less than half (46.4%) of Years K, 2 and 4 students spent 60 minutes or more per day in physical activity. Boys (50.5%) were more likely to do so than girls (42.2%); from 2004 to 2010, there was a significant decline in physical activity among students in Years 6, 8 and 10, with the exception of Year 10 girls. This is a reversal of the gains observed between 1997 and 2000.

Government Responses - National [7]: In November 2008, the States, Territories and the Commonwealth entered into a [National Partnership Agreement on Preventative Health \(NPAPH\)](#) "In an attempt to improve the health of Australians and reduce pressure on the health system". The Agreement commits the Australian Government as well as State and Territory Governments to address the rising prevalence of lifestyle-related chronic diseases, including obesity, by implementing programs and activities that promote healthy behaviours in the daily lives of Australians. The NPAPH initially provided \$872.1 million for health prevention over six years from 2009-10, extended on 28 June 2012 to June 2018.

Government Responses - NSW [7]: Over the past decade or so NSW Governments have sought to address the obesity issue by various means. In 2002, for example, the Carr Government convened the *Childhood Obesity Summit*. In 2010, NSW was the first Australian jurisdiction to introduce mandatory nutrition information labelling for certain prescribed food businesses. As a result, from 1 February 2012 any food business that sells standard food items at 20 or more locations in New South Wales or at 50 or more locations in Australia is required to display the nutritional information of their standard food items.

Subsequent to the "NSW 2021: A Plan to Make NSW Number One", the NSW Office of Preventative Health was opened on 29 June 2012 with Professor Chris Rissell of the University of Sydney's School of Public Health being the inaugural Director. A Ministerial Advisory Committee on Preventive Health was also established in June 2012. The NSW 2021 plan includes the performance benchmarks for obesity set under the NPAPH and the following specific targets for overweight and obesity:

- Reduce overweight and obesity rates of children and young people (5-16 years) to 21% by 2015; and
- Stabilise overweight and obesity rates in adults by 2015, and then reduce by 5% by 2020.

The NSW Ministry of Health is in the process of developing the *NSW Strategy for the Prevention of Overweight and Obesity 2012-2016*.

1. INTRODUCTION

If the level of media coverage is any measure then the issue of obesity is one that is high on the agenda of public debate. Over the past few months alone overweight and obesity related issues have featured in a range of newspaper reports. On 2 October 2012 the [Sydney Morning Herald](#) reported the results of a Sydney University study of more than 500 children aged up to five that "the home environment was the most significant factor contributing to their weight", with 70 per cent of parents of overweight kindergarten children thinking that their child "was the right weight". On 30 October 2012 the [Sydney Morning Herald](#) reported that "Australians are smoking and drinking less but they are still putting on weight, with 63 per cent of the population deemed overweight or obese". Some good news is that childhood obesity has not increased in recent years, although as [The Australian](#) reported 17.7 per cent of Australian children were overweight and 7.6 per cent obese.

As an indication of the seriousness of the issues involved, on 8 November the [Sydney Morning Herald](#) reported that "Australians support a tax on unhealthy foods and many want a total ban on junk-food advertising". Earlier, however, on 27 October 2012 the *Australian Financial Review* reported that Denmark's experiment with a "fat tax" had had mixed results at best, with support for the tax eroding among consumers. Two of the causes often blamed for the increase in obesity are the food we eat in modern societies and the relatively sedentary lifestyles we tend to lead.¹ However, an article headed "Could obesity be a gut reaction?" on 6 September 2012 in the [Sydney Morning Herald](#) also suggested that the causes may be more complex than is sometimes stated in public health messages, with difference in microbiology between individuals perhaps explaining "why sometimes exercise and diet alone just do not work as well for some people as for others".

Whatever the causes, the obesity problem is real enough. A recent Australian Institute of Health and Welfare (AIHW) report, *Australia's Health 2012*, which compared Australia's adult obesity prevalence to 13 other member countries of the Organisation for Economic Co-operation and Development (OECD),² found that Australia had the second highest rate of obesity for males and the highest for females.³ In 2009 an OECD report predicted that overweight and obesity levels in Australia would continue to rise across all age groups over the next decade to two-thirds of the population.⁴ On the health front, Australia's most recent national study of the burden of illness and injury found that tobacco smoking contributed the greatest burden (7.8%), followed in third position by overweight and obesity status (7.5%).⁵ According to the 2011-12 Australian Health Survey, 28.3% of Australian adults and 7.6% of children (aged 5-17) were obese.⁶

This Briefing Paper seeks to present an overview of this debate, presenting key statistical data on overweight and obesity in Australia and NSW, discussing the factors that contribute to obesity and reviewing the government policies, national and NSW, formulated to address the issue. The paper starts with a

comment on the health and economic impacts of obesity.

Please note that a detailed technical review of obesity in terms of scientific literature, prevention options and effective initiatives undertaken both nationally and internationally is provided in the National Preventative Health Taskforce (NPHT) report, [Technical Report 1, Obesity in Australia: a need for urgent action, including addendum for October 2008 to June 2009](#). A systematic scientific literature review was recently released by the National Health and Medical Research Council (NHMRC), in support of the revision of the Australian Dietary Guidelines: [A review of the evidence to address targeted questions to inform the revision of the Australian Dietary Guidelines](#).

2. HEALTH AND ECONOMIC IMPACTS OF OBESITY

2.1 The medical recognition of obesity

18th-century medical literature first recorded the health consequences of obesity.⁷ However, medical opinion throughout most of the 19th and early 20th-century considered that "carrying an extra 20-50 pounds of excess flesh was healthy,"⁸ as it "provided a reserve of 'vitality' that would keep a person from being run down through an extended illness."⁹ It was only in the 1920s when insurance actuaries noted increase death claims of obese policy holders and an association between cardiac disease and diabetes that the medical profession altered their position and accepted that excess fat was a health problem.¹⁰ By the 1960s the study of obesity was recognised as a legitimate scientific field, one result of which was the foundation for the growing diet and exercise industry that represents \$30-\$50 billion worldwide.¹¹

2.2 The health risks associated with obesity

There is clinical evidence that overweight and obesity is a risk factor for a range of diseases including cardiovascular disease, Type II diabetes, some musculoskeletal conditions and some cancers.¹² Further, the longer a person is obese, the higher the risk of premature mortality.¹³ The table below details the diseases associated with obesity and overweight status in adults. Further:

The association between BMI (a measurement discussed below) and many of these diseases appears to be continuous, starting from BMI levels of about 20–21 kg/m.¹⁴

Health risks associated with overweight and obesity in adults¹⁵

Body System	Health Risk
Cardiovascular	Stroke Coronary heart disease Hypertension
Endocrine	Type 2 diabetes
Gastrointestinal	Gallbladder disease
	Gastro-oesophageal reflux disease
	Hepatic, biliary and pancreatic disease
	Cancers of the bowel, oesophagus, gall bladder and pancreas

Body System	Health Risk
Genitourinary	Chronic kidney disease
	End-stage renal disease
	Kidney cancer
	Glomerulopathy
	Kidney stones
	Prostate cancer
	Stress urinary incontinence –women
Pulmonary	Obstructive sleep Asthma
	Guh
Musculoskeletal	Osteoarthritis Spinal disc disorders Lower back pain Disorders of soft-tissue structures such as tendons, fascia and cartilage. Wearing et al 2006
	Mobility disability (particularly in older adults)
	Impaired immune function
Reproductive Health	Menstrual
	Miscarriage and poor pregnancy outcome
	Infertility/subfertility
	Breast cancer (postmenopausal women)
	Endometrial cancer
	Ovarian cancer
Mental Health	Depression
	Anxiety disorder
	Reduced health-related quality of life

2.3 The Economic Cost of Obesity

In its August 2008 report, commissioned by Diabetes Australia,¹⁶ *The growing Cost of Obesity in 2008: three years on*, Access Economics estimated the financial cost of obesity at \$8.283 billion.¹⁷ This figure comprised:

- Productivity costs (\$3.6 billion) 44%
- Health System costs (\$2.0 billion) 24 %
- Carer Costs (\$1.9 billion) 23%
- Deadweight Loss from transfers (taxation revenue forgone, welfare and other government payments) – (\$727 million) 9% and other indirect costs (\$76 million) 1%.¹⁸

In addition, there were costs of lost wellbeing (due to disability or shorter life span) valued at \$49.9 billion resulting in an estimated total cost of obesity of all States and Territories of \$58.2 billion. The economic costs of obesity were highest in NSW, at \$19.0 billion, comprised of \$2.7 billion financial costs (14%) and \$16.3 billion in net lost wellbeing costs (86%).¹⁹ The division of the financial

costs were borne as follows:

- Federal Government (34.3%) representing \$2.8 billion per annum;
- The individual (29.4%);
- Family and friends (19.2%);
- Society (11.8%);
- State Governments (5.1%); and
- Employers (less than 0.1%).²⁰

If the cost of lost wellbeing is included, the individual's share rises to 90%.²¹

There have been earlier attempts to estimate the cost of obesity in Australia including: a 1989-90 estimate by the AIHW and the Centre for Health Program Evaluation (CHPE), which estimated the direct costs of obesity at \$464 million and indirect costs at \$272 million.²² Similarly, an unpublished study from 1995-96, estimated the cost of obesity at between \$0.68-1.24 billion.²³ Comparisons are difficult due to different measurement assumptions. However, when comparing direct health costs there has been a dramatic increase as the AIHW/CHPE estimate of direct costs was \$464 million as against Access Economics estimate of \$2.0 billion.²⁴

Australia's Food & Nutrition 2012, reported that a poor diet costs Australia \$5 billion each year, with direct health-care costs of \$3 billion. When overweight and obesity are included, this figure increases to \$11.6 billion per year.²⁵

An OECD report predicts there will be a significant rise in the future health-care costs for OECD countries, as there is a time lag between the onset of obesity and linked chronic health problems. A recent study in the United Kingdom predicted that costs linked to overweight and obesity could increase by as much as 70% from 2007 to 2015, with further increases continuing to 2025.²⁶

The 19th-century writer John Ruskin was the first to acknowledge that certain exchanges had economic value but were at the same time detrimental to human well-being. He referred to such exchanges as "illth."²⁷ Picking up on this theme and playing devil's advocate as it were, Garry Egger and Boyd Swinburn point out that, whilst the obesity epidemic may burden the taxpayer, economically it is a 'blessing' as the extra consumption contributing to obesity adds to the economy, as well as to the health 'industries' and other associated industries in treating obesity. For example, a recent US study reported that the health costs for an obese individual are \$1400 per year more than for a healthy weight individual. This adds an extra \$47 billion to the US economy representing approximately 10% of all health spending.²⁸ A similar trend exists in Australia where a review of weight loss surgery between 1998-99 and 2007-08 shows it has increased from 535 procedures to 17,000, with 61% of the procedures occurring in private hospitals.²⁹

3. CLASSIFYING OVERWEIGHT AND OBESITY

The National Health and Medical Research Council (NHMRC) is Australia's leading expert body promoting the development and maintenance of public and individual health standards. The NHMRC considers that, while it may be easy to recognise that a person is overweight "proper diagnosis requires that clinically significant risk levels of the problem be identified and this often necessitates some form of quantification."³⁰ While the NHMRC emphasises "there are no perfect measures of overweight or obesity,"³¹ it is the case that clinical measures have been developed.

The WHO believes such measures are "valuable" as they allow:³²

- meaningful comparisons of weight status within and between populations;
- the identification of individuals and groups at increased risk or morbidity and mortality;
- the identification of priorities for intervention at individual and community levels;
- a firm basis for evaluating interventions.³³

3.1 Clinical Measures

It is only possible to accurately measure fat as a proportion of total body mass when one is deceased.³⁴ In living humans, a range of measures have been developed:

A: Anthropometric Measures are a set of non-invasive, quantitative techniques for determining an individual's body fat composition by measuring, recording, and analyzing specific dimensions of the body, such as height and weight, skin-fold thickness and bodily circumference at the waist, hip, and chest.³⁵

B: Body Composition Measures involve the use of technology in determining the relative proportions of protein, fat, water and mineral components in the body.³⁶ Methods for calculating body composition include: magnetic resonance imaging,³⁷ computerised tomography scanning,³⁸ dual X-ray absorptiometry,³⁹ infra-red spectroscopy⁴⁰ and bioelectric-impedance analysis.⁴¹

Measures relying on technology present obstacles in that they often are expensive, require rare equipment, and their reliability is questionable in less than fully standardised conditions.⁴² For these reasons, in clinical practice, anthropometric measures are relied on.

3.2 Body Mass Index (BMI)

BMI is the main measure used in international obesity guidelines⁴³ and is relied on by WHO as a population measure for obesity.⁴⁴ BMI is defined as a person's weight in kilograms divided by the square of their height in metres:

$$\text{BMI} = \frac{\text{mass}(\text{kg})}{(\text{height}(\text{m}))^2}$$

The weight classification relied on by the WHO:⁴⁵

Classification	BMI (Kg/m ²)	Risk of Co-Morbidities
Underweight	< 18.5	Low (but possible increased risk of other clinical problems)
Normal range	≥ 18.5 -24.9	Average
Overweight	≥ 25.0	
Pre-obese	25.0-29.9	Increased
Obese I	30.0-34.9	Moderate
Obese II	35.0-39.9	Severe
Obese III	≥ 40.0	Very Severe

The above classification is "based primarily on the association between BMI and mortality"⁴⁶ for adult people of European descent.

The Development of the BMI and its Limitations: The BMI, originally developed for use by epidemiologists studying the health of populations, was adopted by doctors who wanted a quick way to measure body fat in individual patients.⁴⁷ In 1985 the United States National Institute of Health (NIH) started defining obesity according to BMI. However, the BMI was intended to be used only for population studies and not for individual diagnosis, as it ignores variables such as a patient's age, ethnicity and gender.⁴⁸ The NHMRC acknowledges the BMI has "several limitations"⁴⁹ including:

- a) The index is insensitive to the distribution between muscle and adipose tissue (fat), for the formula depends only upon weight and height. This is a problem in older patients, where BMI will increase without any corresponding increase in weight because of "their differential loss of lean mass and decreased height and overestimated in [patients] with a muscular build,"⁵⁰ such as professional athletes.
- b) The index does not indicate the distribution of fat. The NHMRC states "individuals with the same BMI can have different levels of visceral [abdominal] fat mass."⁵¹ This is an issue as men generally have twice the amount of abdominal fat than pre-menopausal women.⁵² In addition, the amount of abdominal fat independent of total body fat has consistently been shown to increase the risk of cardiovascular disease, type II diabetes and cancer.⁵³ However, the latter has limited predictive correlation above a BMI of 35 (Obese II).⁵⁴
- c) The index does not show "the same degree of fatness across populations."⁵⁵ This is in part due to body proportion variations among different ethnic groups: "Among Asians and Indians morbidity and mortality occur at a lower BMI and it is proposed that the BMI cut-offs for overweight and obesity in these populations be lowered to ≥23 and ≥ 25 respectively. In contrast, African- Americans and Polynesians tend to have a lower body fat percentage than people of European descent at

the same BMI".⁵⁶

This is of significance to Australia given our multi-ethnic population base. In addition, owing to a lack of data the 2003 NHMRC Guidelines make no recommendation as to the best measure for Aboriginal and Torres Strait Islander people.⁵⁷ It is likely that different BMI cut-offs would be required for "Aboriginal and Torres Strait Islander."⁵⁸

The NHMRC is currently reviewing the 2003 Australian Dietary Guidelines. The [2012 Draft Guidelines](#) (NHMRC 2012 Draft Guidelines) released in December 2011⁵⁹ acknowledge the limitations of the BMI but continue to recommend its continued use to classify overweight or obese individuals.⁶⁰ The Draft Guidelines continue to rely on the WHO BMI classification in the above Table⁶¹ and also recommend the "use of the [the] waist circumference in addition to BMI to refine assessment."⁶² This is because waist circumference enhances type II diabetes prediction beyond that predicted by BMI alone in women but not in men.⁶³

The WHO concludes that BMI provides "the most useful, albeit crude, population-level measure of obesity."⁶⁴ Similarly, the 2003 NHMRC Guidelines recommend that BMI results be interpreted "with caution when this is the only measure of body fatness in a person."⁶⁵

3.3 Combining Clinical Measures

According to both the 2003 NHMRC Guidelines and the 2012 Draft Guidelines the deficiencies in the BMI and waist circumference measures can be "moderated if both measures are used in the risk assessment."⁶⁶ Hence, the NHMRC recommends "if patients wish to be measured, a combination of BMI and waist circumference or weight and waist circumference should be used."⁶⁷

Combining Waist Measurement and BMI to assess obesity and the risk of type II diabetes and cardiovascular disease- NHMRC Draft Guideline.⁶⁸

Classification	BMI(Kg/m2)	Waist Circumference (cm)	
		Men: 94-102 Women: 80-88	102+ 88+
Overweight	25-29.9	Increased	High
Obese I	30-34.9	High	Very High
Obese II	35-39.9	Very High	Very High
Obese III	≥ 40	Extremely High	Extremely High

3.4 Classifying Obesity in Childhood

There are no definitions for obesity and overweight for children under two years of age.⁶⁹ The 2003 NHMRC Guidelines consider that "BMI should be used as the standard measure of overweight and obesity for 2 to 18 year old[s] in Australia."⁷⁰ The limitations of the BMI also apply to children.⁷¹

One recommendation of the [Draft NHMRC Guidelines](#) 2012 states (in part):

- BMI should be used as the standard measure of overweight and obesity for 2 to 18 year olds in Australia.
-
- BMI-for-age percentile charts should be used in clinical practice and in non-health care settings. A BMI above the 85th percentile is indicative of overweight and a BMI above the 95th percentile is indicative of obesity. It should be noted that this definition of overweight and obesity is arbitrary and that a more appropriate definition is needed but not yet available. The Centers for Disease Control and Prevention BMI percentile charts are recommended for use until local BMI growth charts are developed. There is a need for Australia to develop such charts for clinical practice very soon.⁷²

A further recommendation is that:

Waist circumference appears to be the best clinical determinant of truncal obesity, and hence metabolic risk, in children and adolescents and can be used for longitudinal assessment in management.

Acknowledged is the:

need to develop local BMI growth charts for use in Australia. Separate BMI growth charts may need to be considered in Aboriginal and Torres Strait Islander people.

4. PREVALENCE OF OBESITY

4.1 International overview

There are three key international reports that provide the most current comparison of the rates of overweight and obesity globally:

1. [The World Health Organisation's, World Health Statistics 2012](#)⁷³ (WHO 2012);
2. [The Organisation for Economic Co-Operation and Development \(OECD\)'s Sixth Edition of Health at a Glance 2011:OECD Indicators](#) (OECD 2011);⁷⁴ and
3. [OECD Health Working Papers No. 45- The Obesity Epidemic: Analysis of Past and Projected Future Trends in Selected OECD Countries \(2011\)](#) (OECD Working Papers No.45).⁷⁵

All of these reports appear to measure obesity based on BMI and the WHO classification. However, there is a need to be cautious when assessing international comparisons, as different collection methods and reporting may be used. For example, in *OECD 2011* Australian data is based on measured height and weight derived from medical examinations, whereas other OECD countries' data is based on self-reported health surveys, which are considered to be less accurate.⁷⁶ This could account for the variation in the data reported in *WHO 2012* and *OECD 2011* below.

According to *WHO 2012*, worldwide 2.8 million people die each year as a result of being overweight or obese.⁷⁷ In 2008, it was estimated that half a billion men and women over the age of 20 were obese, with women more likely to be obese than men. Worldwide the prevalence of obesity has almost doubled between 1980 and 2008.⁷⁸

	Gender	1980	2008
Percentage of each gender who were obese	Male	5%	10%
	Female	8%	14%

The prevalence of overweight and obese individuals was highest in the WHO region of the Americas⁷⁹ (62% of both sexes overweight and 26% obese) and lowest in the WHO South East Asia Region⁸⁰ (14% of both sexes overweight and 3% obese).⁸¹

Prevalence of obese individuals in each WHO Region (the Western Pacific region includes Australia and New Zealand).⁸²

WHO Region	Adults aged ≥20 years who are obese (%)	
	Male	Female
African Region	5.3	11.1
Region of the Americas	23.5	29.7
South-East Asia Region	1.7	3.7
European Region	20.4	23.1
Eastern Mediterranean Region	13.0	24.5
Western Pacific Region	5.1	6.8

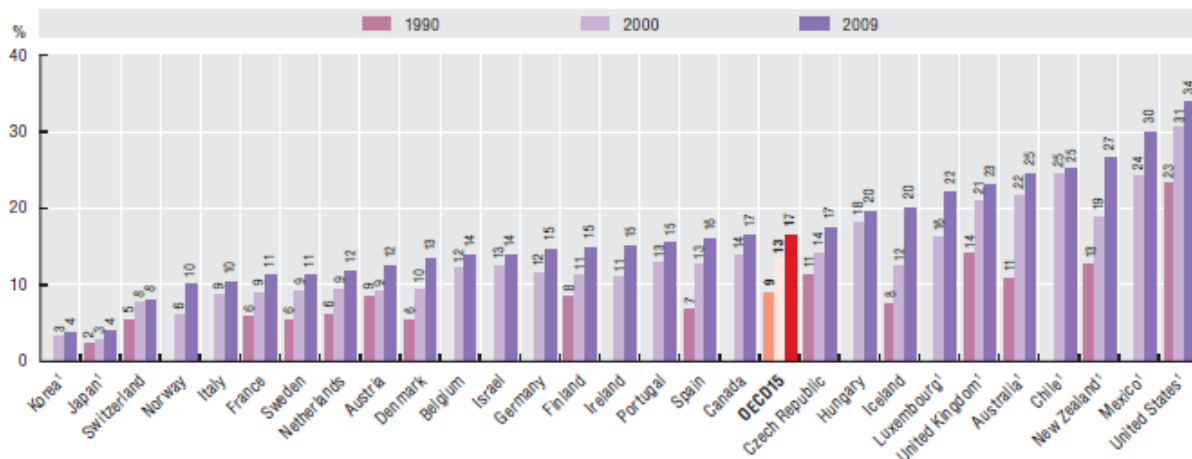
A more detailed comparison of Australia, New Zealand, the United Kingdom and the United States is set out below.

The prevalence of obese individuals in Australia, New Zealand, the United Kingdom and the United States of America.⁸³

Country	Adults aged ≥ 20 years who are obese (%)	
	Male	Female
Australia	25.2	24.9
New Zealand	26.2	27.7
United Kingdom	24.4	25.2
United States of America	30.2	33.2

The OECD reports, *OECD 2011* and *OECD Working Papers No.45*, reinforce the "alarming rise"⁸⁴ in obesity rates. For more than half of the OECD countries (19 of the 34 OECD countries) 50.3% of the population are said to be overweight or obese.⁸⁵ In those OECD countries where height and weight were measured, such as Australia, the average proportion of the adult population who are overweight rose to 55.8%.⁸⁶ Across the OECD membership, 17% of the adult population are obese.⁸⁷ Obesity rates among adults are highest in the United States (rising from 15% in 1980 to 34% in 2008) and lowest in Japan and South Korea (4%) although obesity is on the rise in both the latter countries.⁸⁸

Increasing obesity rates among the adult population in OECD countries, 1990, 2000 and 2009 (or nearest years)⁸⁹



1. Data are based on measurements rather than self-reported height and weight.

Source: OECD Health Data 2011.

Amongst OECD countries obesity rates are higher for women than for men.⁹⁰ Further, "internationally a complex relationship exists between socio-economic conditions and obesity."⁹¹ In low-income countries obesity is more prevalent amongst those who are better-off, while the reverse applies in modern industrialised societies like Australia where the rates of obesity decrease with increasing socio-economic status and education.⁹²

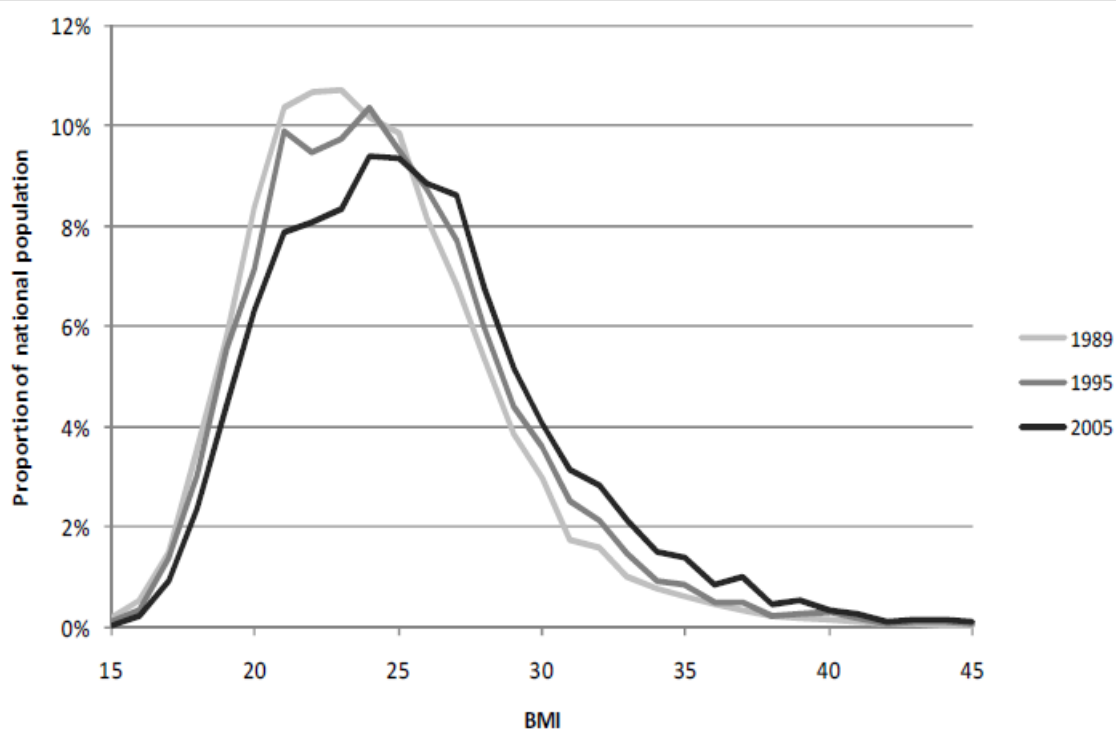
4.2 Australia Compared to the World

4.2.1 Adults

Australia's obesity prevalence is comparable to Canada, the United Kingdom and Ireland (20-24%), and reflects the same level for the United States in the early 1990s.⁹³

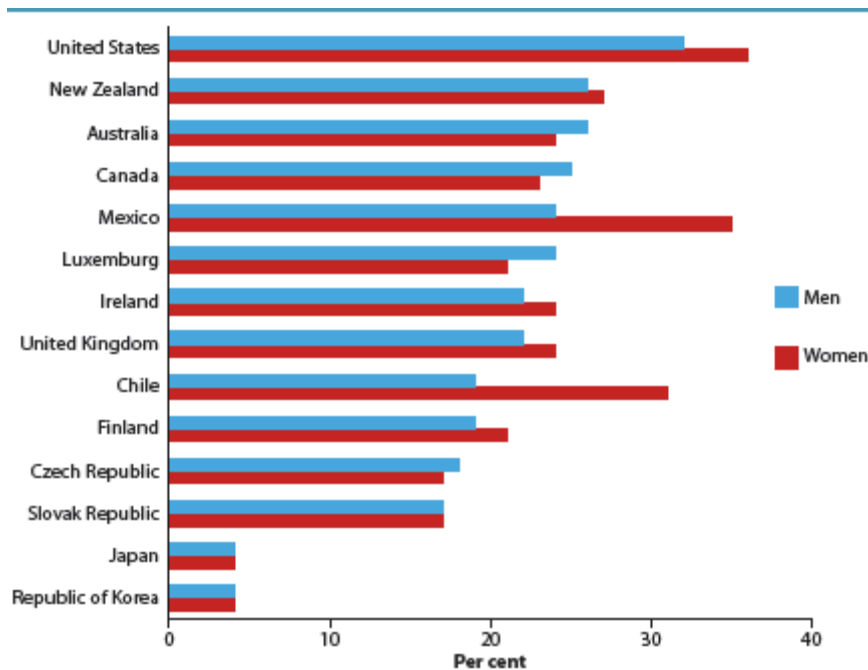
BMI Distributions have been increasing over time in all countries. However, of greatest concern is the conclusion of the *OECD Working Papers No.45* study that the shift is more marked in Australia, the United Kingdom and the United States.⁹⁴ The shift in Australia is depicted in the chart below.

Shows age and gender standardised distribution of BMI in Australia for the years 1989, 1995 and 2005.



A recent Australian Institute of Health and Welfare (AIHW) report, *Australia's Health 2012*, compared Australia's adult obesity prevalence to 13 other member countries of the OECD where BMI was calculated using only measured data. It found that Australia had the second highest rate of obesity for males and the highest for females.

Prevalence of obesity among adults, selected OECD countries 2009 (or nearest year)⁹⁵



Note: Countries are only included where BMI is calculated using measured data.

Source: OECD 2011.

The *OECD Working Papers No. 45* report, which undertook modelling to project overweight and obesity rates for 2014 and 2019, concluded that for several countries, including Australia, "a substantial further increase in obesity rate is projected."⁹⁶

4.2.2 Children

The figure below shows the prevalence of overweight (including obesity) in OECD countries among school-aged children aged 5-17 years.⁹⁷ Australian girls had the 12th highest rate of overweight/obesity (24%) and Australian boys were ranked 17th in terms of prevalence of overweight/obesity (22%). The prevalence for girls exceeded the average OECD prevalence rate of 21.4% and for boys was only 0.9% below the OECD average prevalence.

Prevalence of overweight (including obesity) in OECD countries among school-aged children aged 5-17 years

2.4.1 Children aged 5-17 years who are overweight (including obese), latest available estimates



Source: International Association for the Study of Obesity (2011).

4.3 Prevalence of obesity in Australia

At a national level the most recent analysis on obesity is found in two AIHW reports, [Australia's Health 2012](#)⁹⁸ and [Australia's Food and Nutrition 2012](#).⁹⁹ But note that these reports rely on the most 'recent' national statistics taken from the [2007-08 National Health Survey](#)¹⁰⁰ (NHS 2007-08) conducted by the Australian Bureau of Statistics (ABS).

In respect of children aged 5-17 years old, the NHS 2007-08 also provides the most recent national data, with the [2007 Australian National Children's Nutrition and Physical Activity Survey](#) (the Children's Survey 2007)¹⁰¹ also providing the most recent data for children aged 2-16 years.¹⁰²

As of March 2011, the ABS commenced the first [Australian Health Survey \(AHS\) 2011-13](#), the biggest health survey ever conducted in Australia, from which limited [first results](#) have just been released.¹⁰³ The ABS states:

The AHS builds on previous health surveys allowing comparisons of health information over time such as obesity, smoking, health conditions and how we manage our health.¹⁰⁴

The ABS National Health Survey: The ABS conducted a National Health Survey (NHS) from August 2007 to June 2008,¹⁰⁵ with approximately 20,800 participants from 15,792 private dwellings. Although the sample size was relatively small, participants came from all States and Territories, including both urban and rural areas (except very remote areas) and across all age groups. Information was obtained for one adult and one child in each participating household.

In 2007-08, based on measured body mass index (BMI), 25% of Australian adults and 8% of children (aged 5-17) were obese, equating to approximately 3 million people.¹⁰⁶ A further 37% of adults were overweight, with the highest rate of overweight/obesity in the 65-74 year age group, at (75%).¹⁰⁷ Adult males (68%) were more likely to be overweight or obese than adult females (55%).¹⁰⁸ For children, 17% were classified as overweight with proportions being similar for both boys and girls. However, this is not the case for obesity, with a higher proportion of boys being obese (10%) than girls (6%).¹⁰⁹

The first results of the AHS, report that 28.3% of Australian adults and 7.6% of children (aged 5-17) were obese. This represents a 3.3% increase in the prevalence of obesity for adults and a marginal decrease for children. A further 35% of adults were overweight (a decrease of 2%), with the highest rate of overweight/obesity in the 65-74 year age group, at (74.7%).¹¹⁰

Adult males (70.3%) continued to be more likely to be overweight or obese than adult females (56.2%),¹¹¹ with both rates increasing since the NHS. For children, 17.7% were classified as overweight, a 0.7% increase. However the AHS considered that there had been no significant change in the proportion of children who were overweight or obese. In contrast to the NHS, the proportion of girls who were overweight or obese was higher than that of boys (27.1% compared to 23.6%).¹¹²

The 2007 Australian National Children's Nutrition and Physical Activity Survey: The Children's Survey 2007 was commissioned by the Commonwealth Department of Health and Ageing (DoHA), the Department of Agriculture, Fisheries and Forestry and the Australian Food and Grocery Council to assess:

- Food and nutrient intake;
- Physical activity participation ; and
- To measure weight, height and waist circumference in a sample of children aged 2-16 years randomly selected across Australia.

Data was collected on two occasions from 4,487 participants or their caregivers from February to August 2007.¹¹³

Similar to the findings of the *NHS 2007-08*, 17% of children were overweight and 6% were obese, 2% lower than the comparable finding in the *NHS 2007-08*. The proportion with excess weight was similar in boys and girls, both peaking in the 9-13 years age group.¹¹⁴ While there are no agreed cut-offs for waist girth in children, it has been suggested by the NHMRC that abdominal

fatness is excessive in children when the ratio of waist girth to height exceeds 50%.¹¹⁵ Based on this measure, one child in six had a waist girth greater than the recommended ratio.¹¹⁶

Table 8: Australian children aged 2-16 by BMI category, 2007 (percent)¹¹⁷

	Age group (years)	Underweight	Normal	Overweight	Obese
Boys	2-3	5	74	17	4
	4-8	4	78	13	5
	9-13	6	69	18	7
	14-16	5	71	19	6
Girls	2-3	4	78	14	4
	4-8	4	75	15	6
	9-13	5	65	23	7
	14-16	5	72	16	7
Children	2-16	5	72	17	6

(a) Population weights applied.

Source: 2007 Children's Survey (CSIRO & University of South Australia 2008).

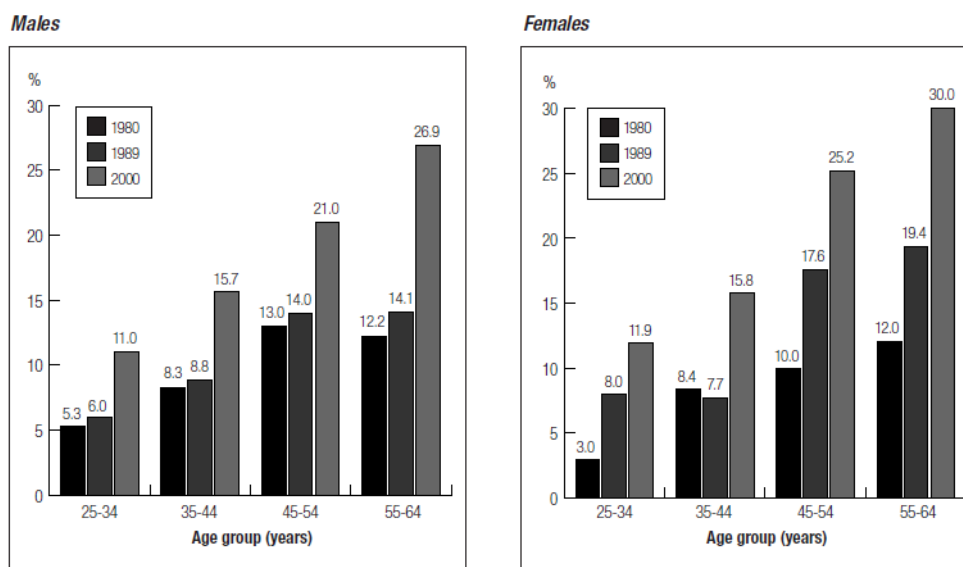
4.4 Obesity Trends in Australia

4.4.1 Adults

The [Australian Diabetes, Obesity and Lifestyle Study 2000](#) (AusDiab)¹¹⁸ analysed data (confined to capital city participants who were aged 25-64 years of age) obtained from the 1980 and 1989 *National Heart Foundation Risk Factor Prevalence Studies* and the *ABS National Nutrition Survey of 1995*.¹¹⁹

The figures below show that, for the period 1980-2000, the prevalence of obesity amongst males increased by 10% (more than doubling) and for females by 12% (almost tripling).¹²⁰

Changes in prevalence of Obesity (BMI \geq 30kg/m²) in Australia 1980-2000 by age group¹²¹



Source: Report of the AusDiab Study 2000.

4.4.2 Children

A similar trend exists for children, with obesity beginning to increase in the 1970s.¹²² A 2003 NSW report concluded for the period 1985-1995, the level of combined overweight/obesity in children more than doubled, whilst the level of obesity tripled in all age groups and for both sexes.¹²³ Similarly, a 2010 Productivity Commission working paper reported a clear trend of overweight and obesity increasing amongst boys and girls aged 7-15 years between 1985 and 2007.¹²⁴

Weight classification of Australian children, 1985 to 2007-08¹²⁵
Proportion classified as not overweight, overweight or obese



^a Ages 7–15 years. ^b Ages 5–17 years.

Sources: ABS (2007–08 National Health Survey, Cat. no. 4364.0); Magarey, Daniels and Boulton (2001).

This trend was confirmed in the AIHW's reports, *Australia's Health 2010* and the more recent *Australia's Food & Nutrition 2012*.¹²⁶ The last report suggested that the proportion of overweight children continued to increase since 1995 but not as rapidly. It also indicated that it is uncertain whether childhood overweight and obesity rates have stabilised or are continuing to rise. The report said that further monitoring is required to answer this question.¹²⁷ It would seem that detailed data collection over a period is needed in order to identify national trends in children.

4.5 Variation within the Australian Population

Although obesity is widely distributed amongst the Australian population, it is not evenly distributed. The greatest prevalence occurs in the following population sub-groups:¹²⁸

- Aboriginal and Torres Strait Islanders peoples;
- Those in the most disadvantaged socioeconomic groups;
- Those living in rural and remote areas as opposed to urban areas; and
- People born overseas.

4.5.1 Aboriginal and Torres Strait Islander peoples

For Aboriginal and Torres Strait Islander people high body mass is the second highest contributor to disease burden (11.4%) after tobacco use (12.1%).¹²⁹ The 2004-05 National Aboriginal Torres Strait Islander Health Survey (NATSIHS 2004-05) found (29%) of Indigenous Australians aged 18 years and over were overweight and (31%) were obese.

Further, after adjusting for differences in age structure, Indigenous adults were almost twice as likely to be obese (34% compared to 18%) but less likely to be overweight than non-Indigenous adults (31% compared to 36%).¹³⁰ These findings reflect those of a 1994 survey, which found 25% of Indigenous men were obese compared to only 18.5% for non-Indigenous men.

However, amongst Indigenous women 60% were overweight compared to 49% for non-Indigenous women. Further, the rate of obesity amongst Indigenous women was 10% higher.

One concerning finding was that the differences between the Indigenous and non-Indigenous population were most pronounced in the younger age groups.¹³¹

Further, a variation has been found between Torres Strait Islander and Aboriginal populations, with a higher proportion of Torres Strait Islander people in the overweight or obese categories than in the Aboriginal population (61% versus 56%).¹³²

There is currently no data on the prevalence of overweight and obesity among Aboriginal and Torres Strait Islander children.¹³³ However, there is limited self-reported data available for 15-24 year olds from the NATSIHS 2004-05 showing that Indigenous young people were more likely to be overweight or obese than non-Indigenous young people (37% vs 27%) and twice as likely to be obese (15% vs 6% respectively).¹³⁴

The change from a nutrient-dense traditional diet to a Western-style diet (higher in saturated fat and refined sugars) is said to be part of the reason why obesity and diet-related diseases, such as type II diabetes, have become more prevalent among Indigenous people.¹³⁵

4.5.2 Socioeconomic Status

There is a strong correlation between a low socio economic status and a low level of education and a higher level of obesity with the correlation strongest in women.¹³⁶ However, data from the *NHS 2007-08* suggests that for Indigenous adults there was little difference between the proportion of overweight/obese persons in the lowest socio-economic quintile (61%) and those in the highest quintile (60%).

Household Income: Data from the *NHS 2007-08* shows that adults living in areas with the highest levels of disadvantage (AHD) had a higher prevalence of

overweight/obesity (65.3%), while those living in areas of least disadvantage (ALD) had the lowest prevalence (56.1%).¹³⁷ This trend was also reflected amongst young people aged 12-24 years, with those in AHDs more likely to be overweight or obese than those in ALDs (44% and 25% respectively). In fact, amongst young people obesity rates were three times higher in AHDs than those in ALDs (22% and 6% respectively).¹³⁸

One reason for this may be that energy-dense foods composed of refined grains, added sugars or fats may present the lowest cost option to consumers as compared to diets based on fresh vegetables, fruit, lean meats and fish. Accordingly, people in lower-income households may be more inclined to consume energy dense foods as they are generally cheaper options resulting in higher rates of weight and obesity.¹³⁹

Data from the *NHS 2007-08* shows that adults in households in the most disadvantaged quintile¹⁴⁰ were less likely to consume the recommended daily intake of fruit and vegetables than those in the most advantaged quintile households (4.9% vs 6.8% respectively).

Further, participants in the most disadvantaged quintile were more likely to be sedentary or exercise at lower levels (78.6%) compared with (64.1%) of adults in households in the most advantaged quintile.¹⁴¹ In fact, over half of the adults in the most disadvantaged quintile did no exercise at all in the week prior to the NHS, compared with a quarter of adults in households in the most advantaged quintile.¹⁴²

One Melbourne study comparing residents of socio-economically varied neighbourhoods found people living in advantaged neighbourhoods had a greater number of supermarkets as well as fruit and vegetable stores within 2 km of their home. They also had a higher density of fruit and vegetable stores per 10,000 residents and travelled the least distance to their nearest supermarket and or fruit and vegetable store. Further, these residents had access to a greater range of fruit and vegetables and tended to spend more on these foods.¹⁴³

Education: The prevalence of obesity also seems to vary according to level of education attainment. ABS research shows that adults who had only completed year 11 or lower were more likely to be overweight or obese (69%) than those who had completed year 12 or equivalent (54%).¹⁴⁴ Similarly, adults who had no formal qualification (63%) or "only" a qualification such as a certificate I-IV (66%) were more likely to be overweight or obese than adults with a degree, diploma or higher qualification (55%).¹⁴⁵

Again the trend appears to be different amongst Indigenous adults, in which case those whose highest year of school completed was Year 12 were more likely to be overweight or obese than those whose highest year school completed was year 9 or below (64% compared to 57%).

Employment. In contrast to the previous categories, ABS research suggests that employed adults were more likely to be overweight or obese (both 60%) than those unemployed (44%). But note that more than a third of those unemployed were aged 18-24 years and the prevalence of overweight/obesity increases with age.¹⁴⁶

In contrast, Indigenous adults who were employed were only slightly more likely to be overweight/obese (61%) than those who were unemployed (59%) or not in the labour force (60%).

Employed people who worked full time were more likely to be overweight or obese (63%) than those who worked part-time (51%). This may suggest that longer working hours affect people's weight by increasing sitting times (depending on occupation)¹⁴⁷ as well as reducing the time available for activities such as exercise and preparation of healthy meals.¹⁴⁸

4.5.3 Remoteness

The obesity rate amongst Australians across both sexes was significantly higher in regional and remote parts of Australia (31%) than in major cities (23%).¹⁴⁹

The proportion of each gender as a (%) who were overweight or obese as categorised by the level of remoteness of their home location.¹⁵⁰

Sex	Level of Remoteness- Proportion (%) of each gender overweight or obese		
	Outer regional areas	Inner regional areas	Major cities
Women	50	48	43
Men	69	64	60

This may be explained by a variety of factors, including a higher proportion of adults in outer regional and remote parts of Australia doing no exercise (43%) compared with those who live in major cities (36%).¹⁵¹

It is also the case that healthier food options are not as easily available or more costly in some regional areas, sometimes¹⁵² 30-50% higher¹⁵³ than in metropolitan areas due to transport and overhead costs. In fact, remote stores on average sell half the fruit and one-quarter of the vegetable intake per capita of that of the overall Australian community.¹⁵⁴

The higher food costs apply mainly to independent supermarkets and generally not to major supermarket chains such as Coles or Woolworths who are able to spread costs across stores.¹⁵⁵ Queensland Health believes that strategies are required to help address the few supermarkets in remote areas and therefore the lack of price competition.¹⁵⁶

The NATSIHS 2004-05 Report found that the level of remoteness did not impact on the proportion of Aboriginal and Torres Strait Islander Australians who were overweight or obese.¹⁵⁷

4.5.4 People Born Overseas

Recent immigrants to Australia in the period 1996-2006 on average had slightly lower age-standardised rates of obesity (11%) compared to the pre-existing adult obesity rate (18%).¹⁵⁸ However, for migrants the prevalence of obesity varies according to country of origin. For example, 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) whereas adults born in South East Asia were least likely to be overweight or obese (31%).¹⁵⁹

Further, children of Pacific Islander or Middle Eastern/Arabic background are most likely to be obese. This ethnic effect is independent of socio-economic status.¹⁶⁰

5. NEW SOUTH WALES PREVALENCE AND TRENDS

5.1 Adults

The *NSW Adult Population Health Survey* results for 2011 reveal that there has been a significant increase in the proportion of adults who are overweight or obese (41.5% in 1997 compared to 52.6% in 2011) with the prevalence being higher among males than females.¹⁶¹

Overweight or Obesity by Sex, Persons Aged 16 Years and Over, NSW¹⁶²

Gender	1997	2011	Increase
Female	33.9	45.4	11.5
Male	49.1%	59.8	10.7

Specifically in relation to obesity, the tables below show the percentage of male and female persons by age group that were obese in 1997 and 2011. It is of concern that there has been a significant increase in the proportion of persons aged 16 years and over who are obese, 8.45% across both genders and all age groups. The greatest increase for males was in the 35-44 age group (an increase of 14.2%) and for females in the 65-74 age group (an increase of 12%).¹⁶³

Obesity (Percentage %) by Age, Male Persons Aged 16 Years and Over, NSW.¹⁶⁴

Age Group	1997	2011	Increase
16-24	4.4	9.3	4.9
25-34	10.9	14.6	3.7
35-44	11.0	25.2	14.2
45-54	16.5	22.4	5.9
55-64	15.1	27.7	12.6
65-74	14.9	24.3	9.4
75+	5.0	10.7	5.7
All ages	11.3	19.7	8.4

Obesity (Percentage %) by Age, Female Persons Aged 16 Years and Over, NSW.¹⁶⁵

Age Group	1997	2011	Increase
16-24	3.1	7.4	4.3
25-34	10.0	15.2	5.2
35-44	11.0	20.5	9.5
45-54	15.0	21.0	6
55-64	18.8	29.8	11
65-74	16.5	28.5	12
75+	7.7	18.8	11.1
All ages	11.3	19.8	8.5

5.2 Demographic Distribution

The national trend is reflected at a State level with the prevalence of overweight and obesity higher among:¹⁶⁶

- Aboriginal communities (60% of Aboriginal adults were classified as either overweight (30.2%) or obese (29.9%)).¹⁶⁷
- The socio-economically disadvantaged;

- Those living in regional and remote areas (68.5% compared to 49.9% in major cities); and
- A significantly higher proportion of adults born in New Zealand (59.5%), Greece (64.8%) Italy (70.6%) and Lebanon (72.4%) were overweight or obese compared with the overall NSW adult population.¹⁶⁸

5.3 Children

The NSW Child Population Health Survey for 2009-2010 reported that 18.5% of children were overweight and 10.1% were obese.¹⁶⁹

In NSW, a Schools Physical Activity and Nutrition Survey (SPANS) for children between 5 and 17 years of age was undertaken in 2004 and 2010.¹⁷⁰ An analysis of the trends between the 2004 and 2010 survey results show that combined overweight/ obesity remained stable at 22.8%.¹⁷¹

Between 2004 and 2010, the prevalence of overweight/obesity decreased slightly amongst boys from 25.1% to 24.0%; for girls it increased from 20.5% to 21.5%.¹⁷²

The 2010 SPANS Report makes an optimistic observation:

The trends between 2004 and 2010 are in contrast to earlier trends that had showed consistent increases in combined overweight and obesity since 1985.¹⁷³

As with adults, the prevalence of overweight and obesity is higher amongst lower socioeconomic groups.¹⁷⁴

6. FACTORS CONTRIBUTING TO OVERWEIGHT AND OBESITY

Australia's Food & Nutrition 2012 states:

A person's health and well-being is influenced by a complex interplay of societal, environmental, socio-economic, biological and lifestyle factors.¹⁷⁵

There are three key factors that influence the development of overweight and obesity: biology, environment and life style behaviours.¹⁷⁶ Each of these factors has a sub-set of risk factors. There are different types of risk factors: modifiable risk factors (these can be categorised as behavioural or biomedical) and non-modifiable risk factors.

Risk factors for chronic diseases such as obesity¹⁷⁷

Behavioural	Biomedical	Broad Influences	Non-modifiable risk factors
Tobacco smoking Risky alcohol consumption Physical inactivity Poor diet Other	Excess weight High blood pressure High blood cholesterol Other	Socio--environmental factors Psychosocial factors Early life factors Political factors	Age Gender Indigenous status Ethnic background Family history Genetic make-up

Three risk factors are considered in this section of the paper, namely: those associated with:

- Biology
- The environment, and
- Life style

6.1 Risk Factor - Biology

The NHMRC acknowledges that genetics and epigenetic changes (changes in gene expression caused by mechanisms other than changes in the DNA sequence)¹⁷⁸ may in part explain why some individuals have an increased risk of developing overweight and obesity than others.¹⁷⁹

Genetics: A strong predictor of a child's weight is the weight status of his or her parents as confirmed by studies of adopted children and monozygotic twins. This is not to say that the family environment is not important in terms of impact on child's risk of developing overweight and obesity. Genetic obesity is thought to be due to inheritance of a "large number of genetic variations leading to a series of small but important disruptions to the way the body regulates energy balance."¹⁸⁰

Epigenetic Changes:¹⁸¹ Epigenetic changes are thought to predispose individuals to obesity by influencing the regulation of energy balance. The following factors have been shown to increase the level of obesity later in life:

- In Utero and Early Life Experience

- Low Birth Weight Infants
- High Birth Weight Infants
- Accelerated Weight Gain or Rapid Early Growth

Breastfeeding exclusively for six months has been shown to reduce the level of obesity later in childhood. It is not clear whether this relationship is correlative or causative.¹⁸²

6.2 Risk Factor - Environment

Research indicates that "Environments that support or discourage health behaviours critically influence health".¹⁸³ The modern Australian environment has been described as "obesogenic"¹⁸⁴ in the way it encourages a sedentary lifestyle resulting in individuals having "a chronic positive energy imbalance."¹⁸⁵ It is only recently that the role of the physical environment as a key factor in driving obesity has been acknowledged.¹⁸⁶

There are five key urban characteristics comprising both the natural and built environment that influence physical activity and may therefore impact on obesity:¹⁸⁷

- Transport infrastructure, foot paths and cycle ways;
- Facilities for physical activities, which may include outdoor sports facilities, playgrounds and natural green spaces such as bushland and parks.¹⁸⁸
- Street connectivity and design, which reflects the ease of travel between households, shops and places of employment.¹⁸⁹
- Mixed land uses (residential, commercial, industrial and agricultural) as well as community and recreation facilities are often associated with shorter travel distances.¹⁹⁰¹
- Residential density, a higher residential density may mean that there are more people to use a range of activities and institutions within a smaller area, often leading to shorter walking distances (as opposed to use of a car) to such destinations.¹⁹¹

Green Space: Some research indicates that access to "green space" increases the likelihood of the public undertaking physical activity. There are a number of variables that may influence the use of "green space" besides personal factors such as motivation, include: the space's attractiveness, distance, size, quality and ease of access.¹⁹²

Travel Behaviour: Different modes of travel have been shown to have consequences for health with car use contributing to a sedentary lifestyle. Australia has one of the highest rates of car ownership in the World and $\frac{3}{4}$ of all trips to work are undertaken by car.¹⁹³

In the 12 months ending 31 October 2010 there were an estimated 16.0 million vehicles registered in Australia; with passenger vehicles comprising 76.9% of all registered vehicles.¹⁹⁴ According to the 2006 Census, the majority (83%) of

employed Australians who travelled to work using one method of transport used a car. Overall 8% of Australians used public transport (bus, tram, ferry, and train), while only 6% used non-motorised transport (that is, walked or cycled only).¹⁹⁵

A similar trend existed in New South Wales with 77% of those employed travelling to work by car; 15% using public transport and 6.4% using non-motorised transport.¹⁹⁶

A recent study in New South Wales reported that those who drove to work were significantly more likely than non-car commuters to be overweight or obese (51% vs 43%) and were significantly less likely to achieve recommended levels of physical activity. Further, the association with overweight and obesity increased with frequency of driving among respondents. Amongst respondents driving more than 10 times a week, 47% were overweight or obese, compared with 41% among those driving 6 to 10 times and 30% among those driving less than six times a week.¹⁹⁷

Another study conducted in New South Wales reported that men who cycle to work were significantly less likely to be overweight and obese (39.8%) compared with those driving to work (60.8%). Further, men who used public transport to work were also significantly less likely to be overweight and obese (44.6%). However, these inverse relationships were not found for women.¹⁹⁸

Several studies report that changes in walking and cycling infrastructure can result in reduced car use and increase use of non-motorised transport.¹⁹⁹

Walkability: "Walkability"²⁰⁰ refers to "how conducive an area is to walking for leisure, exercise or transport."²⁰¹ The NHS 2007–08 reported that only 37.4% of Australian adults exercised sufficiently.²⁰² In respect to walking specifically, 57% of Australians aged 15 years or older walked for transport and only 43% walked for fitness, recreation or sport. Walking for transport was most common among young adults (15–24 years). Walking for fitness, recreation or sport was less common increased across the age groups until 65–74 years, after which both forms of walking declined.²⁰³

The importance of walking in the management of obesity has been suggested by American and Australian studies which indicate "an inverse relationship between neighbourhood 'walkability' and obesity."²⁰⁴

Policies to encourage walking: The National Heart Foundation created a [walkability survey in 2008-09](#)²⁰⁵ to help identify the aspects of the local environment that encourage or dissuade people from walking with the aim of providing feedback to local councils.

In Victoria, Deakin University in conjunction with the City of Greater Geelong developed the [Clause 56 Walkability Toolkit](#), which is "designed to assist developers, subdivision designers and planning officers determine the "walkability" of a location, internally and within the context of [the] surrounding street network[s] and amenity."²⁰⁶ The toolkit outlines steps to identify the

walking area (the 'walking catchment'), determine if key destinations (shops, schools, public transport) are within walking distance and to assess the quality of the walking experience.²⁰⁷

The website, <http://www.walkscore.com/score/sydney>²⁰⁸ is a large-scale public access "walkability" index site. It allows prospective home buyers and the general public to calculate the 'walk score™' of a particular address in Australia, New Zealand, Canada and the United States. Each walk score™ is calculated between 0 (low "walkability," high car dependence) and 100 (high "walkability," low car dependence) based solely on the distance to amenities.

6.3 Risk factors - Life Style Behaviours

The following life-style choices are modifiable risk factors for obesity:

1. Dietary behaviours;
2. Level of physical activity;
3. Smoker status; and
4. Alcohol consumption

This Briefing Paper focuses on dietary behaviours and physical activity levels at both a national and State level.

6.3.1 Dietary Behaviours

The NHMRC produced the current [Australian Dietary Guidelines](#) (the Dietary Guidelines) in April 2003. The Dietary Guidelines are used by health professionals, policymakers, educators, food manufacturers, food retailers and researchers to assist Australians to eat a healthy diet.²⁰⁹ They aim to:

Promote health and wellbeing; reduce the risk of diet-related conditions, such as high cholesterol, high blood pressure and obesity; and reduce the risk of chronic diseases such as type II diabetes, cardiovascular disease and some types of cancers.²¹⁰

In addition, the Commonwealth Department of Health and Ageing (DoHA) produces the [Australian Guide to Healthy Eating](#), which is designed to "help average Australians and their clinicians work out the foods they should eat each day based on age, gender and activity level."²¹¹

The Guide provides detailed recommendations as to the number of servings of each food group, including size of servings. Further, these recommendations are specified for: children and teenagers, men and women across all age groups and for women when pregnant and breast feeding.

Both the Dietary Guidelines and the Guide are in the process of being reviewed by the NHMRC's Dietary Guidelines Working Group.

The NHMRC recently conducted a public consultation on the [draft guidelines](#) released in December 2011.²¹² It is anticipated that the redrafted Australian Dietary Guidelines will be released in early 2013.²¹³ Other resources are also expected to be released at the same time, including: the revised Australian Guide to Healthy Eating and the revised Infant Feeding Guidelines.²¹⁴

The NHMRC states that one of the reasons we need Dietary Guidelines is that:

Unfortunately, diet-related chronic diseases are currently a major cause of death and disability among Australians.²¹⁵

Further, the NHMRC states that:

Many of the health problems due to poor diet in Australia stem from excessive intake of foods that are high in energy, fat, added sugar and/or salt but relatively low in nutrients. These include fried and fatty take-away foods, baked products like pastries, cakes and biscuits, savoury snacks like chips, and sugar-sweetened drinks. If these foods are consumed regularly they can increase the risk of excessive weight gain and other diet-related conditions and diseases.

Many diet-related health problems in Australia are also associated with inadequate intake of nutrient-dense foods, including vegetables, legumes/beans, fruit and wholegrain cereals.²¹⁶

The NHMRC states that evidence supports that Australians need to eat more:

- vegetables and legumes/beans
- fruits
- wholegrain cereals
- low fat milk, yoghurt, cheese
- fish, seafood, poultry, eggs, legumes and beans (including soy), and nuts and seeds.
- red meat (young females only)

And to eat less:

- starchy vegetables (e.g. potatoes)
- refined cereals
- high and medium fat dairy foods
- red meats (adult males only)
- food and drinks high in saturated fat, added sugar, salt, or alcohol (e.g. fried foods, most take-away foods from quick service restaurants, cakes and biscuits, chocolate and confectionery, sweetened drinks).²¹⁷

Current National Data for Food and Nutrient Intake: The most current detailed national data for Australian adults' food and nutrient in-take was conducted 16 years ago in the 1995 *National Nutrition Survey*²¹⁸ and five years ago for children aged 2-16 in the 2007 *Australian National Children's Nutrition and Physical Activity Survey*. The data is therefore "rather dated."²¹⁹

The *NHS 2007-08* provides the latest national data on selected dietary behaviours (the intake of fruit and vegetables).²²⁰ It warned that the data should be interpreted with care, as survey respondents had difficulty in estimating quantities consumed.²²¹

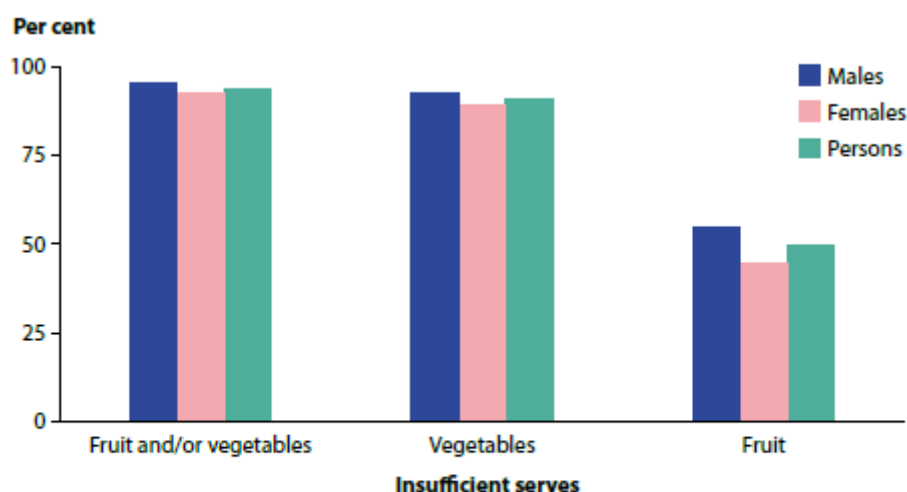
Percentage (%) of persons aged 15 years and over who met the recommended daily intake of fruit and vegetables.²²²

	Fruit	Vegetables
Female	56%	10%
Male	46%	7%

According to the *NHS 2007-08* only (51%) of the Australian population aged 15 years and over consumed the recommended two or more serves of fruit per day; while only 1 in 11 (9%) consumed the recommended five or more serves of vegetables.²²³ The just released first results of the *AHS 2011-13* indicate a further decrease with (48.3%) of Australians consuming the recommended two or more serves of fruit per day; while only (8.3%) consumed the recommended five or more serves of vegetables.²²⁴

For both the *NHS 2007-08* and the *AHS 2011-13* females aged 15 years and over consumed more fruit and vegetables overall than their male counterparts. Those aged ≥ 65 years and older were more likely to consume the recommended daily intake of fruit and vegetables (still only 10%) compared with (4%) for people aged 18 to 34 years.²²⁵ The latter figure decreased further to (3%) in the *AHS 2011-13*.

Persons aged 16 and over who do not usually consume the recommended servers of fruit and/or vegetables, 2007-08.²²⁶



Notes

1. Servings do not include fruit or vegetable juices.
2. Recommended serves were defined as two serves of fruit and five serves of vegetables.

Source: AIHW analysis of the 2007-08 NHS.

In 2003 the inadequate consumption of fruit and vegetables was estimated to be responsible for 2.1% of the total burden of disease in Australia.²²⁷

Children - NHS 2007-08 Results: Based on the *NHS 2007-08*, the table below outlines the percentage of children who met the recommended daily intake of fruit and vegetables according to DoHA's *Australian Guide to Healthy Eating*.

Percentage (%) of children for the following sub-age groups: 5-7 years, 8-11 years, 12-15 years and 16-17 years who met the recommended daily intake of fruit and vegetables.²²⁸

Age Group	Percentage (%) of children who met the recommended daily intake of:	
	Fruit	Vegetable
Aged 5-7 years Recommended intake of one serve of fruit and two serves of vegetables.	98%	57%.
Aged 8-11 years Recommended intake of one serve of fruit and three serves of vegetables.	99%	33%
Aged 12-15 years Recommended intake of three serves of fruit and four serves of vegetables.	23%	15%
Aged 16-17 years Recommended intake of three serves of fruit and four serves of vegetables.	18%	16%

Children - The 2007 Australian National Children's Nutrition and Physical Activity Survey: Similar findings were recorded in the *2007 Australian National Children's Nutrition and Physical Activity Survey*, with older children less likely than younger children to meet the recommended serves of fruit and vegetables.²²⁹

Fruit

51%-68% of children aged 2-13 met the fruit serve (excluding fruit juice); only 1% of children aged 14-16 years met the recommended daily intake.²³⁰ Fruit consumption increases when fruit juice is included, but that in itself can be seen as problematic.²³¹ As shown in the table below, the proportion of children meeting the recommended intake declines with the increasing age of the child.

Vegetables

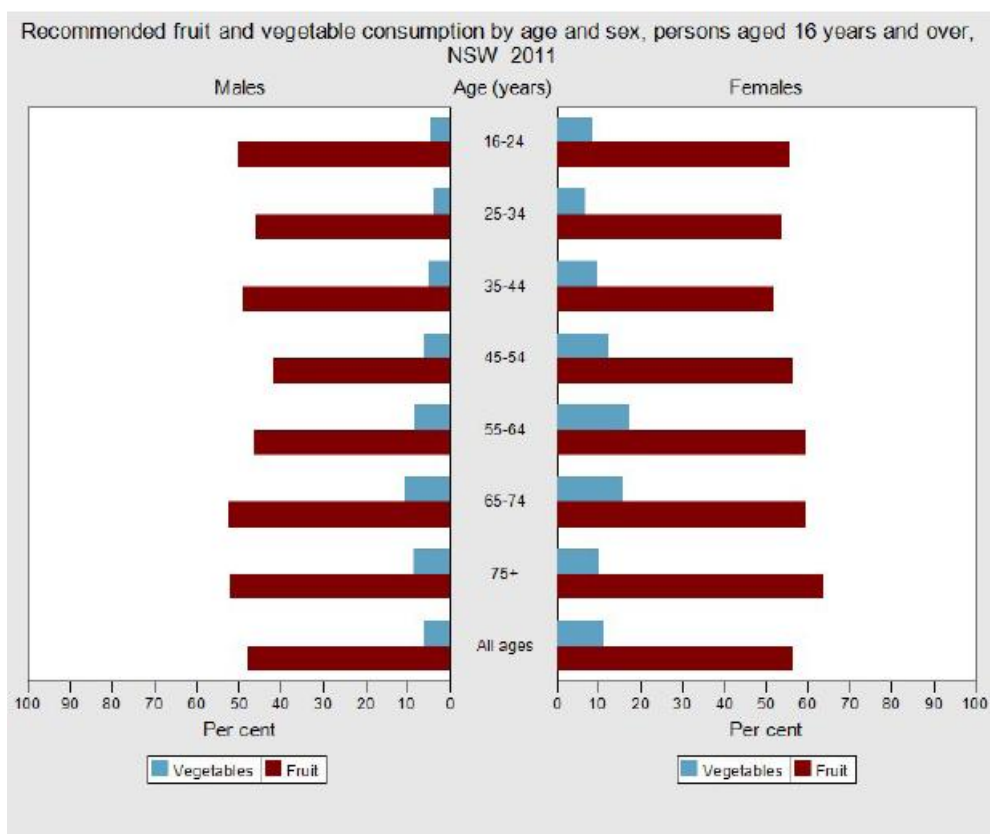
When potatoes are included, 14-22% of children aged 2-13 met the vegetables serve, a figure that falls to 5% of children aged 14-16 years. When potatoes are excluded, these figures fall to 2-5% of children aged 2-13 and 0% children aged 14-16.²³²

Proportion (%) of children meeting the serve recommendations of the *Australian Guide to Healthy Eating* based on the Dietary Guidelines.²³³

		All Children-Age Shown in Years (%)			
Dietary Guideline	Parameter	2-3	4-8	9-13	14-16
Fruits	≥ 1- 3 serves /day excluding juice	68	61	51	1
Fruits	≥ 1- 3 serves /day including juice	90	93	90	24
Vegetables	≥2-4 serves/day excluding potato	5	3	2	0
Vegetables	≥2-4 serves/day including potato	14	22	14	5

Current NSW Dietary Data: In 2010, 56.4% of adults consumed the recommended two serves of fruit per day. However, only 9.5% of adults consumed the recommended five serves of vegetables per day.²³⁴ The 2011 NSW 'Adult' Population Health Survey (persons aged 16 years and over) below shows that this consumption has further decreased, with 52% of adults consuming the recommended serves of fruit per day and only 8.6% of adults consuming the recommended serves of vegetables per day.²³⁵

Recommended fruit and vegetable consumption by age and sex, persons aged 16 years and over, NSW 2011.²³⁶

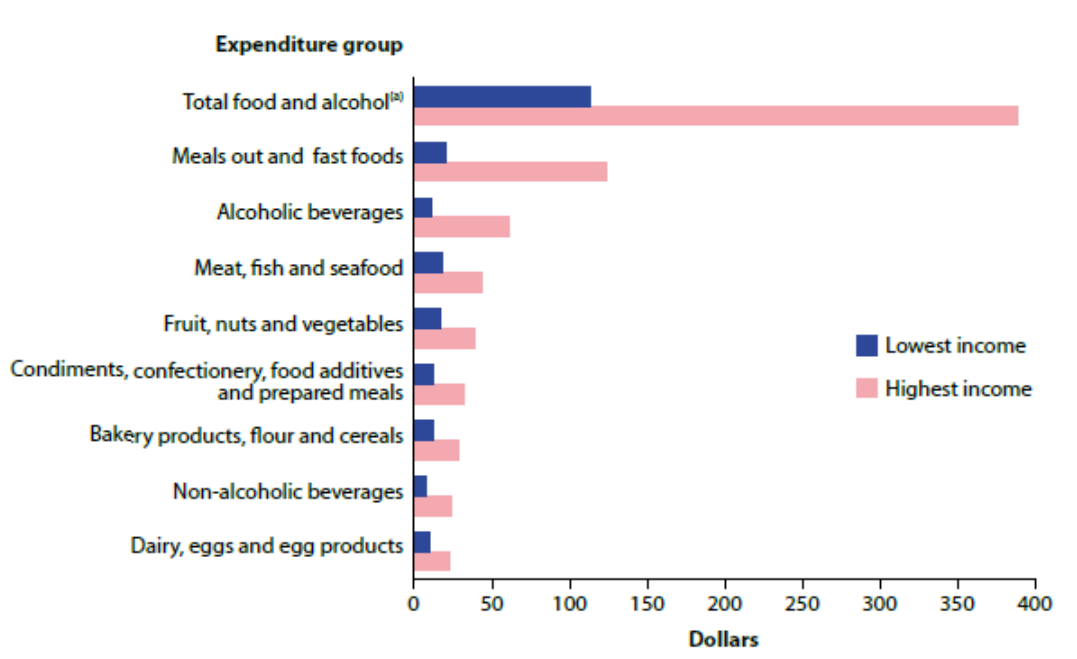


The 2010 SPANS Report found that 95.9% of primary school aged children and 42.1% of high school aged children met fruit consumption recommendations. However, only 43.6% of primary school aged children and 20.1% of high school aged children met recommendations for vegetable consumption.²³⁷

The AIHW Report - Australia's Food & Nutrition 2012: This AIHW report highlights the following additional dietary factors that may have contributed to the obesity trend in Australia:

- There has been a strong trend towards the consumption of convenience foods (packaged foods that can be prepared quickly and easily).²³⁸ In fact, in 2009-10, Australian households spent on average \$237 per week on food and beverages with food prepared outside the home (both meals out and fast food) being the largest expenditure item averaging \$63 (27%) per week, an increase from \$42 (24%) in 2003 (not adjusting for inflation). This was followed by alcoholic beverages at \$32 (14%). Households only spent \$30 (13%) per week on meat, fish and seafood collectively.²³⁹

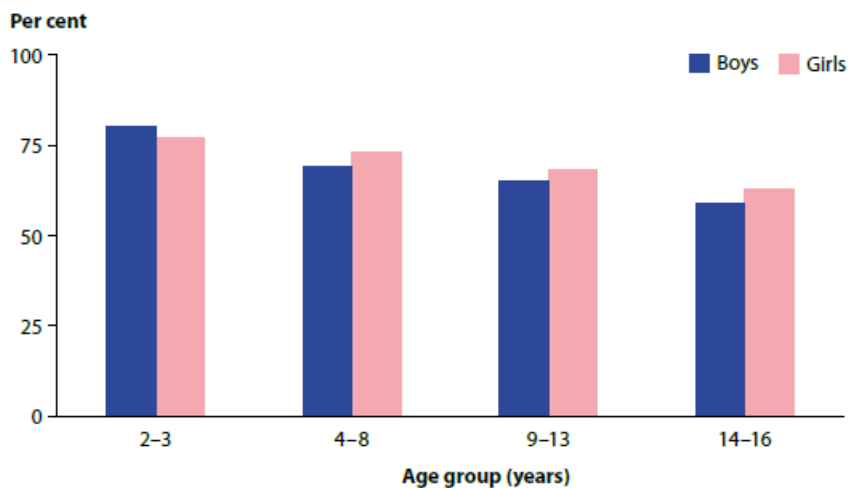
Average weekly expenditure on food, by selected food items, gross household income quintile, 2009-10²⁴⁰



- There has been an increase in the number of dual-income families as more women have entered the workforce providing families with more money but less time to spend on preparing food. Both factors have resulted in more meals and snacks being eaten outside the home. To place this in perspective, in 2007 there were an estimated 17,000 fast food outlets which sold more than 1.64 billion meals and takeaways per year.²⁴¹

- The excess consumption of sugar- The *Australian Dietary Guidelines* indicate that only 15-20% of energy from sugar is compatible with a healthy diet. However, *Australia's Food and Nutrition 2012* reports that the majority of children had energy intakes from sugar far greater than 20%.²⁴²

Figure 13: Proportion of children exceeding the recommended sugar intake (more than 20% of total energy derived from sugars), aged 2-16, 2007.²⁴³



Source: CSIRO & University of South Australia 2008.

The *Australian Guide to Healthy Eating* classifies "extra foods" as "foods which we can occasionally include for variety. They are generally higher in fat and/or sugar, kilojoules, salt etc."²⁴⁴ Examples include: sweet biscuits, cakes, jam/honey, pizza, meat pies, potatoes crisps, margarine/butter, confectionery, soft drinks, fruit drinks, cordials and alcohol.

In respect of adults, sugar, sweet biscuits and sugar-sweetened soft-drinks are the most consumed "extra food", following margarine.²⁴⁵ The top three "extra foods" consumed by children that contribute the most to energy intake are:²⁴⁶

Extra Food	Proportion consuming (%)	Mean Intake (grams/day)
Sugar-sweetened soft drinks	35.4	180.7
Cordials	35.4	119.3
Sweet biscuits	31.1	31.1

For David Gillespie, writing in *Sweet Poison, Why Sugar Makes Us Fat*,²⁴⁷ the key to understanding the modern diet is the increased consumption of sugar. He argues that while our body uses glucose (a sugar) biochemically as its primary fuel (food is broken down to this simple sugar) we have not evolved to cope with the volume or versions of sugar in our modern western diet. Gillespie says that Australian's sugar consumption has been increasing, in particular through soft-drink consumption. In 2003 Australians consumed an average of 110 litres of soft drinks per person,²⁴⁸ an increase from 87.4 litres in the late

1980s.²⁴⁹ In 2003, a NSW average teenager (12-18 years old) consumed 300-600 ml of soft drink each day, which is more than their daily intake of milk.²⁵⁰ While there has been an increase in the consumption of fruit over time, this has largely been due to increased juice consumption against a background of falling whole fruit and vegetable consumption.²⁵¹ The problem with juicing is that it converts fruit and vegetables:

containing significant fibre mass, flavoured with fructose, to one containing little other than fructose, water-oh, and some vitamin C.²⁵²

Gillespie states that:

Australians were consuming about 22.5 kg of fructose by the turn of the 21st century... an awful lot more than the less than zero kilos of added fructose we were eating 130 years before.²⁵³

6.3.2 Level of Physical Activity

One of the key causes of overweight and obesity is an energy in-balance between calories consumed and calories expended over time. Physical activity increases the body's normal energy expenditure (internal bodily functions) and may influence this equation.²⁵⁴ A sustained energy imbalance leads to excessive consumption being stored as body fat and hence contributing to an individual's overweight or obese status.²⁵⁵

Physical activity is defined as "any bodily movement produced by muscles [which] results in energy expenditure."²⁵⁶ Physical activity includes incidental movement (for example, hanging out washing), work-related activity (for example, lifting) and exercise which is "planned, structured and repetitive."²⁵⁷

Physical activity has clinically been shown to be beneficial for the musculoskeletal system, psychological health, the maintenance of healthy body weight and to prevent chronic diseases, as well as beneficial in managing such diseases.²⁵⁸ Physical activity is said to be the "best buy in public health because of its manifold benefits"²⁵⁹ Of concern is the evidence that Australians are not sufficiently active and that physical activity is in fact declining.²⁶⁰

After tobacco smoking, physical inactivity is the second largest contributor to the burden of disease and injury in Australia (6.6%)²⁶¹ and has been estimated to have a direct health care cost of almost \$1.5 billion in 2006-07

National Physical Activity Guidelines (NPAG): DoHA produces the [National Physical Activity Guidelines](#) for adults (the NPAG) which outline the minimum levels of physical activity required to gain health benefits and ways to incorporate incidental physical activity into everyday life. In addition, DoHA makes physical activity recommendations for the following ages:

- [Physical Activity Recommendations for 0-5 year olds](#)
- [Physical Activity Recommendations for 5-12 year olds](#)

- [Physical Activity Recommendations for 12-18 year olds](#)
- [Physical Activity Recommendations for Older Australians](#)

The NPAG recommends "at least 30 minutes of moderate intensity physical activity on most, preferably all days."²⁶² The 30 minutes does not have to be continuous but can consist of sessions of 10-15 minutes. Moderate intensity is defined as causing "a slight but noticeable increase in one's breathing and heart rate." Examples include brisk walking, mowing the lawn, digging in the garden or medium paced swimming or cycling.²⁶³

Guideline Four recommends vigorous exercise "for those who are able and wish to achieve greater health and fitness benefits."²⁶⁴ The NPAG advises that regular vigorous activity may provide superior health and fitness benefits compared to moderate intense activity, such as "extra protection against heart disease."²⁶⁵ Vigorous activity includes football, netball, aerobics, circuit training, jogging, speed walking, fast cycling. To achieve optimum results the activity should be undertaken for 30 minutes three to four days a week.²⁶⁶

The Current Picture of Physical Activity Undertaken by Australians: The *NHS 2007-08* provides the latest data about physical activity for adults and children aged 5-17 years old. The survey included questions about exercising for sport, recreation and fitness, as well as walking for transport.²⁶⁷ The Children's Survey 2007²⁶⁸ provides data for slightly younger children aged 2-16 years.²⁶⁹ The physical activity module used in the *NHS 2007-08* is being repeated in the Australian Bureau of Statistics, *AHS 2011-2013*.

Physical Activity—Adults: The *NHS 2007-08* specifically showed the following for obese adults compared to 'normal weight' and 'overweight' adults as defined by the NHMRC BMI guidelines:²⁷⁰

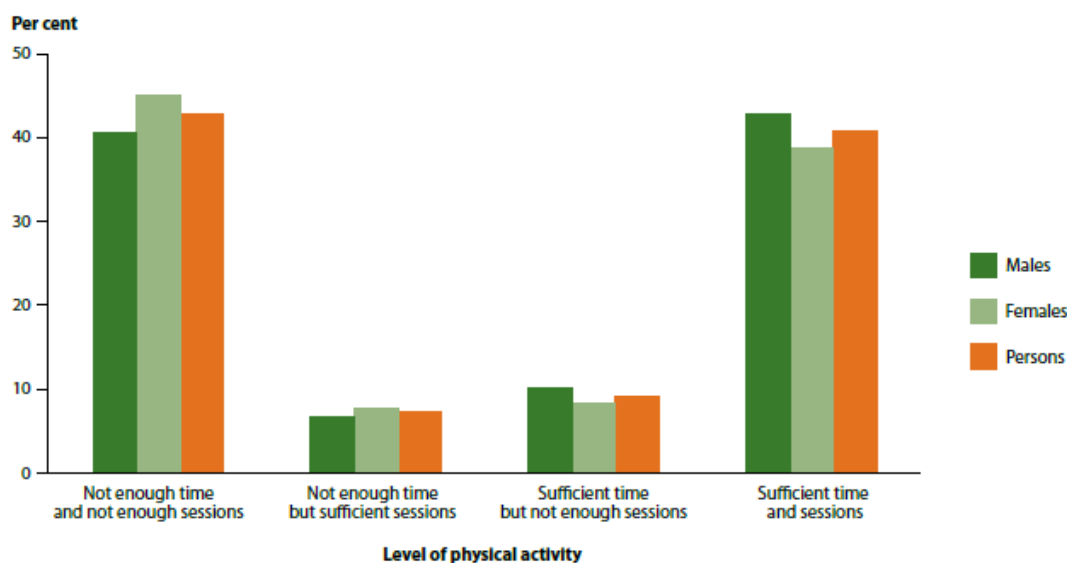
Obese adults were less likely to:

- exercise at high or moderate levels of fitness, recreation or sport;
- exercise three or more days; and
- meet the recommended guidelines of exercise.

Obese adults were more likely to:

- be sedentary or exercise at low levels for fitness, recreational sport;
- exercise two or less days; and
- do no exercise.²⁷¹

In 2007–08, the proportion of adults who exercised sufficiently (both in terms of time and number of sessions in the one week survey period) to obtain benefits to their health was only 37.4 %.²⁷²

Persons by activity level in the week before interview, 2007-08²⁷³

Notes

1. Records for persons who did not know the number of sessions or the time spent exercising were excluded from analysis unless they reached sufficient time and sessions through other questions.
2. The NHS collected information about the number of days that physical activity was undertaken, not the actual sessions. Days are used as a proxy for sessions, however this does mean that there may be an under estimate of sessions.
3. Sufficient physical activity is defined as at least 150 minutes in 1 week over at least 5 sessions.

Source: AIHW analysis of the 2007-08 NHS.

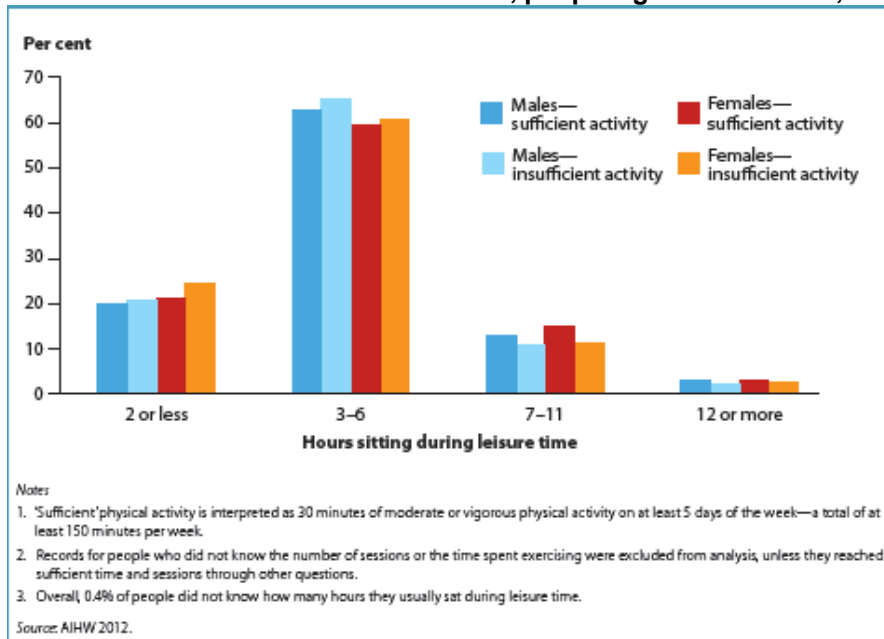
The results suggest that 8% of adults exercised for sufficient time, but not for five or more sessions. Conversely, 10% of adults had a sufficient number of sessions but did not exercise for a sufficient amount of time. Males were more likely to exercise at sufficient levels than females (39% vs 36%).²⁷⁴

ABS research suggests that participation in sport and physical recreation for people aged 15 years and over has been decreasing, from 10.5 million (66%) in 2005-06 to 11.1 million (64%) in 2009-10, with the decline being driven by a fall in female participation, from 66% to 63%. However, the rate of people participating in aerobics, fitness or gym activities increased slightly from 13% to 14%.²⁷⁵

Results from the *NHS 2007-08* shows that more than 96% of adults spent between 1 and 11 hours sitting during leisure time per day, with the average Australian spending between three and six hours each day's sitting during leisure time.²⁷⁶

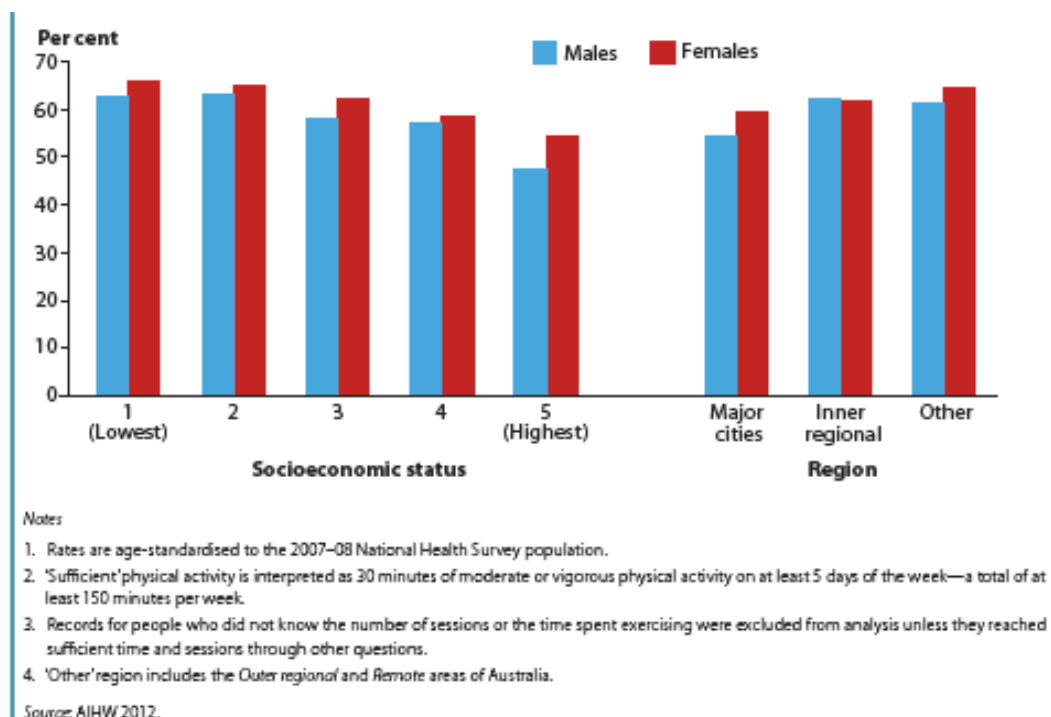
Further, a recent survey showed that for Australians, 77% of time spent at work was sedentary.²⁷⁷ This is concerning given recent research has shown that the amount of time spent sitting during a day can affect a person's health, regardless of how much moderate or vigorous activity they do.²⁷⁸ The research highlights that movement is needed throughout the day and not just as result of planned exercise.²⁷⁹

Hours usually spent sitting during leisure time, by sex and physical activity level in the week before the interview, people aged 15 and over, 2007-08.



Australian's living outside major metropolitan areas and those living in socio-economically disadvantaged areas were less likely to undertake sufficient physical activity.²⁸⁰

Insufficient time or sessions of physical activity, by selected variables, people aged 15 and over, 2007-08²⁸¹



Physical Activity-Children: The AIHW's *Australia's Health 2010* acknowledges that children's physical activity tends to be less structured than that of adults:

For example, children may participate in organised sports or activities, at school or through clubs, or may just be physically active through unstructured activities such as playing with friends, in or out of school.²⁸²

The Children's Survey 2007 collected information about physical activity levels of children (9-16 years).²⁸³

Proportion (%) of children who met the physical activity guidelines using four different methods²⁸⁴ of interpreting the guidelines, Children's Survey 2007²⁸⁵

AGE (YEARS)	BOYS			GIRLS			ALL CHILDREN		
	9-13	14-16	9-16	9-13	14-16	9-16	9-13	14-16	9-16
All Days Method	46	25	38	33	13	25	40	19	32
Most Days Method	74	53	66	60	33	50	68	43	58
4 Day Average Method	94	77	87	86	59	75	90	68	82
Child x Day Method	80	64	74	71	51	64	76	58	69

¹Population weights applied

The report concluded that by most methods of analysis the majority of children aged 9-16 years met the guidelines for moderate to vigorous physical activity everyday (MVPA). On any given day, there was a 69% chance that a child would obtain at least 60 minutes of MVPA. Boys were more likely than girls to meet the guidelines. However, there was a drop-off with age, which was more marked in girls.²⁸⁶

The National Physical Activity Guidelines recommend that 5-18-year-olds accumulate no more than two hours of screen time a day for entertainment. The Children's Survey 2007 calculated the total amount of out-of-school hours of screen time for children aged 9-16 years. As with physical activity, four criteria were used to assess observance of the guidelines.²⁸⁷

Proportion (%) of children who met with screen time guidelines using four different methods of interpreting guidelines.²⁸⁸

Age (years)	BOYS			GIRLS			ALL CHILDREN		
	9-13	14-16	9-16	9-13	14-16	9-16	9-13	14-16	9-16
All Days Method	5	4	4	10	8	9	7	6	7
Most Days Method	16	10	13	25	23	24	20	17	19
4 d Average Method	19	12	16	28	28	28	24	20	22
Child x Day Method	30	24	28	39	39	39	35	31	33

¹Population weights applied

The Children's Survey 2007 concluded that "the levels of observance of screen time guidelines were low."²⁸⁹ On any given day, there was only 33% chance that any given child would obtain no more than two hours of screen time. In fact on average children aged 9-16 years engaged in 223 minutes of screen time each day.²⁹⁰ Girls met the guidelines more often than boys and younger children more often than older children.²⁹¹

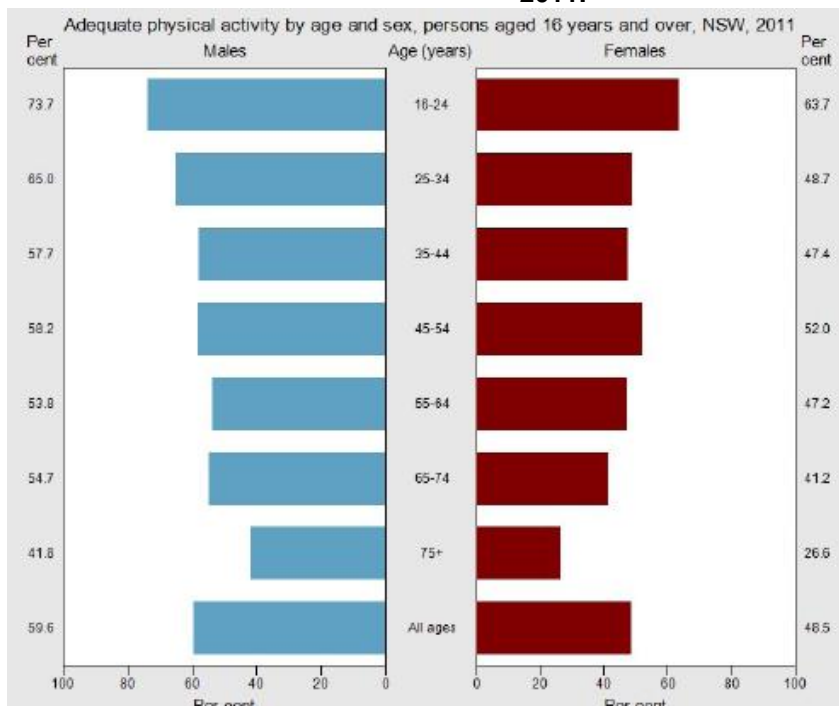
A 2012 University of Sydney study of nearly 1200 children in their first year of school (mean age 5.3 years) showed that detrimental weight-related behaviours were already established in the home environment prior to children beginning at school.²⁹²

The study reported that 18.7% of children in the study were overweight or obese. Compared to non-overweight participants, overweight/obese boys were 1.73 times more likely to exceed recommended TV time and 2.07 times more likely to eat dinner three or more times/week in front of the TV. Overweight/obese girls were twice as likely to have a TV in their bedroom, 1.65 times more likely to be rewarded with sweets for good behaviour and were 1.65 times more likely to be inactive. The authors of the study considered that the prevalence of the behaviours was high for such young children and suggested the need to intervene during the pre-school years to minimise early exposure and potential adoption of these behaviours.²⁹³ The study concluded that:

Social marketing strategies that communicate to parents the benefits for changing obesogenic household practices to reduce screen time and adopt healthier dietary behaviours during preschool years have the potential to assist children to start school in optimum health.²⁹⁴

The Current Picture of Physical Activity undertaken in NSW: According to NSW Health, in 2011, 54% of adults undertook adequate levels of physical activity each week. More men (59.6%) than women (48.5%) reported adequate levels of physical activity.²⁹⁵

Adequate physical activity by age and sex, persons aged 16 years and over, NSW, 2011.²⁹⁶



These proportions have declined slightly when compared with the 1998 NSW Health Survey, which reported that (65%) of all males and (57%) of females

undertook a minimum of 150 minutes of accumulated physical activity throughout a week.²⁹⁷

In respect of children, the 2010 SPANS Report indicated that less than half (46.4%) of Years K, 2 and 4 students spent 60 minutes or more per day in physical activity.²⁹⁸ Boys (50.5%) were more likely to do so than girls (42.2%); from 2004 to 2010, there was a significant decline in physical activity among students in Years 6, 8 and 10, with the exception of Year 10 girls. This is a reversal of the gains observed between 1997 and 2000.²⁹⁹

In 2012, the Auditor-General released a report entitled "[*Physical activity in government primary schools, Department of Education and Communities*](#)." The Department of Education and Communities (DEC) "Curriculum Planning, Assessment and Reporting Policy" requires schools to provide two hours of "planned" physical activity each week. According to the report, DEC does not monitor physical activity in schools leaving this to school principals.³⁰⁰ The audit found that:

- "around 30 per cent of government primary schools do not provide two hours of planned physical activity each week
- even those schools that provide two hours of planned physical activity are not likely to provide two hours of moderate to vigorous physical activity each week, as planned time usually includes travel to venues, setting up equipment, waiting for a turn etc. DEC's minimum requirement for planned physical activity does not stipulate a minimum amount that should be 'moderate to vigorous', unlike some other States
- the quality of physical activity instruction varies between schools and teachers, with many primary students not able to master the fundamental movement skills required to participate in a full range of physical activities."³⁰¹

The Auditor-General made [eight recommendations](#),³⁰² all of which were accepted by DEC.³⁰³

7. GOVERNMENT RESPONSES

7.1 The Commonwealth Government's Response to Obesity

Federally, the following departments, bodies and agencies have responsibilities that impact on the management of obesity in Australia:

- The Department of Health and Ageing (DoHA) develops and evaluates national policy, resources and initiatives in the areas of nutrition, healthy eating and the promotion of physical activity and healthy weight.³⁰⁴
- The National Health and Medical Research Council (NHMRC) is Australia's leading expert body promoting the development and maintenance of public and individual health standards. It is an independent statutory body³⁰⁵ responsible to the Commonwealth Minister for Health and Aging.³⁰⁶ The NHMRC co-ordinates the development of the Australian Dietary Guidelines (discussed in an earlier section of this paper) and nutrient reference values.³⁰⁷ It is said that:

[The] [D]ietary Guidelines are a key statement to support Australia's policy goals and directions for supporting better nutritional outcomes for the population...based on the best available evidence and a systematic review of the literature.³⁰⁸

In 2010 DoHA commissioned the NHMRC to review the 2003 *Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults, Children and Adolescents*. The updated draft clinical practice guidelines ([Management of Overweight and Obesity in Adults, Children and Adolescents, Clinical Practice Guidelines for Primary Care Health Professionals](#)) were released for public consultation on 12 March 2012, with submissions closing 4 May 2012.³⁰⁹ The draft guidelines are "designed for use primarily at the level of the individual"³¹⁰ but "acknowledge that individual choices are shaped by the wider environmental and social context."³¹¹ The draft guidelines are based on similar guidelines from Scotland³¹² and a systematic literature review.³¹³

Another federal government agency in this field is Food Standards Australia New Zealand (FSANZ). This is an independent statutory agency,³¹⁴ part of the Australian Government's Health and Ageing portfolio. FSANZ develops [food standards](#) to cover the food industry in Australia and New Zealand.

The standards regulate:

- The use of ingredients, processing aids, colourings, additives, vitamins and minerals.
- The composition of some foods e.g. dairy, meat and beverages as well as standards developed by new technologies such as genetically modified foods.

FSANZ are also responsible for [labelling](#) for both packaged and unpackaged food, including specific mandatory warnings or advisory labels.

7.2 National Policies and Programs Influencing Obesity

The *Australia's Food & Nutrition 2012* report acknowledges obesity is a common risk factor for the development of chronic diseases including cardiovascular disease, type II diabetes and some cancers. Accordingly, at a national level it has been acknowledged that policies that prevent or reduce obesity have the potential to improve the health and well-being of Australians, as well as reduce health-care costs. Therefore a large number of current national health policies are focusing on obesity prevention and reduction.³¹⁵

Set out below is an outline of the key Commonwealth Government policies and programs over the last 20 years (1992-2012):

Key Australian Government policies and programs over the last 20 years (1992 – 2012) that have been designed to influence health and nutrition

Date	Policy / Program	Key Features
1992	Dietary Guidelines for Australians	Advice on healthy food choices to contribute to a healthy lifestyle and reduce the risk of diet-related diseases.
	Australia's Food and Nutrition Policy	Improve knowledge and skills; food and nutrition objectives in policy; people with special needs, monitoring and surveillance
1994	The Core Food Groups: the Scientific Basis for Developing Nutrition Education Tools	A consistent basis for the development of a range of nutrition education tools.
1996	National Public Health Partnership – Strategic and Integrated Response to Public Health Priorities	Priority areas – healthy weight, child public health, information development and workforce development and planning.
	National health priority areas	Cardiovascular health, cancer, injury prevention, mental health, diabetes mellitus (1997), obesity (1998).
1997	Australia's Weight: A Strategic Plan for the Prevention of Overweight and Obesity	Aim – to prevent further weight gain and reduce adult overweight and obesity; and ensure healthy growth of children.
1998	The <i>Australian Guide to Healthy Eating</i>	Practical resource to help Australians develop the skills and knowledge needed to choose a healthy diet.
1999	Dietary Guidelines for Older Australians	Practical advice about nutritious eating for older Australians to promote and maintain a healthy lifestyle.
2001	Eat Well Australia: An Agenda for Action for Public Health Nutrition (2000-2010)	'Whole of population' priorities for vulnerable groups, fruit and vegetable intakes, women, infants and children, obesity prevention.
	National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan	Food supply, food security, economic status, nutrition and social issues, Indigenous nutrition workforce and information systems.
2003	Dietary Guidelines for Adults, Children and Adolescents (incorporating the infant Feeding Guidelines for Health Workers)	Food and diet recommendations to promote health and reduce diet-related conditions and chronic disease risk. Focus on food groups and lifestyle patterns, rather than specific nutrients.
2005	National Chronic Disease Strategy (NHPAC 2005)	Priority areas included asthma, cancer, diabetes, heart, stroke and vascular disease, and arthritis and osteoporosis.
2006	Nutrient Reference Values for Australia and New Zealand, incorporating Recommended Dietary Intakes (NHMRC & NZMoH 2006)	Recommendations for an adequate nutritional intake for healthy people to prevent chronic diseases.

2008	National Partnership Agreement on Preventive Health Over 6 Years from 2009-10 (COAG 2008b)	States and territory programs for children and workplaces targeting fruit and vegetables intake, obesity, alcohol, smoking.
	National Partnership Agreement on Closing the Gap in Indigenous Health Outcomes	Priorities – life expectancy, childhood mortality, education and unemployment (COAG 2008a).
2009	Parliamentary Committee Inquiry Report Weighing it Up: Obesity in Australia (Australian Parliament 2009)	Obesity prevalence, and recommendations for prevention and management.
	National Preventative Health Strategy (National Preventative Health Taskforce 2009b)	Priority areas addressed include – obesity, tobacco and alcohol misuse.
	National Strategy for Food Security in Remote Indigenous Communities (COAG 2009)	Resources to improve access to healthy food in remote areas through national, state and territory collaboration.
	The Food and Health Dialogue (for manufactured foods)	Aims to reduce saturated fat, added sugar, sodium and energy, and increase fibre, wholegrain, fruit and vegetable content.
	Australian National Breastfeeding Strategy 2010-2015 (Australian Health Ministers' Conference 2009)	Aims to improve the health, nutrition and wellbeing of infants and young children, and mothers, by promoting breastfeeding.
2010 – 12	Draft Australian Dietary Guidelines, incorporating the Australian Guide to Healthy Eating (NHMRC 2011)	Evidence-based recommendations that focus on food choice rather than nutrients.
2011	National Nutrition Policy development agreed and referred to Australian Health Ministers	Framework to identify, prioritise, drive and monitor nutrition initiatives including the role of food labelling in public health.

The most recent policy development by the Commonwealth Government is the national nutrition policy "to provide a long-term overarching framework to guide programs and policies aimed at reducing the burden of nutrition-related disease and educating and encouraging consumers to choose a healthy diet."³¹⁶

7.3 Preventative Health Focus

In 1996, the Commonwealth Government, in response to the World Health Organisation's global strategy, *Health for All by the Year 2000*, established the National Health Priority Areas initiative (NHPAs).³¹⁷ The aim was to focus both public attention and health policy on areas considered "to contribute significantly to the burden of disease in Australia and for which there is potential for health gain."³¹⁸ The initial 1996 set of NHPAs included cardiovascular health, cancer control, injury prevention and control and mental health. Diabetes mellitus was added in 1997, followed by asthma in 1999, arthritis and musculoskeletal conditions in 2002 and obesity was only added in 2008.³¹⁹

In the same year the Commonwealth Government strengthened its focus on preventative health through the [National Partnership Agreement on Preventative Health \(NPAPH\)](#), "in an attempt to improve the health of Australians and reduce pressure on the health system."³²⁰ The Agreement commits all Australian government to address the rising prevalence of lifestyle-related chronic diseases, including obesity, by implementing programs and activities that promote healthy behaviours in the daily lives of Australians.³²¹

7.4 An Inter-Governmental Response to Obesity: The National Partnership Agreement on Preventative Health (NPAPH)

Background: The [Council of Australian Governments \(COAG\)](#) is the peak inter-governmental forum in Australia. The health ministers from all jurisdictions collectively make up the [Standing Council on Health](#) of COAG, which has overall responsibility for Australia's health system, including "the development, implementation and evaluation of national policies, programs and priorities in relation to population health, chronic disease and child health and well-being."

The Council is supported by the [Australian Health Ministers Advisory Council \(AHMAC\)](#), a committee of the heads of all government health authorities; its role is to advise the health ministers on policy, resources and financial issues.

The National Partnership Agreement on Preventative Health (NPAPH): On 29 November 2008, COAG announced the NPAPH under the [Intergovernmental Agreement on Federal Financial Relations](#).³²² The NPAPH provided \$872.1 million for health prevention initially over six years from 2009-10. This was the largest investment ever made by the Commonwealth Government in health prevention.³²³ The NPAPH was extended on 28 June 2012 for a further three years to June 2018.³²⁴

The NPAPH aims:

To address the rising prevalence of lifestyle related chronic disease by laying the foundations for healthy behaviours in the daily lives of Australians through settings such as communities, early childhood education and car environments, schools and workplaces, supported by national social marketing campaigns.³²⁵

The NPAPH consists of [11 initiatives](#) all of which, with the exception of 'Social Marketing Tobacco', 'directly' impact on the management of overweight and obesity.

The implementation of the NPAPH sits both with DoHA and the States and Territories. The evaluation of the NPAPH is conducted by the [Australian National Preventive Health Agency \(ANPHA\)](#).³²⁶

DoHA is responsible for the following initiatives: Healthy Communities, Industry Partnership, Social marketing campaigns – *MeasureUp*, Eating Disorder Collaboration. In addition, DoHA implements:

soft infrastructure to support the NPAPH which includes a number of aspects: establishment of the Australian National Preventive Health Agency (discussed below), workforce audit and strategy, expansion of the health survey and developing soft infrastructure to support the Healthy Workers Initiative.³²⁷

The States and Territories are responsible for implementing the following initiatives: Healthy Children and Healthy Workers (discussed in detail below under 'NSW Government Response to Obesity'). The States and Territories are also responsible for implementing local activities that support social marketing

campaigns and for developing the infrastructure to support the collection of health, nutrition and physical activity data.³²⁸

The NPAPH includes the following performance benchmarks for obesity that have been agreed to by the Commonwealth, the States and Territories:

Children

- The "proportion of children at unhealthy weight is to be held at less than five per cent from baseline by 2016; [The] proportion of children at healthy weight returned to baseline level by 2018."³²⁹
- "Increase [the] mean number of daily serves of fruits and vegetables consumed by children by at least 0.2 serves for fruits and 0.5 serves for vegetables from a base by 2016."³³⁰ This is to be further increased to "0.6 for fruits and 1.5 for vegetables by 2018."³³¹
- "Increase [the] proportion of children participating in at least 60 minutes of moderate physical activity each day from a baseline by 5 per cent by 2016 [and] by 15 per cent by 2018."³³²

Adults

- The "proportion of adults at unhealthy weight held at less than five percent from baseline by 2016; proportion of adults at healthy weight returned to baseline by 2018."³³³
- "Increase [the] mean number of daily serves of fruits and vegetables consumed by adults by at least 0.2 for fruits and 0.5 for vegetables from a baseline by 2016; 0.6 for fruit and 1.5 for vegetables by 2018."³³⁴
- "Increase [the] proportion of adults participating in at least 30 minutes of moderate physical activity on five or more days of the week [by] five per cent from [a] baseline for each state by 2016; 15 per cent by 2018."³³⁵

For the purpose of measuring the performance of NSW against these benchmarks, the baseline will be as at June 2009 for both healthy children and healthy adults. The performance of NSW will be assessed at two time points: June 2016 and December 2017 (projected to June 2018).³³⁶

The Australian National Preventative Health Agency (ANPHA): As part of the NPAPH, the ANPHA was formally established on 1 January 2011.³³⁷ Its creation was originally agreed to by COAG as part of the NPAPH in 2008 and was also recommended by the [National Health and Hospitals Reform Commission's Report](#) and in the final report of the [National Preventative Health Taskforce](#)^{338 339}

The ANPHA's role is to "support the development of evidence and data on the state of preventive health in Australia and the effectiveness of preventative health interventions."³⁴⁰ The Agency has a five-year [Strategic Plan 2011-2015](#) and an aligned [Operational Plan for 2012-2013](#), which has six broad strategic goals.³⁴¹ Specifically, in relation to reducing obesity, "Key Result Area (KRA) 2.2 Reduce Obesity" of the Operational Plan outlines the Agencies actions for 2012-13 and associated performance targets.³⁴²

Key Result Area (KRA) 2.2 Reduce Obesity of the Operational Plan 2012-13 of ANPHA:

KRA 2.2 Reduce Obesity	Actions for 2012-13	Performance targets (Target Dates)
Support, extend and improve policies and programs that aim to reduce the prevalence of overweight and obesity, through research, analysis and advice.	<ul style="list-style-type: none"> • Strengthen <i>Measure Up Campaign</i> coordination. • Continue ongoing roll-out of the <i>Measure Up Campaign</i> and planning of future campaign developments. • Implement a coordinated approach to progressing the national agenda to address obesity through social marketing. • Report on implementing recommendations of the National Seminar on Unhealthy Food and Beverage Advertising to Children. • Develop a monitoring framework to measure children's exposure to the marketing of 'unhealthy' food and beverages (subject to funding). • Review national obesity research gaps and priorities 	<ul style="list-style-type: none"> • Expanded <i>National Measure Up Campaign Reference Group</i> operations - Sep 2012. • Implement <i>Measure Up Campaign</i> phase Spring 2012 – Mar 2013. • Implement <i>Measure Up Campaign</i> phase Autumn 2013 – June 2013. • National Obesity Prevention Social Marketing Strategy - Dec 2012. • National Seminar on Unhealthy Food and Beverage Advertising to Children Report presented to Standing Council on Health (SCoH) - Dec 2012. • A monitoring framework for future data collection developed and considered by SCoH – June 2013. • <i>National Obesity Prevention Research Priorities</i> - Dec 2012.

The table above makes reference to the ["Measure Up" campaign](#).³⁴³ This campaign aimed to provide Australians (target 25-50 year olds and 45-60 year olds) with the tools and knowledge to make healthy lifestyle choices to reduce the risk factors for chronic disease. This program has been extended into a second phase known as ["Swap It, Don't Stop It" campaign](#) until July 2013. This second phase of the campaign focuses on encouraging small everyday lifestyle

changes to improve health.

Outlined below is some of the additional work ANPHA has undertaken or is currently undertaking in regards to obesity prevention:

- Late last year ANPHA held a Symposium on Social Marketing in Obesity³⁴⁴
- Currently ANPHA is developing a national approach to social marketing for obesity³⁴⁵
- Unhealthy food marketing to children - ANPHA and the South Australian Department of Health undertook a national seminar on food advertising and marketing to children.³⁴⁶
- ANPHA is developing a National Preventative Health Research Strategy and obesity will be included in this strategy³⁴⁷
- Earlier this year ANPHA awarded \$3.75 million for research in the areas of obesity, smoking and harmful use of alcohol.³⁴⁸
- ANPHA is responsible for evaluating the NPAPH. 'Phase One' of the National Evaluation was expected to be completed by August 2012.³⁴⁹

Historical Background to the National Partnership Agreement on Preventative Health (NPAPH): In April 2008 the Minister for Health and Ageing, Nicola Roxon, announced the formation of the National Preventative Health Taskforce (NPHT) for a three year period to advise the Government on interventions that would address the prevention of obesity, tobacco and harmful consumption of alcohol that are collectively placing an escalating burden on the Australian health system.³⁵⁰

To start debate, the Minister for Health and Ageing and the NPHT released on 10 October 2008, "[Australia: The Healthiest Country by 2020, A Discussion Paper](#)".³⁵¹ Public submissions were called for and closed on 2 January 2009. The paper outlined the scale of the obesity problem and the following potential reforms:

The Taskforce believes that in order to halt and reverse the rise in overweight and obesity the major actions are:

- **Reshape industry supply and consumer demand towards healthier products** by increasing availability and access to healthier food and activity choices and through the development of comprehensive national food policy (eg. modelled on the UK's *Food Matters*).
- **Protect children and others from inappropriate marketing** of unhealthy foods and beverages, and improve public education and information.
- **Embed physical activity and healthy eating in everyday life** through school, community and workplace programs. At the same time these are reinforced by individuals and families choosing to become more active and to eat healthier foods.

- **Reshape urban environments towards healthy options** through consistent town planning and building design that encourage greater levels of physical activity and through appropriate infrastructure investments (for example, for walking, cycling, food supply, sport and recreation).
- **Strengthen skill and support primary health care and the public health workforce** to support people in making healthy choices, especially through the delivery of community education and advice about nutrition, physical activity and the management of overweight and obesity.
- **Close the gap for disadvantaged communities** through the development of targeted approaches to overweight and obesity for disadvantaged groups, particularly Indigenous and low-income Australians, pregnant women and young children.
- **Build the evidence base**, monitor and evaluate the effectiveness of actions.³⁵²

The NPHT prepared a detailed technical report, "[Technical Report 1, Obesity in Australia: a need for urgent action, including addendum for October 2008 to June 2009](#)," which outlined the impact of obesity in Australia, prevention options and potential initiatives.

On 30 June 2009, the NPHT released the [National Preventative Health Strategy](#), officially launched by the then Minister for Health and Ageing, Nicola Roxon, on 1 September 2009. The Strategy comprised three parts: [an overview](#); [a roadmap for action](#); and technical papers focused on three key areas including obesity (referred to above), tobacco and alcohol. These three risk factors are the priority areas for the ANPHA.³⁵³

It can also be noted that in May 2009, the Standing Committee on Health and Ageing released a report, [Weighing it Up, Obesity in Australia](#). The Report was intended to complement the National Preventative Health Taskforce process by making "general recommendations on what governments, industry, individuals and the broader community can do to reverse our growing waistline."³⁵⁴ The Committee held 13 public hearings, visited hospitals, schools as well as heard from Federal, State and Local Government officials as to "campaigns, policies and activities that seek to prevent and manage the obesity epidemic in children youth and adults."³⁵⁵ The Report made twenty recommendations covering government, industry and community programs and partnerships.³⁵⁶

On 11 May 2010, the Commonwealth Minister for Health and Ageing released [Taking Preventative Action](#), the Government's detailed response to the report of the National Preventative Health Taskforce. The Government supported or said it had taken action in 28 "Key Action Areas" (the Taskforce put forward 35 "Key Action Areas"); and 63 sub-recommendations were addressed (136 recommendations were made) and of the remaining sub-recommendations, five were addressed using a different approach and the remaining 49 were left for consideration by the Government.³⁵⁷

In respect of obesity, the Government outlined a detailed [response](#) to the following ten broad "Key Action Areas":

- **Key action area 1:** Drive environmental changes throughout the community that increase levels of physical activity and reduce sedentary behaviour
- **Key action area 2:** Drive change within the food supply to increase the availability and demand for healthier food products, and decrease the availability and demand for unhealthy food products
- **Key action area 3:** Embed physical activity and healthy eating in everyday life
- **Key action area 4:** Encourage people to improve their levels of physical activity and healthy eating through comprehensive and effective social marketing
- **Key action area 5:** Reduce exposure of children and others to marketing, advertising, promotion and sponsorship of energy-dense nutrient-poor foods and beverages
- **Key action area 6:** Strengthen, up-skill and support the primary healthcare and public health workforce to support people in making healthy choices
- **Key action area 7:** Address maternal and child health, enhancing early life and growth patterns
- **Key action area 8:** Support low-income communities to improve their levels of physical activity and healthy eating
- **Key action area 9:** Reduce the obesity prevalence and burden in Indigenous communities
- **Key action area 10:** Build the evidence base, monitor and evaluate effectiveness of actions.³⁵⁸

The Government acknowledged what had been recognised by the NPHT, namely:

in proposing measures to tackle obesity, the evidence for intervention was more variable than in other public health issues such as tobacco control.³⁵⁹

Accordingly, when regulatory interventions are undertaken, they must be staged, which allows both time for the approaches to work and for their effectiveness to be assessed.³⁶⁰ In other words, there is a strong emphasis on "learning by doing."³⁶¹

7.5 New South Wales Government's Response to Obesity under the National Partnership Agreement

As noted, in November 2008 the NPAPH, which consists of 11 initiatives, was signed by the Commonwealth, State and Territory Governments. Under the Agreement, the NSW Government has agreed to deliver at this stage the following three "Initiatives":³⁶²

1. The Healthy Children Initiative;
2. The Healthy Worker Initiative; and
3. The Social Marketing Initiative.

The Healthy Children Initiative ("HCI"): This initiative will provide from July 2011 to 2017-18 up to \$325.9 million to State and Territory Governments to deliver programs for children from birth to 16 years of age to increase levels of physical activity and improve the intake of fruit and vegetables in settings such as child care centres, pre-schools and schools.³⁶³

NSW will receive \$78.6 million in funding to deliver this initiative. The following three programs to execute it have been approved by NSW Health:³⁶⁴

The **Children's Healthy Eating and Physical Activity Program** seeks to enhance the capacity of settings within the community to adopt a variety of programs that promote physical activity and healthy eating. It is intended to achieve broad organisational change that supports the implementation of a range of health-promoting programs and practices on an ongoing basis. The program includes existing state-wide programs targeting early childhood and primary settings as well as new programs for supported playgroup, high school and sporting settings.

The **Targeted Family Eating and Physical Activity Program** targets children who are overweight or obese and their families. It delivers a behavioural treatment regarding healthy eating, physical activity and small screen recreation. The program is targeted at areas where the prevalence of overweight and obesity is high and where there is greater social disadvantage.

The **Population Health Education Program** will deliver evidence-based messages on health related behaviours to young people. The campaign will use a range of appropriate channels and mechanisms most likely to resonate with and impact on the health related behaviours of young people in NSW.³⁶⁵

Part of the aim of the *Children's Healthy Eating and Physical Activity Program* is to support teachers in early childhood services and primary schools to improve their knowledge of childhood healthy eating and physical activity. By the end of 2011, 53% of early childhood services across NSW, and nearly 1,000 government and independent schools, had participated in this program.³⁶⁶ By the end of 2011, nearly 1300 children and their families had taken part in the *Targeted Family Healthy Eating and Physical Activity Program* and over the next four years NSW Health plans to deliver the program to 7,000 children, their siblings and parents.³⁶⁷

NSW Health states in respect of the *Targeted Family Healthy Eating and Physical Activity Program*:

Initial program results are promising and include reductions in Body Mass Index, waist circumference and time spent in sedentary behaviour and an increase in the number of hours spent in physical activity each week. Children taking part in this program have also reported an increase in self-esteem.³⁶⁸

The Healthy Worker Initiative ("HWI"): This initiative will provide State and Territories with up to \$289.1 million from 1 July 2011 to June 2018 to support "workplace health programs that focus on decreasing rates of overweight and obesity, increasing levels of physical activity and intake of fruit and vegetables, smoking cessation and reducing harmful levels of alcohol consumption."³⁶⁹ The Commonwealth is allocating \$5.2 million to:

develop 'soft infrastructure' to support the implementation of State and Territory activities at both a local and national level.³⁷⁰

NSW will receive \$70.9 million in funding for this initiative, with the primary targets being adults aged 35-55 years in paid employment.³⁷¹ So far, the [Get Healthy Information and Coaching Service®](#) (Get Healthy Service) is the key program implemented by NSW Health. This service provides adults with free, evidence-based information and coaching via telephone on healthy eating, physical activity and weight loss.³⁷²

Since the launch of the Get Healthy Service in February 2009 to June 2012, there have been approximately 6,500 requests for information kits and 12,200 requests for coaching.³⁷³ As of August 2012, approximately 4,100 people are currently enrolled or have graduated from the six month health coaching program.³⁷⁴ According to NSW Health:

Participants who have completed 6 months of coaching continue to demonstrate significant improvements in self-reported weight, waist circumference, BMI, healthy eating and physical activity behaviours.³⁷⁵

NSW Health plans for the program in 2012-13 to target at risk communities, as defined by the Department. In addition, it is planned under this program that an Aboriginal Strategy and a module specifically designed to prevent type II diabetes will be introduced. Under the HWI, NSW Health plans to introduce additional specific programs to prevent type II diabetes across NSW, as well as strategies to facilitate the promotion of healthy eating and physical activity in the workplace.

The Social Marketing Initiative: This initiative represents \$120 million from 2009–10 to 2012–2013. The Australian National Preventive Health Agency (ANPHA) manages and coordinates the initiative (\$41 million), whilst the States and Territories are given a total of \$18 million to deliver programs at a local level that reinforce and extend the national campaign messages. In relation to obesity, there is a further \$59.0 million allocated to the [Measure Up campaign](#).³⁷⁶ NSW is also receiving \$1.9 million each year for three years 2010-11 until 2012-13 and is using the funding to promote the Get Healthy Service.³⁷⁷

The Current Status of the NPAPH between NSW and the Commonwealth: Under the NPAPH, NSW is required to submit "Implementation Plans" for each "Initiative" for approval by the Commonwealth Minister for Health. Recently, the NPAPH has been varied in terms of extending the period of funding for the Healthy Children Initiative and Healthy Worker Initiative. Accordingly, NSW is

required to submit modified "Implementation Plans" for approval by the end of 2012.³⁷⁸ It is said that the "NSW Ministry of Health is currently working with key stakeholders on these Plans."³⁷⁹

7.6 Independent NSW Government Initiatives

In 2002, the NSW Government in recognition of the dramatic increase in the number of overweight and obese children in the decade 1985-1995 convened the *Childhood Obesity Summit*.³⁸⁰ Nine working groups³⁸¹ presented the then Minister for Health, Craig Knowles, with 145 resolutions.³⁸² The Government released "*NSW Childhood Obesity Summit, Government Response 2003*,"³⁸³ which addressed each resolution. In addition the Government released an action plan, "*Prevention of Obesity in Children and Young People, NSW Government Action Plan 2003-2007*."³⁸⁴ This plan focused on seven priority areas, namely:

1. Healthier schools;
2. An active community;
3. Supporting parents;
4. Healthy child and out-of-school care;
5. Community understanding;
6. Increasing knowledge; and
7. Governments, industry and community working together.

In 2006, the then Premier announced a ban of soft drinks from school canteens to work in harmony with the 2004 Healthy School Canteens Strategy.³⁸⁵ In 2003, a NSW average teenager (12-18 years old) consumed 300-600 ml of soft drink each day, which was more than their daily intake of milk.³⁸⁶

In November 2006, as part of the State Plan "*A New Direction for NSW*"³⁸⁷ a target was set to "stop the growth in childhood obesity by holding childhood obesity at the 2004 level of 25% by 2010. The plan was then to reduce levels to 22% by 2016."³⁸⁸ The Plan committed the Government to the principle of "prevention and early intervention into future policy development and programme design."³⁸⁹ There is no official NSW Government report confirming that the target set for 2010 was met. However, a comparison of the 2004 Schools Physical Activity and Nutrition Survey (SPANS) Report to the 2010 SPANS Report reveals that the overall prevalence of combined overweight and obesity fell from 25% in 2004 for students aged 7-16³⁹⁰ to 22.4% in 2010 for students aged 5-16, which is below the target set.³⁹¹

In 2009, the NSW Government released the "[NSW Government Plan for Preventing Overweight and Obesity in Children, Young People and their Families 2009 – 2011](#)." It presented a range of policies and initiatives to stop the growth in childhood obesity.³⁹² The Plan promoted:

healthy food and physical activity choices and seeks to encourage behaviour change at both an individual and community level by addressing five key priority areas of community information; healthy food; active lifestyles; sport and recreation infrastructure; and prevention and early intervention services.³⁹³

In addition, six key behaviours were targeted within the Plan:

1. Reduced intake of energy dense and nutrient poor foods;
2. Increased intake of vegetables and fruit;
3. Reduced intake of sugar sweetened beverages;
4. Reduced time in sedentary, particularly the small screen related behaviours;
5. Increased moderate to vigorous physical activity; and
6. Increased walking and incidental exercise.³⁹⁴

Both of the above plans - "Prevention of Obesity in Children and Young People, NSW Government Action Plan 2003-2007" and "NSW Government Plan for Preventing Overweight and Obesity in Children, Young People and their Families 2009 – 2011" - were inter-agency both in terms of implementation and monitoring.³⁹⁵ They were led by the Obesity Senior Officer's Group (with NSW Health as Secretariat) and historically reported to the CEOs of the agencies that fell within Human Services and Justice.³⁹⁶

NSW became the first Australian jurisdiction to introduce mandatory nutrition information labelling for certain prescribed food businesses, when the Parliament passed the *Food Amendment Act 2010*,³⁹⁷ which amended the *Food Act 2003* and the *Food Regulation 2010*. As a result, from 1 February 2012 any food business that sells standard food items at 20 or more locations in New South Wales or at 50 or more locations in Australia is required to display the nutritional information of their standard food items.³⁹⁸

The legislation was introduced in light of the then Government's conclusion that "we are dealing with an overweight and obesity epidemic"³⁹⁹ that was costing NSW an estimated \$19 billion per annum. Noted too, was the fact that 4.5 million Australians eat at a fast-food outlets each day without knowing the nutritional value of the food they are consuming.⁴⁰⁰ Accordingly, it was determined that the:

food regulatory system can help to address these chronic health problems by giving consumers the information they need to make healthy food choices.

Further, it was said that the Government wanted to avoid "uncoordinated industry efforts",⁴⁰¹ as exemplified in the United Kingdom, which appeared to confuse consumers.⁴⁰²

As required by s.106R of the *Food Act 2003*, NSW Health in partnership with the NSW Food Authority will undertake an evaluation of the legislation with a report expected to be tabled in Parliament by 1 February 2013. This review will also consider whether the legislation should be extended to include the display of additional nutritional information relating to fat and salt.⁴⁰³

Variations on the NSW model have been followed in other jurisdictions, as follows:

- The ACT passed the *Food (Nutritional Information) Amendment Act*

2011⁴⁰⁴ which commences 1 January 2013. The Act requires "Standard Food Outlets[s]"⁴⁰⁵ that sell "Standard Food Items"⁴⁰⁶ at 7 or more places in the ACT or at 50 or more places in Australia to display nutritional information as Part 4 of *Food Regulation 2002*.⁴⁰⁷

- On 23 February 2012, South Australia passed the *Food Variation Regulations 2012* under the *Food Act 2001*. The effect will be that multiple site food businesses that sell standardised food items from 20 or more locations in South Australia or 50 or more locations nationally will be required to display kilo joule information at the point of sale.⁴⁰⁸ The legislation includes a 12 month transition period, with businesses having up until 23 February 2013 to comply.

Unlike in NSW and the ACT, supermarkets are currently exempt from the regulations. The South Australian Government intends to review this position in two years.⁴⁰⁹

- The former Victorian Premier, John Brumby, announced in 2010 a similar mandatory scheme applying to food service businesses with 50 or more outlets in Victoria or 200 or more outlets across Australia.⁴¹⁰ At present this is still under consideration.⁴¹¹
- Similarly, Queensland and Tasmania have also announced plans to introduce a labelling scheme.⁴¹²

The NSW Premier, Barry O'Farrell, released on 6 September 2011, "NSW 2021: A Plan to Make NSW Number One," a ten-year strategic plan for NSW ("NSW 2021").⁴¹³ The NSW 2021 Plan has 32 goals of which goal 11 is to "keep people healthy and out of hospital."⁴¹⁴ In working towards achieving this broad goal, the Plan aims to strengthen preventative health by:

- Establishing an Office of Preventative Health responsible for state-wide coordination of key preventative health programs and reporting on the achievements of the Preventative Health Fighting Fund
- Establishing a Ministerial Advisory Committee on Preventative Health to provide advice about strategies to keep people healthy and out of hospital.⁴¹⁵

The NSW Government opened the NSW Office of Preventative Health on 29 June 2012 with Professor Chris Rissell of the University of Sydney's School of Public Health as its inaugural Director.⁴¹⁶ The Office has a state-wide health promotion focus and is responsible for "overseeing the NSW Government's \$120 million Preventative Health Fighting Fund."⁴¹⁷ It will coordinate initiatives to reduce lifestyle-related risk factors which lead to chronic disease, including state-wide programs that address overweight and obesity.⁴¹⁸

The Minister for Health, Jillian Skinner, said in June 2012:

The NSW Government is firmly committed to keeping people healthy and out of hospital and, most importantly, to improving their quality of life. It's about making sure that people are living healthy lives.⁴¹⁹

Delivering on their NSW 2021 Plan, in June 2012 the NSW Government established a Ministerial Advisory Committee on Preventative Health under s 20(6) of the *Health Administration Act* 1982 (NSW). The Committee has been established for a period of up to two years with terms of appointment expiring 1 June 2014.⁴²⁰ The Committee is primarily responsible for:

- Providing expert advice to the Minister for Health and Minister for Medical Research on evidence-based, effective and feasible strategies to maintain and enhance individual and population health.
- Promoting discussion and resolution with influential sectors beyond health in the pursuit of primary prevention.
- Proposing prevention for patients with serious and continuing illness that will enhance their life quality and reduce crises that necessitate hospital care.⁴²¹

The Advisory Committee is chaired by Professor Stephen Leeder AO, Director, Menzies Centre for Health Policy, School of Public Health, University of Sydney. Other members are clinicians from varied backgrounds, including population health, chronic disease management, general practice, nursing, allied health and Aboriginal health.⁴²²

The NSW 2021 Plan also included the following "Key Initiatives":

- Implementing the NSW Healthy Children's Initiative under the National Partnership Agreement on Preventative Health. As stated above, an Implementation Plan has been agreed upon with the Commonwealth Government.
- Developing a new cross-government plan to address overweight and obesity in NSW. The plan will include a focus on adult, as well as child overweight and obesity.⁴²³

The NSW 2021 plan includes the performance benchmarks for obesity set under the NPAPH and the following specific targets for overweight and obesity:

- Reduce overweight and obesity rates of children and young people (5-16 years) to 21% by 2015; and
- Stabilise overweight and obesity rates in adults by 2015, and then reduce by 5% by 2020.⁴²⁴

According to NSW Health:

These targets will require a coordinated investment and the large-scale delivery of evidence-based programs – to both adults and children - across NSW. This will be progressed through the Healthy Children and Healthy Worker Initiatives of the National Partnership Agreement on Preventative Health and through yet to be determined initiatives under the NSW Strategy for the Prevention of Overweight & Obesity 2012-2016.⁴²⁵

NSW Health has stated it is in the process of developing the *NSW Strategy for the Prevention of Overweight and Obesity 2012-2016*.⁴²⁶

8 CONCLUSION

Obesity is a major public health issue, as complex as it is important. As with smoking, policies designed to tackle obesity can raise questions about individual choice and the social costs and benefits associated with government policies and interventions in this area. What is clear is that obesity can have serious health consequences and that it is a growing problem in Australia, as it is in most advanced industrial societies. There are some hopeful signs, most notably in the levelling off of obesity rates among children, in NSW and Australia. However, considerable challenges posed by the high prevalence of overweight and obesity remain, as acknowledged by recent developments in public health policy. Of particular concern is that the prevalence of obesity is not evenly distributed in society, with lower socio-economic groups experiencing higher rates than those who are more well off. The challenge is for public policy to address the obesity issue in all its complexity, in its many biological, environmental and social manifestations.

¹ For an historical and evolutionary perspective see - G, Eknoyan, "A History of Obesity, or How What Was Good Became Ugly and Then Bad," *Advances in Chronic Kidney Disease*, Vol 13, No 4 (October), 2006: 421-427 at 423.

² Body Mass Index was calculated using only measured data.

³ Australian Institute of Health and Welfare, [Australia's Health 2012](#), Australia's health series no.13. Cat. no. AUS 156. (Canberra, AIHW, June 2012) at 213.

⁴ F Sassi, M Devaux, M Cecchini et al (2009) *The Obesity Epidemic: Analysis of past and projected future trends in selected OECD countries*. Organisation for Economic Cooperation and Development (Paris, France, 20 March 2009) at 35.

⁵ K, Gebel. L, King. A, Bauman. P, Vita. T.Gill. A, Rigby. A, Capon, *Creating healthy environments: A review of links between the physical environment, physical activity and obesity*. NSW Health Department and NSW Centre for Overweight and Obesity, (Sydney, October 2005) at 67.

⁶ Australian Bureau of Statistics, *Australian Health Survey: First Results, 2011-12*, ABS cat no. 4364.0.55.001 (Canberra, 29/10/2012 released at 11.30 am).

⁷ Note 1 at 424.

⁸ Note 1 at 424.

⁹ Note 1 at 424.

¹⁰ Note 1 at 425.

¹¹ Note 1 at 425.

¹² National Health and Medical Research Council (NHMRC), *Management of Overweight and Obesity in Adults, Adolescents and Children, Clinical Practice Guidelines for Primary Care Health Professionals, Public Consultation Draft* (Canberra, 29 March 2012) at vii.

¹³ NSW Centre for Public Health Nutrition, *Report on the Weight Status of NSW: 2003*, funded by the NSW Department of Health (Sydney, September 2003) at 5.

¹⁴ Note 12 at 16-17.

¹⁵ Note 12 at 16-17.

¹⁶ Access Economics, August 2008, "The growing cost of obesity in 2008: three years on", Report for Diabetes Australia, (Canberra: 2008).

¹⁷ Note 16 at iv.

¹⁸ Note 16 at iv.

¹⁹ Note 16 at 23.

²⁰ Note 16 at iv.

²¹ Note 16 at iv.

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- ²² J, Crowle & E, Turner, *Childhood Obesity: An Economic Perspective*, Productivity Commission Staff Working Paper (Melbourne, September 2010) at 29.
- ²³ Note 22 at 29.
- ²⁴ Note 22 at 30.
- ²⁵ Australian Institute of Health and Welfare, [Australia's Food & Nutrition 2012](#). Cat. no. PHE 163, (Canberra, AIHW, July 2012.) at 195.
- ²⁶ Note 3 at 54.
- ²⁷ J, Ruskin, "[Unto This Last](#)", first published in December 1860 in the monthly journal [Cornhill Magazine](#) in four articles (In the hyperlink reference above at 47) in G, Egger, *Planet Obesity How We're Eating Ourselves And The Planet To Death*, (Crows Nest, NSW, Allen & Unwin, 2010) at 44.
- ²⁸ G, Egger, *Planet Obesity How We're Eating Ourselves And The Planet To Death*, (Crows Nest, NSW, Allen & Unwin, 2010) at 43.
- ²⁹ Australian Institute of Health and Welfare, *Weight loss surgery in Australia* cat. no. HSW 91 (Canberra, AIHW, October 2010) at 16.
- ³⁰ National Health and Medical Research Council (NHMRC), *Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults*, Endorsed 18th September 2003 (Canberra, Updated 19th March 2004) at 43.
- ³¹ Note 30 at 44.
- ³² World Health Organization, "Obesity: preventing and managing the global epidemic." Report of a WHO consultation. *WHO Tech Rep Ser* 2000; 894(3): i-xii, 1-253 at 7.
- ³³ Note 32 at 7.
- ³⁴ Note 30 at 43.
- ³⁵ P, Harris; S, Naggy & N, Vardaxis (eds), *Mosby's Dictionary of medicine, Nursing and Health Professions, Australian and New Zealand Edition* (Sydney, Elsevier, 2006) at 106.
- ³⁶ Note 30 at 43.
- ³⁷ See <http://www.topendsports.com/testing/tests/magnetic-resonance-imaging.htm> for a description of the procedure and the advantages and disadvantages of this method.
- ³⁸ See <http://www.topendsports.com/testing/tests/computed-tomography.htm> for a description of the procedure and the advantages and disadvantages of this method.
- ³⁹ See <http://www.topendsports.com/testing/tests/DEXA.htm> for a description of the procedure and the advantages and disadvantages of this method.
- ⁴⁰ See <http://www.topendsports.com/testing/tests/near-infrared-interactance.htm> for a description of the procedure and the advantages and disadvantages of this method.
- ⁴¹ See <http://www.topendsports.com/testing/tests/BI.htm> for a description of the procedure and the advantages and disadvantages of this method.
- ⁴² Note 30 at 43.
- ⁴³ Note 12 at 10.
- ⁴⁴ World Health Organization, Health Topics, Obesity, <<http://www.who.int/topics/obesity/en/index.html>> at 30 May 2012.
- ⁴⁵ Note 32 at 9.
- ⁴⁶ Note 32 at 8.
- ⁴⁷ J, Singer-Vine, "Beyond BMI- Why doctors won't stop using an outdated measure for obesity," *Slate*, July 20 2009 at 2.
- ⁴⁸ Note 47 at 2.
- ⁴⁹ Note 30 at 44.
- ⁵⁰ Note 30 at 44.
- ⁵¹ Note 30 at 45.
- ⁵² Note 30 at 45.
- ⁵³ Note 30 at 46.
- ⁵⁴ Note 30 at 46.
- ⁵⁵ Note 32 at 8.
- ⁵⁶ Note 30 at 45.
- ⁵⁷ Note 30 at 45.
- ⁵⁸ Note 30 at 45.
- ⁵⁹ Between December 2011 and 29 February 2012.

⁶⁰ Note 12 at 10.

⁶¹ Note 12 at 10.

⁶² Note 12 at 12.

⁶³ Note 12 at 11.

⁶⁴ Note 32 at 9.

⁶⁵ Note 30 at 45.

⁶⁶ Note 30 at 48.

⁶⁷ Note 30 at 48.

⁶⁸ Note 12 at 12.

⁶⁹ Note 30 at 7.

⁷⁰ Note 30 at 14.

⁷¹ BMI may be insensitive to children who are particularly tall or short for their age, who are muscular and there are racial differences- Note 15 at 8.

⁷² Note 12 at 52.

⁷³ World Health Organization (2012), *World Health Statistics 2012*, (Geneva, Switzerland), http://www.who.int/gho/publications/world_health_statistics/2012/en/> viewed 30 May 2012.

⁷⁴ OECD (2011), *Health at a Glance 2011: OECD Indicators*, OECD Publishing. http://dx.doi.org/10.1787/health_glance-2011-en.

⁷⁵ F, Sassi; M, Devaux; M, Cecchini & E, Rusticelli (2009), "The Obesity Epidemic: Analysis of Past and Projected Future Trends in Selected OECD Countries" *OECD Health Working Papers*, No. 45, OECD Publishing (Paris, France) <http://dx.doi.org/10.1787/225215402672>.

⁷⁶ Note 74 at 54 & 55 and Note 3 at 213.

⁷⁷ Note 73 at 36.

⁷⁸ Note 73 at 36.

⁷⁹ The WHO Region of the Americas includes the following countries: Antigua & Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Saint Kitts & Nevis, Saint Lucia, Saint Vincent & Grenadines, Suriname, Trinidad & Tobago, United States of America, Uruguay and Venezuela.

⁸⁰ The WHO South East Asia Region includes the following countries: Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Indonesia, Nepal, Maldives, Myanmar, Sri Lanka, Thailand and Timor-Leste.

⁸¹ Note 73 at 36.

⁸² Note 73 at 119.

⁸³ Note 73 at 110-117.

⁸⁴ Note 74 at 8

⁸⁵ Note 74 at 54

⁸⁶ Note 74 at 54.

⁸⁷ Note 74 at 54.

⁸⁸ Note 74 at 8 and 54.

⁸⁹ Note 74 at 55

⁹⁰ Note 75 at 8.

⁹¹ Note 75 at 9.

⁹² Note 75 at 10.

⁹³ Note 74 at 54.

⁹⁴ Note 75 at 21.

⁹⁵ Note 3 at 14.

⁹⁶ Note 75 at 34

⁹⁷ Note 74 at 57.

⁹⁸ Note 3.

⁹⁹ Note 25.

¹⁰⁰ Australian Bureau of Statistics, *National Health Survey: Summary of Results, 2007-2008 (Reissue)*, ABS cat no. 4364.0 (Canberra, 25/08/2009 released at 11.30 am).

¹⁰¹ Department of Health and Ageing (2007), *Australian National Children's Nutrition and Physical Activity Survey*, main findings, prepared by Commonwealth Scientific Industrial

Research Organisation (CSIRO), Preventative Health National Research Flagship and the University of South Australia (Canberra: DoHA, 2007).

¹⁰² E-mail advice confirming the most recent Commonwealth reports and statistical analysis on the issue of obesity from Debbie Vanderdonk, Australian Institute of Health & Welfare, 23 July 2012.

¹⁰³ Note 6.

¹⁰⁴ Note 6.

¹⁰⁵ Note 100.

¹⁰⁶ Note 100 at 8.

¹⁰⁷ In the self-reporting cohort the highest rate of overweight/obesity was in the lower 55-64 year age group at (67%), 8% lower than the measured group. However, measured BMI index is considered more reliable as the survey shows both male and female adults generally underestimated their weight with (63%) of males and (48%) of females classifying themselves as overweight or obese. However, when these same adults were measured the prevalence increased to (68%) of males and (55%) of females respectively.

¹⁰⁸ Note 100 at 8.

¹⁰⁹ Note 100 at 8.

¹¹⁰ Note 6.

¹¹¹ Note 100 at 8.

¹¹² Note 6.

¹¹³ Note 101 at x.

¹¹⁴ Note 101 at 35 and 116.

¹¹⁵ Note 3 at 53

¹¹⁶ Note 101 at 36.

¹¹⁷ Note 101 at 35 and Note 25 at 185.

¹¹⁸ The Australian Diabetes, Obesity and Lifestyle Study (AusDiab), *Diabetes & Associated Disorders in Australia-2000-The Accelerating Epidemic*, (Melbourne, the International Diabetes Institute, 2001).

¹¹⁹ Note 118 at 16.

¹²⁰ Note 118 at 16.

¹²¹ Standardised to the 1991 Australian population-Note 118 at 16 and 17 and Note 13 at 19.

¹²² Note 74 at xiii.

¹²³ Note 13 at 19 and Note 25 at 188.

¹²⁴ Australian Institute of Health and Welfare, [Australia's Health 2010](#), Australia's health series no.12. Cat. no. AUS 122. (Canberra, AIHW, June 2010) at 116.

¹²⁵ Note 74 at 9.

¹²⁶ Note 124 at 116 and Note 25 at 188.

¹²⁷ Note 25 at 188.

¹²⁸ Australian Bureau of Statistics, *Overweight and Obesity in Adults in Australia; A Snapshot*, ABS cat no. 4842.0.55.001 (Canberra, 27/05/11 released at 11.30 am) at 10-14 and Note 12 at xi

¹²⁹ Australian Institute of Health and Welfare, *Aboriginal and Torres Strait Islander Health Performance Framework 2010: Detailed Analyses* cat. no. IHW 53 (Canberra, AIHW, October 2011) at 1510.

¹³⁰ Note 12 at 2.

¹³¹ Note 13 at 22.

¹³² Note 12 at 3.

¹³³ Note 12 at at 2.

¹³⁴ Australian Institute of Health and Welfare, *Young Australians: their health and wellbeing 2011* cat. no. PHE 140 (Canberra, AIHW, 2011) at 63.

¹³⁵ Note 25 at 9.

¹³⁶ Note 13 at 20.

¹³⁷ Note 100.

¹³⁸ Note 134 at 63.

¹³⁹ Note 128 at 11.

¹⁴⁰ An index quintile was compiled from various characteristics including income, educational

attainment, unemployment and the skill level of jobs.

¹⁴¹ Note 100.

¹⁴² Note 128 at 11.

¹⁴³ Note 25 at 98.

¹⁴⁴ Note 128 at 12.

¹⁴⁵ Note 128 at 13.

¹⁴⁶ Note 128 at 13.

¹⁴⁷ Obesity was highest for those who worked as machinery operators and drivers (74%). These roles generally involve long hours of sitting, which may undo the benefits of any regular physical activity. In contrast people that worked as sales workers (most likely to be standing and walking in their roles) were the least likely to be overweight or obese (53%)- Note 21 at 14.

¹⁴⁸ Note 128 at 13-14.

¹⁴⁹ Note 128 at 10.

¹⁵⁰ Note 12 at 3.

¹⁵¹ There is often a lack of sporting facilities (eg heated pools and commercial gyms) as well as walking paths that support physical activity. Further, there may be the perception that 'rural work' provides sufficient physical activity and therefore physical activity is not needed during leisure hours- National Health and Medical Research Council (NHMRC)- Note 12 at 39

¹⁵² Note 25 at 10.

¹⁵³ Note 129 at 1517.

¹⁵⁴ AJ Lee, K O'Dea JD Mathews (1994) "Apparent dietary intake in remote Aboriginal communities", *Australian Journal of Public Health: 18:190-7* in Australian Institute of Health and Welfare, *Aboriginal and* Note 241 at 1517.

¹⁵⁵ Note 25 at 97.

¹⁵⁶ <http://www.health.qld.gov.au/ph/documents/hpu/hafb-2010.pdf> > viewed 28 August 2012.

¹⁵⁷ Note 129 at 1516.

¹⁵⁸ Note 12 at 3.

¹⁵⁹ Note 12 at 3.

¹⁶⁰ Note 12 at 3.

¹⁶¹ NSW Health, Health Statistics New South Wales, Selected Reports,

http://www.healthstats.nsw.gov.au/Indicator/beh_bmi_age > viewed 12 September 2012

¹⁶² NSW Health, Health Statistics New South Wales, Selected Reports,

http://www.healthstats.nsw.gov.au/Indicator/beh_bmi_age > viewed 12 September 2012

¹⁶³ NSW Health, Health Statistics New South Wales, Selected Reports,

http://www.healthstats.nsw.gov.au/Indicator/beh_bmi_age > viewed 12 September 2012

¹⁶⁴ NSW Health, Health Statistics New South Wales, Selected Reports,

http://www.healthstats.nsw.gov.au/Indicator/beh_bmi_age > viewed 12 September 2012

¹⁶⁵ NSW Health, Health Statistics New South Wales, Selected Reports,

http://www.healthstats.nsw.gov.au/Indicator/beh_bmikid_cat, viewed 12 September 2012.

¹⁶⁶ Information provided by NSW Health to the author in a written statement, 1 August 2012.

¹⁶⁷ Based on aggregate data across the years 2006 to 2009.

¹⁶⁸ NSW Health, Health Statistics New South Wales, Selected Reports,

http://www.healthstats.nsw.gov.au/Indicator/cob_bmi_cob, viewed 12 September 2012

¹⁶⁹ Note 28.

¹⁷⁰ L Hardy, Principal Investigator, NSW Schools Physical Activity and Nutrition Survey (SPANS) 2010, Full Report (Sydney: NSW Ministry of Health, 2011).

¹⁷¹ Note 170 at 4.

¹⁷² Note 170 at 15.

¹⁷³ Note 170 at 4.

¹⁷⁴ Note 170 at 46.

¹⁷⁵ Information provided by NSW Health to the author in a written statement, 1 August 2012.

¹⁷⁶ Note 12 at 4.

¹⁷⁷ Note 25 at 194.

¹⁷⁸ Epigenetic Change= changes in gene expression caused by mechanisms other than changes in the DNA sequence.> <http://en.wikipedia.org/wiki/Epigenetics> - > Accessed 20 August 2012 and Note 12 at 5.

- ¹⁷⁹ Note 12 at 5.
- ¹⁸⁰ Note 12 at 5.
- ¹⁸¹ Note 12 at 5.
- ¹⁸² T, Harder; R, Bergmann, G, Kallischnigg; A, Plagemann, "Duration of Breastfeeding and Risk of Overweight: A Meta-Analysis," *American Journal of Epidemiology*, 162, 2005, 397-403.
- ¹⁸³ Note 5 at 5.
- ¹⁸⁴ The phrase "obesogenic environment" was first used by G, Egger and B, Swinburn, (1997), "An Ecological approach to the obesity pandemic", *British Medical Journal*, 315,477-80.
- ¹⁸⁵ Note 5 at 5 and 16.
- ¹⁸⁶ Note 5 at 17.
- ¹⁸⁷ Note 5 at 5.
- ¹⁸⁸ Australian Institute of Health and Welfare, *Health and the environment: a compilation of evidence*, Cat. No. PHE 136. (Canberra, March 2011) at 42.
- ¹⁸⁹ Note 188 at 37.
- ¹⁹⁰ Note 5 at 9.
- ¹⁹¹ Note 188 at 37.
- ¹⁹² Note 188 at 45.
- ¹⁹³ Note 13 at ix.
- ¹⁹⁴ Australian Bureau of Statistics, 9208.0 - Survey of Motor Vehicle Use, Australia, 12 months ended (Canberra, 31 October 2010 Latest ISSUE Released at 11:30 AM (CANBERRA TIME) 23/08/2011.)
- ¹⁹⁵ Note 188 at 42.
- ¹⁹⁶ Australian Bureau of Statistics, 2068.0 – NSW Detailed (Place of Work-Study Area)-N S W Method Of Travel To Work By Occupation (a) (Released at 11:30 AM (CANBERRA TIME) 29/02/2008.)
- ¹⁹⁷ LM,Wen; N,Orr;C,Millett;C,Rissel, " Driving to work and overweight and obesity: findings from the 2003 New South Wales Health Survey, Australia," *International Journal of Obesity* (2006) 30, 782-786.
- ¹⁹⁸ LM,Wen & C,Rissel, " Inverse associations between cycling to work, public transport, and overweight and obesity: Findings from a population based study in Australia." *Preventative Medicine* 46 (2008) 29-32.
- ¹⁹⁹ Note 5 at 21.
- ²⁰⁰ E, Leslie. N, Coffee. L, Frank. N, Owen. A, Baumann. G, Hugo. (2007) "Walkability of local communities: using geographic information systems to objectively assess relevant environmental attributes." *Health & Place*, 13:111-22
- ²⁰¹ Note 188 at 37.
- ²⁰² Note 124 at 93.
- ²⁰³ Note 188 at 37.
- ²⁰⁴ Note 188 at 37.
- ²⁰⁵ >accessed 17 July 2012.
- ²⁰⁶ <http://www.healthylives.org.au/userfiles/Geelong%20Walkability%20Toolkit%20June09.pdf> > accessed 17 July 2012.
- ²⁰⁷ <http://www.geelongaustralia.com.au/common/Public/Documents/8cd9bd471204de4-Walkability%20Toolkit.pdf> at 6.
- ²⁰⁸ accessed 17 July 2012.
- ²⁰⁹ The Australian Government, National Health and Medical Research Council, <http://www.nhmrc.gov.au/your-health/nutrition/review-dietary-guidelines> > Viewed 20 August 2012.
- ²¹⁰ Note 209.
- ²¹¹ Note 209.
- ²¹² Between December 2011 and 29 February 2012.
- ²¹³ Information provided to the author by Emma Breen, Acting Assistant Director for Dietary Guidelines, the Australian Government, National Health and Medical Research Council, 31 October 2012.
- ²¹⁴ Australian Government, Department of Health and Aging and Australian Government, National Health and Medical Research Council <http://www.eatforhealth.gov.au/page/public->

[consultation](#) > 20 August 2012.

²¹⁵ Note 209.

²¹⁶ Note 209.

²¹⁷ Note 209 and Note 214.

²¹⁸ The survey included 13,858 people aged two and over and used a 24-hour food recall method to provide a representative indication of food consumption. A second 24 hour recall was collected on a subset of respondents and nutrient intakes from the first day were adjusted to estimate "usual intake" by including information from the second 24-hour record-
<http://www.abs.gov.au/ausstats/abs@.nsf/mf/4802.0/> > viewed 18 July 2012.

²¹⁹ Note 25 at 1.

²²⁰ Note 25 at 199.

²²¹ Note 100 at 9.

²²² Note 100 at 9.

²²³ Note 124 at 103.

²²⁴ Note 6.

²²⁵ Note 100 at 9.

²²⁶ Note 25 at 148.

²²⁷ Note 124 at 102.

²²⁸ Note 100 at 9-10.

²²⁹ Note 124 at 103.

²³⁰ Note 101 at 25.

²³¹ D, Gillespie, *Sweet Poison, Why Sugar Makes Us Fat*, (Victoria: Penguin Group (Australia), 2008) at 143.

²³² Note 101 at 25.

²³³ Note 101 at 25.

²³⁴ Information provided by NSW Health to the author in a written statement, 1 August 2012.

²³⁵ NSW Health, Health Statistics New South Wales, Selected Reports,
http://www.healthstats.nsw.gov.au/Indicator/beh_veg_stagage > viewed 12 September 2012

²³⁶ Note 235.

²³⁷ Note 170 at 16.

²³⁸ Note 25 at 13

²³⁹ Note 25 at 93.

²⁴⁰ Note 3 at 95.

²⁴¹ Note 25 at 13.

²⁴² Note 25 at 162.

²⁴³ Note 25 at 162.

²⁴⁴ The Australian Guide to Healthy eating,

<http://www.health.gov.au/internet/healthyactive/publishing.nsf/content/recommended-daily-servings>> viewed 20 August 2012.

²⁴⁵ Note 25 at 163.

²⁴⁶ Note 25 at 164.

²⁴⁷ Note 231.

²⁴⁸ <http://www.australianbeverages.org/scripts/cgiip.exe/WService=ASP0002/ccms.r?Pageld=10079>

⁰⁷⁹

²⁴⁹ Note 13 at 32.

²⁵⁰ Note 13 at 32.

²⁵¹ Note 231 at 83.

²⁵² Note 231 at 83.

²⁵³ Note 231 at 93.

²⁵⁴ Note 128 at 15.

²⁵⁵ Note 124 at 92.

²⁵⁶ Note 124 at 92.

²⁵⁷ Note 3 at 203.

²⁵⁸ Note 3 at 203 and Note 5 at 13.

²⁵⁹ Note 5 at 13.

²⁶⁰ Note 5 at 13.

²⁶¹ Note 124 at 92

²⁶² Australian Government, Department of Health and Aging, *An active way to better health, National Physical Activity Guidelines for Adults*, Guideline 3 (Canberra, 1999, Reprinted 2005) at 2.

²⁶³ Note 262 at 2.

²⁶⁴ Note 262 at 2.

²⁶⁵ Note 262 at 2.

²⁶⁶ Note 262 at 2.

²⁶⁷ Note: The AIHW's *Australia Health 2010* (Note 124) warns that the NHS 2007-08 (Note 100) "data cannot be used to measure compliance with the national guidelines. However, by using the number of days on which exercise was undertaken over a 1-week period as a proxy for the number of sessions, [this] data enables activity levels to be calculated." at 92.

²⁶⁸ Note 101

²⁶⁹ E-mail advice confirming the most recent Commonwealth reports and statistical analysis on the issue of obesity from Debbie Vanderdonk, Australian Institute of Health & Welfare, 23 July 2012.

²⁷⁰ Note 128 at 4.

²⁷¹ Note 128 at 16.

²⁷² Note 124 at 93.

²⁷³ Australian Institute of Health and Welfare, *Risk factors Contributing to Chronic Disease*, Cat. No. PHE 157 (Canberra, AIHW, March 2012) at 27.

²⁷⁴ Note 124 at 93.

²⁷⁵ Australian Bureau of Statistics, *Participation in Sport and Physical Recreation, Australia*, ABS cat no. 4177.0 (Canberra, 21/12/10 released at 11.30 am) and Note 24 at 204.

²⁷⁶ Note 3 at 207.

²⁷⁷ Note 273 at 29.

²⁷⁸ Note 124 at 94.

²⁷⁹ Note 273 at 29.

²⁸⁰ Note 3 at 206.

²⁸¹ Note 3 at 206.

²⁸² Note 124 at 96.

²⁸³ This allowed for different activities to be recorded for small blocks of time, over four 24-hour periods (2 days prior to the face to face interview and two days prior to the telephone interview). From this data, time spent on moderate to vigorous physical activity and time spent on screen-based activities (for example, watching television or DVDs, or using a computer) was assessed against the national recommendations p.6 survey – Note 124 at 96.

²⁸⁴ All Days Method-a child meets the guidelines if he or she accumulates at least 60 minutes of moderate to vigorous physical activity (MVPA) on each of the four-days sampled.

Most Days Method- a child meets the guidelines if he or she accumulates at least 60 minutes of MVPA on most (i.e three or four) of the four-days sampled.

Four day Average Method-a child meets the guidelines if he or she accumulates at least 60 minutes of MVPA per day when averaged across the four days sampled.

Child x Day Method- The probability that are randomly chosen child on a randomly chosen day will accumulate at least 60 minutes of MPVA on that day.

²⁸⁵ Note 101 at 28.

²⁸⁶ Note 101 at 27.

²⁸⁷ Note 101 at 31: All Days Method-a child meets the guidelines if he or she accumulates no more than two hours of screen time on each of the four days sampled.

Most Days Method-a child meets the guidelines if he or she accumulates no more than two hours of screen time on most (i.e. three or four) of the four days sampled

Four-day Average Method-a child meets the guidelines if he or she accumulates no more than two hours of screen time when averaged across the four days sampled.

Child x Day Method-the probability that are randomly chosen child on a randomly chosen day will accumulate no more than two hours of screen time on that day.

²⁸⁸ Note 101 at 31.

- ²⁸⁹ Note 101 at 31.
- ²⁹⁰ Note 124 at 97.
- ²⁹¹ Note 101 at 31.
- ²⁹² L, Hardy. L.King. D, Hector. B, Lloyd, " Weight status and weight-related behaviors of children commencing school," (2012) *Preventive Medicine*, <http://dx.doi.org/10.1016/j.ypmed.2012.09.009>
- ²⁹³ Note 292 at 3.
- ²⁹⁴ Note 292 at 4.
- ²⁹⁵ NSW Health, Health Statistics New South Wales, Selected Reports, http://www.healthstats.nsw.gov.au/Indicator/beh_phys_age/beh_phys_age?filter1ValueId=0&filter2ValueId=0, viewed 12 September 2012
- ²⁹⁶ NSW Health, Health Statistics New South Wales, Selected Reports, http://www.healthstats.nsw.gov.au/Indicator/beh_phys_age/beh_phys_age?filter1ValueId=0&filter2ValueId=0, viewed 12 September 2012
- ²⁹⁷ Note 13 at 36.
- ²⁹⁸ Note 101 at 17
- ²⁹⁹ Note 234.
- ³⁰⁰ The Audit Office of New South Wales, "[*Physical activity in government primary schools, Department of Education and Communities*](#)," (Sydney, 13 June 2012) at 3.
- ³⁰¹ Note 300 at 3.
- ³⁰² Note 300 at 4.
- ³⁰³ Note 300 at 5-6.
- ³⁰⁴ Note 25 at 42.
- ³⁰⁵ The National Health and Medical Research Council was first constituted in September 1936. The current legislative basis of the Council is the [*National Health and Medical Research Council Act 1992 \(NHMRC Act\)*](#). The NHMRC also has responsibilities under the [*Prohibition of Human Cloning for Reproduction and the Regulation of Human Embryo Research Amendment Act 2006*](#) which came into operation on 12 June 2007. Obligations of NHMRC under the [*Prohibition of Human Cloning for Reproduction Act 2002*](#) and the [*Research Involving Human Embryos Act 2002*](#) include the development and implementation of a program for reviewing and enhancing relevant guidelines, and the provision of administrative improvements in the licensing process.
- ³⁰⁶ <http://www.nhmrc.gov.au/about/organisation-overview/nhmrcs-role> > viewed 27 August 2012.
- ³⁰⁷ Note 25 at 42.
- ³⁰⁸ Note 25 at 55.
- ³⁰⁹ Australian Government, National Health and Medical Research Council, http://consultations.nhmrc.gov.au/public_consultations/clinical-practice-guideline-m > 19/06/2012.
- ³¹⁰ Note 12 at vii
- ³¹¹ Note 12 at vii
- ³¹² <http://www.sign.ac.uk/guidelines/fulltext/115/index.html>
- ³¹³ <http://consultations.nhmrc.gov.au/files/consultations/drafts/2obesitysystematicreview.pdf>
- ³¹⁴ Established by the *Food Standards Australia New Zealand Act 1991*.
- ³¹⁵ Note 25 at 49.
- ³¹⁶ Note 25 at 52.
- ³¹⁷ <http://www.aihw.gov.au/health-priority-areas/>. Viewed 28 August 2012.
- ³¹⁸ Note 25 at 50.
- ³¹⁹ <http://www.aihw.gov.au/health-priority-areas/>. Viewed 28 August 2012.
- ³²⁰ Note 25 at 51.
- ³²¹ Note 25 at 51.
- ³²² A short guide to the Intergovernmental Agreement on Federal Financial Relations and The Federal Financial Relations Framework explains the framework: <http://www.federalfinancialrelations.gov.au/content/guidelines/Short-Guide-Intergovernmental-Agreement.pdf> .viewed 29 August 2012.
- ³²³ <http://www.health.gov.au/internet/main/publishing.nsf/content/phd-prevention-np> > viewed 27 August 2012.

³²⁴ Note 323.

³²⁵ Note 323.

³²⁶ Information provided to the author by Anna Davies of ANPHA, 12 September 2012.

³²⁷ Information provided to the author by Debbie Hurlbut, Acting director, National partnership Section, Healthy Living and Chronic Disease Program Branch/Population Health Division, Department of health and Ageing, 10 October 2012.

³²⁸ Note 327.

³²⁹ Variation to the National Partnership Agreement on Preventative, Intergovernmental Agreement on Federal Financial Relations, Schedule B, Clause 15, 28 June 2012, http://www.federalfinancialrelations.gov.au/content/national_partnership_agreements/health/preventative_health/variation/Preventive-Health-NP-variation.pdf

³³⁰ Note 329.

³³¹ Note 329.

³³² Note 329.

³³³ Note 329.

³³⁴ Note 329.

³³⁵ Note 329.

³³⁶ Information provided by NSW Health to the author in a written statement, 21 September 2012.

³³⁷ Following the commencement of the [Australian National Preventive Health Agency Act 2010](#) on 1 January 2011. The [Revised Explanatory Memorandum](#), circulated by authority of the Minister for Health and Aging, the Hon Roxon, MP, explains the aims and operations of the Act.

³³⁸ National Preventative Health Taskforce, "[Australia: the healthiest country by 2020, National Preventative Health Strategy- the Roadmap for Action](#),"(Canberra, 20 June 2009) at 37.

³³⁹ <http://www.anpha.gov.au/internet/anpha/publishing.nsf/Content/aboutanpha> > viewed 11 September 2012.

³⁴⁰ <http://www.health.gov.au/internet/main/publishing.nsf/content/phd-prevention-np> > viewed 27 August 2012.

³⁴¹ Australian National Preventative Health Agency, Operational Plan 2012-2013, (Canberra, 24 August 2012) at 4.

³⁴² Note 452 at 7.

³⁴³ <http://www.health.gov.au/internet/main/publishing.nsf/Content/phd-prevention-np#children> > viewed 24 September 2012.

³⁴⁴ <http://www.anpha.gov.au/internet/anpha/publishing.nsf/Content/symposium-toc> > viewed 12 September 2012.

³⁴⁵ Information about this can be found in the report of proceedings from the Symposium on Social marketing In Obesity and the ANPHA First Year Highlights report- Information provided to the author by Anna Davies of ANPHA, 12 September 2012.

³⁴⁶ <http://anpha.gov.au/internet/anpha/publishing.nsf/Content/news-2012052> >viewed 12 September 2012.

³⁴⁷ <http://www.anpha.gov.au/internet/anpha/publishing.nsf/Content/strategy-consultation-draft> > viewed 12 September 2012.

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³⁶⁵ Note 336.

³⁶⁶ Note 234.

³⁶⁷ Note 234.

³⁶⁸ Note 234.

³⁶⁹ Note 234.

³⁷⁰ Note 343.

³⁷¹ Note 336.

³⁷² Note 234.

³⁷³ Note 234.

³⁷⁴ Note 234.

³⁷⁵ Note 234.

³⁷⁶ Note 343.

³⁷⁷ Note 336.

³⁷⁸ Note 336.

³⁷⁹ Note 336.

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- ⁴⁰³ Note 234 and Information provided by NSW Health to the author in an email dated 17 September 2012.
- ⁴⁰⁴ Act notified 1 March 2012, <http://www.legislation.act.gov.au/a/2011-32/>
- ⁴⁰⁵ Section 109 *Food (Nutritional Information) Amendment Act 2011*
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- ⁴¹⁰ Letter of the Minister of Health, Hon. Daniel Andrews, MP -
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- ⁴²² Note 336.

Members

- Professor Ronald Penny AO, Emeritus Professor of Medicine, University of New South Wales.
- Professor Kerryn Phelps AM, Adjunct Professor, School of Public Health, Sydney University and Conjoint Professor in the School of Public Health and Community Medicine, University of New South Wales.
- Professor John Dwyer AO, Emeritus Professor of Medicine, the University of New South Wales.

- Mr Craig Bosworth, General Manager, Strategy and Stakeholder Relations, National Health Call Centre Network.
- Ms Sandra Bailey, Chief Executive Officer, NSW Aboriginal Health & Medical Research Council.
- Ms Kerry Stevenson, Divisional Manager Primary, Community and Allied Health, Central Coast Local Health District

⁴²³ Note 415.

⁴²⁴ Note 415.

⁴²⁵ Note 234.

⁴²⁶ Note 224 and Note 336.