Food Security and Health in Rural and Remote Australia

By the National Rural Health Alliance
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Abbreviations

ABS  Australian Bureau of Statistics
ACOSS  Australian Council of Social Services
ACT  Australian Capital Territory
AEGIC  Australian Export Grains Innovation Centre
AHS  Australian Health Survey
AIIFS  Australian Institute of Family Studies
ANAO  Australian National Audit Office
APY  Anangu Pitjantjatjara Yankunytjatjara
CALD  Culturally and linguistically diverse
CATI  Computer assisted telephone interviewing
CATSI  Corporations (Aboriginal and Torres Strait Islander) Act 2010
COAG  Council of Australian Governments
CPI  Consumer Price Index
CSIRO  Commonwealth Scientific and Industrial Organisation
EU-FAA  European Union Food and Agriculture Agency
FAO  Food and Agriculture Organisation of the United Nations
FASD  Foetal Alcohol Spectrum Disorder
FBA  Foodbank Australia
FTA  Free Trade Agreement
GST  Goods and Services Tax
HIV  Human Immunodeficiency Virus
IPCC  Intergovernmental Panel on Climate Change
IQ  Intelligence Quotient
NATSIHS  National Aboriginal and Torres Strait Islander Health Survey
NHANES  National Health and Nutrition Examination Survey (USA)
NHMRC  National Health and Medical Research Council
NSW  New South Wales
NT  Northern Territory
NTER  Northern Territory Emergency Response
OECD  Organisation for Economic Co-operation and Development
PBS  Portfolio Budget Statements
Qld  Queensland
RIRDC  Rural Industries Research and Development Corporation
SA  South Australia
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<td>South Australian Council of Social Services</td>
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<td>TNCs</td>
<td>Trans-national corporations</td>
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Foreword

Even though Australia is a net food exporter and a wealthy nation overall, 5 to 8 per cent of its citizens may go to bed hungry because they do not have access to affordable, healthy, nutritious food.

The Agricultural Competitiveness White Paper, *Stronger Farms, Stronger Economy*, refers to the food security in its Terms of Reference. As a major agricultural producer, Australia has significant opportunity to supply expanding food markets in Asia and Oceania. It will be important for this to be managed in such a way as to give full consideration to domestic food security.

This report describes and analyses the prevalence of food insecurity in Australia and the consequent adverse implications for the health and productivity of individuals and communities. It proposes options aimed at improving the health and wellbeing of Australians who experience food insecurity. It notes the role of the agricultural sector in addressing Australian food security. It also highlights the prevalence food insecurity in remote Aboriginal and Torres Strait Islander communities.

From canvassing some of the actions already underway to address food insecurity by Commonwealth, state and territory governments and by the community sector, the report proposes ways in which the situation could be better managed. A national strategy for food security, a targeted research agenda and data collection, and the development of new and coordinated or additional policy and program approaches are suggested. Among other things, this report makes the case for food security considerations to be incorporated into an integrated national discussion about health, agriculture, water resource management, supply chains, taxation and trade. It also underscores the need for a comprehensive cost benefit analysis of the impact of food insecurity for remote and rural Australian communities.

Research, development and innovation will help to discover and apply new ways of managing sustainable food production, including by reducing food waste, encouraging local and regional food supply and improving supply chains to better meet the needs of communities in remote Australia.

The National Rural Health Alliance (NRHA) has a particular interest in people who live in rural, remote and very remote parts of Australia. These include Aboriginal and Torres Strait Islander people, who experience food insecurity in conjunction with a range of other health risk factors. Given these serious, complex and persistent issues, this research report has given special attention to food security among Indigenous people. It identifies the need to address food insecurity in pregnant women and in early childhood to make lasting improvements in the health status of Aboriginal and Torres Strait Islander children.

This report has been produced by the NRHA and forms part of RIRDC’s National Rural Issues Research and Development program. The program aims to inform and improve policy debate by government and industry on national and global issues relevant to agriculture and rural policy in Australia, by targeting current and emerging rural issues, and producing quality work that will inform policy in the long term.

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**John Harvey**  
Managing Director  
Rural Industries Research and Development Corporation
Executive Summary

Australia produces over 90 per cent of its domestic food requirements. Compared with many other nations, it is in a global sense ‘food secure’. However, within the Australian population there are some people who regularly experience food insecurity and a greater number for whom it is an occasional issue.

In a country as generally affluent as Australia, this situation is perhaps surprising. It is certainly a situation we should do something about.

Fundamentally, food security and insecurity are determined by economic means. Food insecurity can be a consequence of a range of disadvantages, given their simplest expression in the word 'poverty'. Most frequently and most simply, it is low income that is the issue: financial poverty.

However it might also be 'mobility poverty' that is involved: an inability to access food due to the absence of means of transport, or physical immobility. Or it might be 'communications poverty': the inability of a consumer to express their wishes and needs due to language, physiology or technical barriers. Or it might be the absence of the knowledge and skills needed to know what a healthy diet is and how to manage food appropriately.

Frequently these various types of vulnerability go hand-in-hand, with some individuals and families experiencing challenges on several fronts simultaneously.

The population groups at greatest risk of food insecurity include some Aboriginal and Torres Strait Islander people, families with no employment or low income, welfare recipients, single parent families, and some others in more remote areas of the nation.

This Report describes the human health effects of food insecurity, and explores the policy and program settings currently in place to try to address it nationally and in the various jurisdictions. It then considers the means by which the challenges might be better managed.

One of the particular interests of the NRHA is the extent to which 'rurality' (or distance from major centres) affects the incidence of food insecurity. Unfortunately most of the data sources relevant to the issue of food insecurity are poor at distinguishing populations in remote locations from other areas.

In exploring the effect on human health, the report takes a whole of life approach, examining the health impact of food insecurity prior to birth, at birth to age 4, 5 to12 years of age, 13 to18 years of age, into adulthood and into old age.

Finally, based on the evidence presented, the report proposes options for dealing with food insecurity in Australia.

The purpose of the Report is to bring these issues to the attention of policy makers and researchers, and to promote their discussion. Working collaboratively, governments, communities, researchers, non-government organisations and the private sector can reduce the incidence of food insecurity and its adverse human effects.
Key findings

The key findings of this report are that:

- Australia lacks a National Food Security Strategy, which builds on plans at state and territory level.
- Data describing food security in Australia is incomplete and under-sampled in remote and isolated communities.
- There is a need for a comprehensive cost benefit analysis of the impact of food insecurity for remote and rural Australian communities.
- Food insecurity is worst in remote Aboriginal and Torres Strait Islander communities. Improved food security will help to close the health gap.
- Food insecurity has adverse health and social effects across the whole of life – from infancy through to old age. The human health impact includes higher rates of chronic diseases and this is felt most significantly in rural and remote communities.
- Food insecurity results in lower levels of educational achievement and poorer health, both of which negatively influence productivity and growth in rural and remote communities.
- International research demonstrates that food insecurity in childhood can be addressed and that adverse health impacts can be reduced.
- A range of options to address food security at the community level currently exist and are presented.
- Government policy needs to recognise the links between food insecurity and obesity, including for women from vulnerable populations.

Future Options

To help address the incidence and impacts of food insecurity in rural and remote Australia, consideration could be given to the following options:

Strategy

1. A National Food Security Strategy developed and managed jointly by the Departments responsible for health, agriculture and natural resources.

Research agenda

2. A National Food Security Strategy that includes an appropriately funded research agenda that addresses:
   i. Economic research into the cost of food insecurity in Australia today and modelling the benefits of different policy interventions.
   ii. Agricultural research into improved productivity and increased yields, improved pest and weed management, better use of water resources and development of crops that adapt to variable climatic conditions.
iii. Innovative approaches to addressing food insecurity and translation of successful models into different community settings.
iv. Longitudinal research on the effect of food insecurity on children over the life course.
v. Regular communication of the range and status of research projects and emerging issues in food security research.

Data collection
3. A review of the adequacy of statistical collections measuring food insecurity in Australia by Commonwealth, state and territory governments.
4. Adjustment of sampling methodologies for surveys measuring food security in Australia to ensure data from remote and very remote participants is collected for analysis and reporting. Additional questions could be included to improve the sensitivity of measures of food security.
5. The annual conduct and reporting of a National Healthy Basket Survey, with results analysed by remoteness area. The foods included should reflect the needs of nursing mothers and children aged up to 3 years of age.

Policy
6. The inclusion of food security in national policy discussions about tax, the environment, trade and income support.
7. The development of policies addressing food insecurity that consider and respond to both its causes and effects.
8. Reporting on national rates of food security coordinated by a single agency, working with all jurisdictions.
9. Promoting food security as part of a coordinated national approach to addressing poverty and inequality.

Potential approaches
10. Making available small start-up grants (e.g. up to $5000) to support local community action to address food insecurity. Activities funded could include development of a local community garden and/or kitchen, establishing a local farmers’ market, and establishing a community cooperative to support the sale of locally grown produce.
11. Should subsidisation of healthy foods be considered, options to fund the subsidy could be developed by an independent agency, such as the Productivity Commission, and may include consideration of a 'Healthy food levy' applied to energy-dense foods to support the distribution of healthy foods into rural and remote communities.
12. Recognising that not-for-profit and charitable food aid is one approach to addressing food insecurity but should not be the only approach supported.
1. What is Food Security?

Food security matters immensely; it is a topic of keen interest to policy makers, practitioners and academics around the world in large part because the consequences of food insecurity can affect almost every facet of society (1).

Food security is a global issue and has been the focus of actions by international, national, state and local organisations, including the United Nations and the FAO, since the 1970s.

There are three levels of food security generally referred to in the academic literature:

- full access to an affordable, nutritious diet, or full food security
- partial access to an affordable, nutritious diet, without hunger being present, which is often referred to as 'food deficiency'
- partial or limited access to an affordable, nutritious diet, with hunger present, which is referred to as 'food insecurity'.

Prolonged periods of food insecurity lead to malnutrition. A lack of nutrition during childhood development (ranging from the womb to teenage years) in turn can have adverse impacts on mental and physical advancement.

Food security exists in a continuum that commences with the origin of food through agriculture and finishes with the use of food and recycling and disposal of food waste.

The World Health Organization (WHO) uses the definition of food security approved at the World Food Summit (WFS) in 1996:

‘when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life.’

Commonly, the concept of food security is defined as including both physical and economic access to food that meets people's dietary needs as well as their food preferences. In many countries, health problems related to dietary excess are an ever-increasing threat (2).

Other bodies have definitions of 'food security' that differ from that of the WHO.

The European Union Food and Agriculture Agency (EU-FAA) has identified four key concepts that underpin food security:

1. the physical availability of food
2. economic and physical access to food
3. food utilisation
4. the stability of the above three factors over time (3).

For full food security to be achieved, the EU-FAA suggests that all four key concepts – availability, access, use and stability, must be met. The last of these, stability, is particularly important in remote communities in Australia that are affected, for example, by wet season road closures and flooding.

The Victorian Eco Innovation Lab (VEIL) used the following definition in Sustainable and Secure Food Systems for Victoria:

‘the state in which all persons obtain nutritionally adequate, culturally acceptable, safe foods regularly through local non-emergency sources (4).’
This definition deliberately excludes the use of emergency sources such as food relief programs as the means of being food secure and broadens the definition to include the concept of the adequacy of the diet in terms of nutritional and cultural needs.

In the Council of Australian Government (COAG) *National Strategy for Food Security in Remote Indigenous Communities*, food security was determined by:

...people’s local food supply and their capacity and resources to access and use that food (5).

That Strategy goes on to define food access as incorporating:

...the physical and financial resources, supports, and knowledge, skills and preferences that people have to access and consume nutritious food.

This definition is synonymous with the WHO definition, although it does not explicitly include the element of stability included by the EU-FAA.

Addressing food security globally was one of the Millennium Development Goals and is still under discussion as the next stage of those goals is being developed. In 2012, one of the teams reviewing the Millennium goals – Beyond 2015 – estimated that almost 870 million people were food insecure globally. That is 12 percent of the global population (6). About 170 million of those who are food insecure are children, likely to suffer stunted growth as a result of chronic under-nutrition. A further 500 million adults are obese.

The Millennium Development Goals were adopted by all member states of the United Nations, including Australia, in the year 2000. Goal 1 is to eradicate extreme poverty and hunger. One of the targets set was to halve the proportion of people who suffer from hunger in 1990 by 2015. The United Nations is now reporting on progress against these goals and targets. The 2015 *Millennium Development Goals Report* indicates, the proportion of undernourished people in developing countries fell from 23.3 percent in 1990-92 to 12.9 percent in 2014-16 (7).

*Inequalities in access, utilisation and stability of food security and nutrition are evident from the fact that underweight and overweight increasingly affect different groups within the same country or community. Micronutrient deficiency, stunting, underweight, and overweight and obesity are all symptoms of the same underlying problems: poverty, inequality and a dysfunctional food system that is unable to meet the health and nutrition needs of its population. The human rights principle of universality requires that inequalities in access to food and in nutrition outcomes are reduced* (6).

When the Food and Agriculture Organisation of the United Nations (FAO) released its report *The State of Food Insecurity in the World* in 2002, it identified 840 million people globally who were food insecure, with 11 million of those in the industrialised countries, such as Australia (8).

What is notable about FAO and other estimates of the number affected is that the data is not definitive. This Report includes several different estimates of both global and Australian levels of food insecurity. The figures are similar but do not align exactly.

McIntyre describes how the presentation of food insecurity differs between the developing and developed worlds:

• food insecurity is lethal in the developing world, but ‘not obviously so’ in the developed world

• in developing countries, the need for food is a priority for survival; in developed countries, food is ‘the most discretionary of all essential expenditures’
• in developing countries, there is rapid growth in obesity and chronic disease due to dietary changes occurring as countries pass through economic transition; in the developed world, it is the obese who are often both poor and hungry (8).

The Prime Minister’s Science, Engineering and Innovation Council considered the issue of Australia’s role in addressing global food insecurity in its 2012 report *Australia and food security in a changing world*. They began by noting:

_Australia has efficient, low input food production systems which have historically provided significant surplus for export. This has provided food security not only in Australia but supported food security in other nations (9)._ 

The FAO asserts clearly that the right to adequate food is a fundamental human right:

_It is generally acknowledged that hunger is both a violation of human dignity and an obstacle to social, political and economic progress, and a number of countries have enshrined the right to food in their constitutions. Yet to date no country has adopted national legislation to specifically realize this right (10)._ 

The FAO goes on to acknowledge that the State is not required to ensure that every individual receives food, but that when safeguards fail for the vulnerable:

_...the state should provide, especially to those who because of age, disability, unemployment or other disadvantages cannot fend for themselves (10)._ 

Maslow’s Hierarchy of Need is a widely accepted psychological description of the basic drivers of human need. Maslow describes how the most basic level needs must be met for an individual to be able to progress to higher levels of needs through which they contribute to society and go on to eventually be their best self (11). The most basic of needs identified by Maslow, the physiological needs, include food.

![Figure 1. Maslow's Hierarchy of Need (12)](image-url)
2. Agriculture: the building block of food security

The global food system is vulnerable to changing environmental conditions. Climate change along with land and water scarcity will increasingly affect food production on the supply side. At the same time, demand for food will increase as a result of global population and income growth. The growing imbalance between rising demand for food and the capacity to supply it, will lead to greater variability in food production, higher and more volatile food commodity prices, and a higher likelihood of price shocks (13).

The Agricultural Competitiveness White Paper, Stronger Farms, Stronger Economy, begins by acknowledging that global population growth will be one of the drivers of increased food production in Australia (14).

While including consideration of food security in its Terms of Reference, the White Paper only mentions it in passing, noting that increased productivity will support food security, as will improvements in soil management. The White Paper does not examine the agricultural policy settings that are needed to guarantee long-term domestic food security in light of a focus on increasing exports, or the challenges that may be faced, particularly in rural and remote settings, with regard to a range of issues including food supply chains. The White Paper does not consider, for example, how climate change may result in increased severity of storms in Northern Australia which would threaten road and rail infrastructure, impacting on the movement of goods to market and of produce to local stores.

The White Paper notes that global food security requires increased agricultural productivity and that security of the water supply and sustainable resource management are vital to support increased productivity and national food security. It also notes the role of pesticides and chemicals in supporting productivity and food production within a sustainable model (14). The paper further notes the need for ongoing research and development to support increasing productivity together with the formation and maintenance of strategic research partnerships to drive innovation in the agricultural sector.

With regard to domestic food security, the Stronger Farms, Stronger Economy White Paper considers the issue only as far as the farm gate. What it includes is essential, but it does not look outwardly at the broader need for national food security, assuming that increased productivity will be sufficient. It does not explore issues of reducing waste, the role of the food supply chain. Nor does it consider other models of food production, such as home or community gardens and local farmers’ markets, as means of increasing local access to fresh, nutritious foods.

Australia produces in excess of 90 per cent of its domestic food needs and exports more than 60 per cent of its current agricultural production (15). With more than half the world’s population located in the countries bordering the Indian and Pacific oceans, Australia is strategically placed to be a significant supplier of food to the region.

To take up this challenge, Australia will need to comprehensively plan how it will marshal resources to continue to meet local food demands while expanding production to meet export challenges and addressing the range of inherent risks. This will require strategic research and investment across all aspects of agriculture, food production, supply chains and waste management to gain the most effective return on investment within the constraints applied by climate, workforce and location.

Agriculture, climate change and food security

This is a brief discussion about how climate change may impact upon Australia’s food production. It highlights the dynamic between how best to prepare to meet future food security challenges —
developing sustainable models of agriculture capable of supporting the domestic market while maximising export opportunities.

Australia has always been a continent subject to widely differing climatic conditions. The Intergovernmental Panel on Climate Change (IPCC) in 2007 advised that Australia should expect more heat waves, fewer frosts, more rain in NW Australia, less rain in southern Australia, greater frequency of droughts and a rise in sea level of 70mm (16). They went on to note that there will be increased stress to water supply and agriculture, and changes to the natural ecosystem. They also predict a greater frequency of increased intensity bush fires.

The CSIRO *Australian National Outlook 2015* outlines the impact of climate change in Australia, noting that climate change will also lead to greater opportunities for Australian agricultural exports, with demand for our products likely to triple by 2050 (17). In addition, the CSIRO projects increased global prices (17), which will result in increased prices in Australia. While climate change will offer threats and opportunities for the agricultural sector, it will also challenge us to maintain an affordable domestic food supply.
3. The causes of food insecurity

...a poorly nourished population is a less economically productive one...(1)

**Inadequate access to Food**

In Australia, while only a relatively small percentage of people are food insecure, they are amongst the most disadvantaged in our society, often dealing with multiple layers of disadvantage. The data available indicates that the groups most affected by food insecurity are Aboriginal and Torres Strait Islander people, single parent families and people on welfare benefits. These groups are disproportionately represented in rural and remote communities where geographic isolation exacerbates difficulties in accessing affordable food.

The photograph below was posted on Twitter on 6 April 2016. It shows items purchased that day for $14 from the only grocery store in Wilcannia. It sharply illustrates why food security is an issue in Australia for those living in remote locations.

![Image of items purchased for $14 in Wilcannia](source: Grumplestiltskin @2FBS. Used with permission)

**Figure 2. What $14 will buy you in Wilcannia**

**Inadequate supply of food**

An inadequate supply of food in a particular place, as for other goods, may be the result either of logistical challenges (i.e. the goods can't get through) or, in a free market or unsubsidised situation, of inadequate demand making it uneconomic for supply to be effected by the private sector.

The logistical challenges become greater with greater distances and sparser populations. Supplying the food needs of communities in remote Australia places significant pressure on supply chains. Not only are the distances vast, but perishable items need to be correctly stored for lengthy periods while in transit.

The combination of logistical challenges and small populations (and so low levels of demand) means that fresh food is sometimes simply not available in more remote areas. The corollary of this is that
the food that is available in remote areas is of poorer quality, more expensive, and less varied in terms of brands, size and type.

Caraher and Coveney argue that the food choices available to us are moulded by corporate interests (18). For example, when the WHO challenged the international food industry over the industry’s promotion of certain types of processed foods and fats, the industry lobby threatened to ‘scupper WHO’ by lobbying to cease or reduce government contributions to it. (18). Globally, food is big business. Caraher and Coveney’s argument is that public health food policy has only operated within a narrow boundary – the impact of poor nutrition on individuals – and that food security needs to be addressed within the global economy (18).

**Affordability of food**

On average the income of families in rural and remote areas is some 15-20 per cent lower than that of families in the major cities. Families with particularly low incomes may sometimes be unable to afford to eat healthily.

This situation may be compounded by the fact that energy-dense foods are cheaper, resulting in higher rates of chronic disease, poorer oral health and lower wellbeing.

**Inappropriate use of food**

Food security is higher amongst those with good access to food knowledge and skills, storage, preparation and cooking facilities (19). In many remote communities, food knowledge and access to appropriate storage and cooking facilities is limited resulting in increased wastage of food.

Refrigeration systems, both along the cold chain and in stores and homes in more remote areas, may also be compromised due to higher costs of purchase and maintenance, further compromising the ability of people living in remote communities, and particularly in remote Aboriginal communities, to access a healthy, nutritious diet including fresh fruit and vegetables.

**Trade policy and food security**

The increasing development of free trade agreements (FTAs) opens Australia’s access to export markets and increases the range of food products that can be imported into Australia. It also results in changes in the exemptions linked to foreign investment in agribusiness between the signatory nations (20), including the purchase of agricultural land by foreign investors. This has the potential to result in an increasing percentage of Australian food production moving into foreign hands, and possibly being excluded from the domestic food supply.

Government has a significant role to play in determining the conditions attached to the sale of Australian agri-businesses and in safeguarding the Australian domestic food supply while also supporting growth in international trade.

Friel et al argue that in trade negotiations, economic arguments are used with no consideration of health-related impacts. The result is therefore agreements that may ultimately result in weakened public health (21).
Case Study

The consumption of milk and dairy products in China has grown considerably in the last 15 years (22). The China-Australia Free Trade Agreement covers a range of areas, including dairy products, that will see the reduction or elimination of importation tariffs over an agreed period (for dairy it will include the elimination of a 20% tariff over 4-11 years) (23).

Part of the growth in dairy products has been due to the increasing use of baby formula to feed children. The growth in the use of formula in China has also led to a number of significant baby formula adulteration scandals in China, reducing the perceived safety of the local Chinese produce (24). This has resulted in significant shortages of baby formula in China, which has played out in Australia where visiting Chinese tourists have bought stocks of formula to send back to China, leading to intermittent shortages of baby formula in Australia (25).

Australian dairy products are seen as safe products in China, reflected in the purchase of formula by tourists and in moves for major Chinese investors to purchase the largest Australian dairy farm (1). The conditions attached to the sale not only require the payment of relevant taxation in Australia but also refer to the sale of food and other products overseas (26).
4. The groups affected by food insecurity

In their 2013 monograph *Food Security in Australia*, Farmar-Bowers, Higgins and Millar note that although Australia is often assumed to be food secure, a significant proportion of its citizens experience food insecurity from time to time (27) (28) (17) (27). They identify the people at greatest risk of food insecurity as:

- those on low incomes and the unemployed
- Aboriginal and Torres Strait Islander people
- more likely to be public housing tenants
- culturally and linguistically diverse groups
- those without access to public transport
- disabled, ill and frail people (19) (29) (28).

Data released recently from the Australian Health Survey and the Australian Aboriginal and Torres Strait Islander Health Survey indicates that between 5 and 8 percent of the Australian population ran out of food at least once in the previous 12 months and could not afford to buy additional food. This figure appears to have been relatively stable over the last ten years. In Australia, the target set in the Millennium Goals of halving the proportion of people who suffer from hunger has not yet been met.

The Aboriginal and Torres Strait Islander Health Survey reports different figures to those reported in the Australian Health Survey. Overall, 22 per cent of Aboriginal and Torres Strait Islander people surveyed indicated that they had run out of food at least once in the past 12 months and were unable to buy more. Further examination shows that this was the case for over 30 percent of Aboriginal and Torres Strait Islander people living in remote and very remote locations, compared with 20 per cent of those living in major centres.

Both the Australian Health Survey and the Australian Aboriginal and Torres Strait Islander Health Survey include notations to the effect that they use sampling methodologies that may result in under-reporting of results for people living in remote and very remote areas.

Evidence for NSW is available from its Population Health Survey. It is conducted using Computer Assisted Telephone Interviewing (CATI) technology and so relies on people having access to a phone (landline or mobile).

Being based on CATI, the survey may under-sample people on low income, in public housing and in more remote areas where telephone connectivity is poor or unreliable. It may therefore under-estimate the number and proportion who are regularly or occasionally food insecure.

That survey indicated that food insecurity was experienced by between 5 to 7 per cent of the NSW population aged 16 years and older in 2002, 2007 and 2014.

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The affected proportion in older age groups (45 and over) was similar in all three years, while the proportion in younger cohorts varied quite considerably, year to year.

In 2012, that same NSW survey, using the same criterion, found that about 5 per cent of children from birth up to 15 years and 10 per cent of young people aged 16 to 24 years lived in households that had experienced food insecurity.  

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By contrast, the 2011-12 Australian Nutrition and Physical Activity Survey reported that just 3 per cent of people aged 18 to 24 years in NSW had run out of food in the previous 12 months.

Other Australian research indicates that those aged 70 to 80 years are more severely affected by poor food security, particularly when the individual is on welfare and in rented accommodation.

The NSW survey suggests that food insecurity increases from major cities to inner regional and then outer regional areas, and that the disparity was greater in the later years.


**Figure 5. NSW – the percentage aged over 16 who experienced food insecurity by remoteness 2002-2014**

**Food insecurity among Aboriginal and Torres Strait Islander People**

The 2012-13 Australian Aboriginal and Torres Strait Islander Health Survey (28) found that remoteness was a significant factor correlated with food insecurity. Up to 31 per cent of remote Indigenous households reported food insecurity, compared with 20 per cent in non-remote areas.

That survey indicated that, overall, approximately 20 per cent of Aboriginal and Torres Strait Islander Australians ran out of food at least once in the previous 12 months, compared with an estimated 4 per cent of non-Aboriginal and Torres Strait Islander Australians aged 2 years or older (28).

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In 2015, in *Food Security in Remote Indigenous Communities*, the Australian National Audit Office (ANAO) confirmed that poor nutrition is a significant contributing factor to the total burden of disease for Indigenous Australians (36).

![Figure 6. Australia – percentage of households that experienced food insecurity by Indigenous status](http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/3A04B813D2132333CA257E5F0016080D/$File/australian%20health%20survey%20nutrition%20%20state%20and%20territory%20results.pdf)
The proportion of Aboriginal and Torres Strait Islander people who experienced food insecurity varied by age from 18 to 27 per cent (Figure 7). For non-Indigenous Australians the figures were:

- around 8 per cent for 2 to 3 year olds
- around 5 per cent for those up to 30 years
- 4 per cent of 31 to 50 year olds
- 2 per cent for those over 50.

Source:

**Figure 7. Australia – prevalence of food insecurity for Aboriginal and Torres Strait Islander people and non-Indigenous Australians by age and remoteness**
The impact of rurality on prevalence of food security nationally is unknown given that most surveys are not inclusive of people in remote and very remote Australia. Under-sampling in remote and very remote locations is a significant issue that is still to be addressed (19).^5


**Figure 8. NSW – percentage of people aged 16 and over who were food insecure by remoteness, 2002–2014**

Despite the likely under-sampling of those most at risk of food insecurity, the NSW survey suggests food insecurity at levels well above national rates. Further comparative analysis is indicated to clarify the differences.

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5. The health effects of food insecurity

Food insecurity has a significant effect on both physical and mental wellbeing. Over the long term it places people at risk of malnutrition.

International research has indicated that it may result in a wide range of physical and mental health symptoms and behavioural issues including:

- disturbed sleep patterns (30)
- maternal depression (31)
- obesity (32) (33)
- type 2 diabetes (34)
- school absenteeism (35)
- poorer child health and higher rates of hospitalisation (36) linked to poorer parenting and poor infant feeding practices (32)
- increased prevalence of chronic conditions, higher levels of iron deficiency with anaemia and poor developmental outcomes for children (37).

Food insecurity in children is likely to have an adverse impact on health and wellbeing through the child’s life trajectory. As Brewster indicates, high rates of microcephaly due to malnutrition impact on the development, health and wellbeing of affected individuals throughout their life (38).

Gampel and Namura report associations between microcephaly and poor verbal, mathematical and visuo-spatial skills together with increased risk of depression and hypertension in adulthood (39). If microcephaly persists into childhood, it also predicts lower IQ (39). Gampel and Namura found that microcephaly together with low birth weight and low Apgar scores were each indicative of higher rates of childhood hospitalisation. They also found that microcephaly alone was a significant long-term predictor of poor psychological functioning, such as depression and social dysfunction (39).

Addressing food insecurity, particularly for pregnant Aboriginal and Torres Strait Islander women, may thus be a key long-term measure in addressing the health gap between Indigenous and non-Indigenous Australians. It is noted, however, that food insecurity is only one cause of microcephaly, which is also linked to Foetal Alcohol Spectrum Disorder (FASD) (40).

Since 2006, systems of compulsory income management have been introduced in the Northern Territory and are being introduced elsewhere in Australia together with voluntary income management systems. Income management is further discussed in Section 10 below.

Food insecurity may result in individuals choosing cheaper foods that lack nutrition, often also being high in energy. This combination of food insecurity and poor nutrition can result in obesity, a paradoxical outcome that needs careful consideration in the policy context. These links are noted in Health and Nutrition in Australia (7) (41) and are the focus of a number of journal articles which are discussed below.

For governments, the main issue is the burgeoning cost of dietary issues impacting through chronic diseases on the health budget (27).

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6 An Apgar score is a test administered to all newborns at 1 and 5 minutes after birth and considers their breathing, heart rate, reflexes, skin colour and muscle tone.
A whole-of-life examination of the impact of food security on human health

Poor food security has multiple effects on the health of individuals and families, including malnutrition, mineral and vitamin deficiencies, mental health problems and, most importantly, chronic diseases. The health effects can be seen very clearly in the context of a whole-of-life approach:

- the 12 months leading up to birth of the infant
- age 0 to 4
- age 5 to 12
- age 13 to 18
- adults
- older age.

A whole-of-life approach permits the consideration of both the health impact of food insecurity and the way in which it may form ‘unholy alliances’ with other major risk factors that impact on health and wellbeing. Such a concatenation of risk factors is difficult to explore due to potential confounding and at present little Australian data is available.

Where communities are dealing with multiple disadvantage, the coalescence of the health effects of food security with the health effects of alcohol use, drug use and smoking has not been explored to date in Australia. This is an area that should be considered carefully as it may be possible that lack of action on food security is compromising interventions to address alcohol and drug health effects.

In developing a conceptual framework in which to consider the influence of household food insecurity, Laraia concludes that the health impacts of food insecurity, moderated through genetic, environmental and life course factors, are:

- early onset puberty
- diabetes
- chronic conditions
- pregnancy complications (42).

Examining these potential impacts across the whole of life allows consideration of the cumulative effects.

The 12 months leading up to birth

Ivers and Cullen discuss a number of American longitudinal studies of large numbers of women, noting that food insecurity is generally associated with poor pregnancy outcomes, including low birth weight and gestational diabetes (43).

From a Californian population based survey, Ivers and Cullen noted that around 35 per cent of women in the lowest socioeconomic quintile, and 20 per cent of those in the second lowest quintile reported food insecurity during pregnancy, compared with 8 per cent in the middle quintile, 4 per cent in the second highest and 0.6 per cent in the highest (43).

They reported that food insecurity was associated with a range of health issues in pregnant women including:
• severe pregravid obesity
• higher gestational weight gain
• a statistically significant level of pre-gestational diabetes in women who were marginally food insecure
• inability to return to pregravid weight status (43).

Pregnant women who were food insecure were also at greater risk of a range of mental health issues, with Ivers and Cullen citing several large US studies that suggested an association between food insecurity and mental health:

• over 30 per cent of women suffering a major depressive episode or generalised anxiety disorder, with the severity increasing with more severe food insecurity
• perceived stress and trait anxiety, which is a response to a perceived threat, and can differ in intensity and duration, depending on the circumstances in which it occurs (43).

Ivers and Cullen also report Carmichael’s research showing severe risks for the baby born to a mother who was food insecure prior to and during her pregnancy, including low birth weight and an increased risk of certain birth defects – cleft palate, d-transposition of the great arteries, tetralogy of Fallot, spina bifida and anencephaly (43).

For mothers with HIV, poor food security also increases the risk of vertical transmission of HIV to the infant (43).

Martorell et al concluded their paper by noting that supplemental feeding of children and pregnant women led to substantial gains in adult human capital and may also lower the risk of cardiovascular disease later in life (44).

From birth to 4 years

Good nutrition for infants and toddlers is essential to set children up for success at school and throughout life.

In an editorial in the Medical Journal of Australia, Parker postulated that one of the sequelae of malnutrition in infancy may be the early onset of dementia (45). He suggested that low birth weight, childhood malnutrition, retarded growth and reduced participation in education are predisposing factors for early onset dementia, and that we are already seeing significantly higher rates of dementia in Aboriginal and Torres Strait Islander people over 45 in the Northern Territory (NT) (45). While Parker was commenting on a single article using recent Australian data, the way in which food insecurity may be associated with dementia is potentially complex and will be explored below.

In their Editorial in the Medical Journal of Australia in 2013, Eades and Stanley point out that children aged 0 to 14 represent 35 per cent of the 2011 population of Australian Aboriginal and Torres Strait Islander people (46). They discuss the impact of diet on Aboriginal children, including the high rate of dental decay and the lack of progress in addressing the gap in child health development (46). They also address the need for Indigenous-led initiatives to address the range of health inequalities and for investment in the health and wellbeing of children to be central to policy initiatives to Close the Gap.

There is a lack of Australian evidence on the impact of diet and food security on the development of healthy infants and children, particularly in rural and remote communities. While the impact of alcohol, drug and smoking on child development is recognised and research is funded to identify gaps and trial interventions, the basic necessity of good nutrition is one of the gaps in the research agenda, together with how diet modifies the level of risk from alcohol, drugs and smoking on the long-term health and wellbeing of children.
Eades and Stanley strongly support improvements in child health and wellbeing being developed and led by Indigenous communities.

The imperative for this is demonstrated in Kruske et al’s paper examining how communication between Aboriginal and Torres Strait Islander mothers and communities and non-Indigenous health workers may be diminished by cultural differences (47). These cultural differences also relate to the way in which Aboriginal parents comply, or choose not to comply, with western medical practices. Aboriginal and Torres Strait Islander communities must take the lead in designing and implementing relevant interventions to support child health to see long term improvements, with support from Indigenous health workers and input from non-Indigenous health workers and researchers as needed and agreed.

Falster and colleagues have brought together a range of administrative databases to examine the factors that contribute to positive early childhood health and development for Aboriginal and Torres Strait Islander children. They note that both infant and child mortality rates are higher for Aboriginal children together with other factors that influence poor health development (48). They also note a current deficiency of research into the drivers of positive development for Aboriginal children and of the characteristics of vulnerable developmental trajectories (48). This is an area for future research and advocacy for agencies working in this field.

With regard to the health impact of poor food security, or at least poor diet, Russell et al describe hospitalisation of Aboriginal children aged less than four years of age in remote Australia due to malnutrition as common, with high rates of hospital readmission (on average 1.9 readmissions per child) and hospital-acquired infections (49).

Brewster highlights the impact of malnutrition on Aboriginal children resulting in:

- high rates of hospitalisation due to respiratory and gastrointestinal infections
- high rates of growth retardation
- iron deficiency
- high rates of wasting and microcephaly (38).

Brewster indicates that malnutrition in infancy and childhood is an important risk factor for the development of a wide range of conditions. Skull et al examine microcephaly and its causes, concluding that malnutrition, both in utero and following birth, can have irreversible effects on intellectual development and behaviour (50).

In a recent review of the state of Indigenous child health, Brewster and Morris examine the issue of malnutrition in Aboriginal and Torres Strait Islander children, noting an earlier study in Bourke indicated hospitalisation rates in Aboriginal children were 10 times higher than in non-Indigenous children, and that on admission, Aboriginal children had three times higher rates of under-nutrition, six times higher rates of anaemia and 36 times higher rates of intestinal parasites (51). They note that since this study the health of Aboriginal children in Bourke has improved but that the situation in the Northern Territory has persisted, citing unpublished data to support this observation (51). Certainly, the presence of high loads of intestinal parasites would not support good health in children.

Ruben and Walker were among the first researchers to discuss the prevalence of malnutrition in Aboriginal children in the Northern Territory by examining children admitted to hospital. They came to the conclusion that approximately 20 per cent of Aboriginal children in the Northern Territory suffered from malnutrition at the time of writing in 1995.

In a 2015 Australian study, White et al found that the rates of observed hospitalisation were considerably higher than the expected rates of paediatric admission, based on previous studies (52). The three key findings from their snapshot of a day’s admissions in a range of different hospital settings found:
the prevalence rates of malnutrition and nutritional risk of paediatric inpatients in multiple tertiary and regional hospitals across Australia are relatively high at 15 and 44 per cent respectively.

- children who are younger, from regional hospitals or with a primary diagnosis of cardiac disease or cystic fibrosis, are more likely to be malnourished and should be targeted for nutrition intervention

- patients who identify as Aboriginal or Torres Strait Islander are more likely to have lower height for age z-scores (52).

**Case study**

In 2009, the Cape York Baby Basket program was implemented across 11 Indigenous Cape York communities (53). The aim of the program was to gain greater engagement between Indigenous women and their families with the health system.

The program provided baskets to expectant women containing items that were appropriate to her stage of pregnancy or for early motherhood. Each participant received three baskets – one in early pregnancy delivered in the home, another immediately prior to expected birth, and the third delivered in the home a few weeks after giving birth (53). The program also included education about nutrition, exercise, smoking and alcohol and baby care.

Evaluation of the Cape York Baby Basket program was undertaken in 2013 (54). The evaluation was unable to establish that improvements in certain key indicators were attributable to the program due to data limitations.

However, key improvements were found in:

- evidence of improved iron levels
- a decline in faltering growth, although this may in part be due to a change in the definition from the CDC definition to the WHO definition during the course of the program (54). Improvement in faltering growth may be due to improved nutrition.

The program has much to recommend it as a model for possible interventions in other remote Indigenous communities. However it is imperative that future project design includes clear measurable outcomes that are agreed with all participants in advance of the implementation of the project, and which remain stable throughout the life of the project.

In an International study, Dubois et al examined the impact of food insufficiency on preschoolers in the USA. Food insufficiency is a form of food insecurity that does not necessarily lead to malnutrition, but which nevertheless affects the growth and development of children. Dubois and colleagues found that the prevalence of food insufficiency was greatest in low income families. They also found that when they controlled for low income, there was an association between food insufficiency and overweight/obesity in preschool children (55). They also found that children who were of low birth weight living in a family with food insufficiency were at higher risk of being overweight by the age of four and a half (55).

**Age 5 to 12 years**

Gwynn and colleagues examined the diets of children aged 10 to 12 in a socially disadvantaged rural location on the NSW north coast. Their study population of 215 children included 82 Aboriginal and Torres Strait Islander children (56). They found that consumption of energy-dense nutrient-poor food represented between 45 and 49 per cent of the children’s daily energy consumption, with fruit and vegetable consumption low for all children. Hot chips, sugary drinks, high-fat processed meats, salty snacks and white bread were the highest contributors to key nutrients and sugary drinks were the...
greatest per capita contributor to daily food intake for all. There were also per capita intake
differences by Indigenous status, with Indigenous boys having a higher intake of energy,
macronutrients and sodium than non-Indigenous boys.

The Australian studies are complemented by the findings of Khanam et al who looked at the impact of
diet in the first years of life on the future schooling outcomes for children in Bangladesh (57). They
found that poor nutrition in childhood resulted in poor health and affected all aspects of schooling
including the age at which children commenced schooling, the regularity of attendance and their
achievement at school (57). They found that poor nutrition affected cognitive development and that
children who had suffered stunting due to poor nutrition performed the worst (57). They also noted
that where children were falling behind at school, stunted children also fell behind in greater numbers – 38 per cent of normal sized children fell behind, while 68 per cent of stunted children fell behind (57).

Casey et al examined the impact of food insufficiency on children from low-income families in the
USA. He reported that food insufficiency has been associated with impaired growth and poor
cognitive development in children, and that food insufficiency and hunger may be associated with
childhood obesity and behavioural, emotional, and academic problems (58).

**Age 13 to 18 years**

Despite extensive searches, no articles were found examining food security and health in teenagers in
Australia.

Internationally, Holben and Taylor examined food insecurity in 12 to18 year olds in the USA and
found that those who lived in both food insecure and marginally food insecure households were
significantly more likely to be overweight or obese than those who lived in food secure households
(59).

In an American behavioural study, Tester and colleagues conducted focus group studies with parents
to examine the behaviour of overweight and/or obese children. The focus groups used included
parents from food secure homes and food insecure homes to discuss behaviour of their children with
regard to food. From the conversations, and from additional probing, parents reported that children
from food insecure homes displayed a range of behaviours including hiding food, binge eating and
night-time eating. These behaviours were not reported in children from food secure homes (60). Such
behaviours will need to be considered in developing initiatives to address food insecurity in this group
of vulnerable adolescents.

A Chilean longitudinal study by Ivanovic et al examined the long term impact of severe
under-nutrition in the first year of life on high school graduates. Their findings were that the long term
effects of malnutrition may impact brain development, IQ and scholastic achievement (61).

A second longitudinal study from Guatemala followed a large cohort of low socioeconomic children,
commencing in 1969 (44). Two groups were included in the study, with one group receiving
substantial nutritional supplements and the second group receiving a drink containing micronutrients
but little protein (44). The cohort was followed up in 1988-89 and again in 2002-04 to determine the
long term impact of supplementary feeding. The findings were that supplementary feeding of children
resulted in:
• higher rates of schooling completion for women
• increased reading comprehension
• higher IQ test results
• higher wages earned by men (women were assumed to have lower workforce participation rates)
• lower risk factors for cardiovascular disease (44).

The Guatemalan study provides good evidence that it is possible to reverse, or at least limit, the effect of food insecurity on the development of children.

**Adulthood**

Recent Australian health surveys clearly demonstrate the differences in food-related diseases and conditions between the Aboriginal and Torres Strait Islander population and the non-Indigenous population. Rates of diabetes and kidney disease in Aboriginal and Torres Strait Islander people are higher and contribute significantly to the burden of disease borne by those living in rural and remote Australia and to the gap in life expectancy between Aboriginal and non-Aboriginal Australians (Table 1, below).

While there is little data on the impact of food security on Australian adults generally, there is recent data on the level of food insecurity in Aboriginal and Torres Strait Islander households and there is also substantial data on the impact of food security on adults in the USA.

Laraia examines the association between food insecurity and weight gain in the USA, suggesting that food insecurity may exacerbate weight gain among some women and that it also was associated with greater gestational weight gain. Her opinion is that as yet the evidence could not answer the question as to whether there was a causal linkage between food insecurity and weight gain (42).

**Table 1. Health factor comparisons of Aboriginal and non-Indigenous prevalence rates**

<table>
<thead>
<tr>
<th>Health Factors</th>
<th>Aboriginal Health Survey 2012-13</th>
<th>Australian Health Survey 2011-12</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of pop'n</td>
<td>% of pop'n</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>8.6</td>
<td>4.6</td>
</tr>
<tr>
<td>Kidney disease</td>
<td>1.8</td>
<td>0.9</td>
</tr>
<tr>
<td>Adults overweight/obese</td>
<td>66</td>
<td>62.8</td>
</tr>
<tr>
<td>Children overweight/obese</td>
<td>29.7</td>
<td>25.7</td>
</tr>
</tbody>
</table>

Source: Australian Bureau of Statistics 4727.0.55.006 and 4362.0.55.003

Laraia explores the nature of the link between food insecurity and chronic disease, reviewing articles that have explored different hypotheses about the ways in which food insecurity may influence human biology (42). She notes that in animal models, food scarcity activates a preference for high-fat, high-sugar foods due to stress. This is not the only biological reaction, as the reward pathway and memory pathway also react, leading to a rapid imprinting of high-fat, high-sugar foods as an effective dampener of food stress (42).

Laraia discusses a number of studies that demonstrate lower levels of fruit and vegetable intake in food insecure households together with poorer quality foods and others that include lower levels of meat consumption (42). After considering a range of papers she finds no association between food insecurity and increased consumption of high-sugar, high-fat foods, suggesting that longitudinal studies are needed to examine this further (42).
An important issue explored by Laraia is whether food insecurity affects chronic disease management. Here, the evidence was clear: food insecurity results in a greater number of hypoglycemic events, making diabetes management more difficult. Laraia supports the need for further longitudinal research to determine the nature of the associations between food insecurity and human health and wellbeing (42).

Seligman and colleagues followed a subgroup of patients recruited to a larger study to determine the impact of food insecurity on diabetes management (62). They found that food insecurity significantly impacted the ability of patients to manage their diabetes resulting in hypoglycaemic episodes that led to Emergency Room attendance. Patients reported cutting back on food to purchase diabetes management items, or cutting back on their management items to buy food. They suggested changes in treatment regimes to respond to food insecurity and assist in reducing hypoglycaemic episodes following screening for food insecurity (62).

In a later study, Seligman went on to explore the nature of the relationship between food insecurity and poor glycaemic control in low-income patients (63). Of the 711 low-income patients enrolled in the study, almost 50 per cent were food insecure. Noting the multi-dimensional nature of the impact of food insecurity, Seligman and colleagues tested whether food insecurity not only influenced the ability of a low-income patient to follow a diabetes-appropriate diet, but whether it also influenced their self-efficacy by reducing their confidence in being able to manage their condition and health, causing emotional distress.

They found that food insecurity is an independent predictor of poor glycaemic control with both difficulty in following an appropriate diet and emotional distress only partially explaining the relationship (63). While acknowledging that their results would not be transferable to developing countries, or possibly outside the USA due to the way in which USA policy responds to poor food security, their insights are worth careful consideration in Australia and are discussed further below.

Seligman et al noted that the most cost-efficient way to consume calories is by eating oils, sweets, bread, pasta and rice, with the least cost-efficient way being eating fruit and vegetables. They also found that for those on incomes paid on a monthly cycle, it is common to run out of food and to then eat anything to avoid a hypoglycaemic event (63).

Seligman et al suggest additional support and advice is needed to assist low-income patients with better food management and planning, noting that such approaches will require time, motivation, planning and knowledge. They advise additional research in this area (63).

In another American study, Currie et al examine how non-compliance in people with type-2 diabetes affects mortality rates and finds that treatment non-compliance results in a statistically significant increase in mortality rates, increasing from a rate of 40.7 per 1000 patient years for those who are treatment-compliant to 52.9 per 1000 patient years for those who are not treatment compliant (64).

These findings did not consider the role of food insecurity, and it would be interesting to examine the reasons for treatment non-compliance in greater detail to determine whether food insecurity plays a role. Further, there is a need to examine data to determine whether people with diabetes who are food insecure have a higher mortality rate. Some of these questions are addressed, at least partially, in two further American studies.

Berkowitz et al found that food insecurity is associated with increased rates of non-compliance with diabetes type-2 treatment, using data derived from the National Health and Nutrition Examination Survey (NHANES) (65). Libman reports that mortality rates for type-2 diabetes are 2.7 times higher in high-poverty communities compared with low-poverty communities (66). Libman also reports that participation in food supplementation programs achieved lower levels of obesity in women who were food insecure (66). Given the link between food insufficiency and obesity, this last finding is potentially significant.
**Older age**

While there is little Australian data on the impact of food security on adults in Australia, there is data on the impact of food security on older Australians. Russell et al examined the rate of food insecurity in a sample of over 3,000 Australians aged 50 and over in the Blue Mountains in NSW. They found that the overall prevalence of food insecurity in this sample was 13 per cent, with women more likely to be food insecure than men (15.7 per cent compared with 9.4 per cent) (67). When they examined the ages of participants, they found those aged under 70 years were significantly more likely to be food insecure (15.7 per cent) than those aged 70 years or over (8.4 per cent) and that those likely to be food insecure were more likely to live in rented accommodation and to be on a pension (67).

Russell and colleagues also noted that the rates of food insecurity detected through their study were significantly higher (13 per cent) than those detected in other national studies (2 to 4 per cent) and suggested that this was due to their study including a greater number of relevant questions (67). They also note that the complexity of food security cannot be measured accurately through a single question.

Russell et al found the strongest predictors of food insecurity in older people were age (with those under 70 being more likely to be food insecure than those aged 70 and over), and whether they lived in rental accommodation, received a pension and were smokers (67). Russell also notes that within this vulnerable group, a food budget is discretionary, with food purchased only after other household expenses are paid.

Russell et al conclude that food insecurity not only compromises the health of affected individuals, but also compromises their ability to live in the community. They conclude that food insecurity is under-estimated nationally and that a coordinated approach is needed nationally and locally to address the potential negative impacts on vulnerable older Australians (67).

In another Australian study, Li et al explore the issue of dementia rates in the Northern Territory in detail, and controversially include food insecurity in childhood among the risk factors they identify (68). Their analysis finds a substantial difference in the prevalence of dementia between Aboriginal and non-Indigenous Territorians aged over 45 (Figure 9, below):

- the age-adjusted prevalence for all Territorians aged over 45 was 3.3 per 100 people
- the age-adjusted prevalence for Aboriginal people aged over 45 was 6.5 per 100
- the age-adjusted prevalence for non-Indigenous people aged over 45 was 2.6 per 100
- the national age-adjusted prevalence for people aged over 45 was 2.4 per 100 (68).

Li et al note that this very high prevalence for Aboriginal and Torres Strait Islander people in the NT is consistent with their exposure to known risk factors – stroke, epilepsy, brain injury, smoking and alcohol related health problems – together with early environmental, social and biological factors – including malnutrition (68). This links back to the findings of White, Brewster and Morris on the high rates of malnutrition in the NT discussed earlier.

A single local study does not provide strong evidence of a relationship between childhood malnutrition and dementia, but does suggest the need for further research in the area. A possible explanation of the finding may be that poor food security, sufficiently severe to lead to malnutrition in the remote Northern Territory, results in higher consumption of energy dense, nutritionally-poor food. As high fat diets have been shown elsewhere to affect the risk for dementia (69,70), the possibility of a link between a high fat diet from early childhood increasing the risk of dementia in adulthood demands further research. It is also noted that in the study discussed above, Laraia excluded an association, but suggested the need for longitudinal studies to fully explore the issue (29).
A Brazilian study of participants aged 65 and over by Scazuftca et al found that indicators of socioeconomic disadvantage in early life were associated with an increased prevalence of dementia (71). They also found an association between accumulated unfavourable conditions through the whole of life and dementia (71).

In an American study, Lee and Fongillo examined the health impact of food insecurity in older Americans, noting poor food security led to an increase in the physical, emotional and economic burdens experienced among a group who already make greater use of health and other services (72). They noted that malnutrition in the elderly exacerbates diseases, increases disability, decreases resistance to infections and lengthens hospital stays. It also leads to higher rates of complications and increasing requirements on carers (72).

In a more recent review of the academic literature, Gundersen examines food insecurity in the USA, noting that older Americans who are food insecure are more likely to report being in only poor or fair health and to have limited ability to undertake some of the activities of independent daily living (73).

**Discussion**

The fact that a significant proportion of disadvantaged Australians cannot afford to eat a nutritious diet is connected to the escalating rate of obesity and chronic disease in some population groups.

Failure to address food insecurity affects a national budget from both ends. It results in increased health and welfare costs for decades to come, and also means lost taxation revenue and societal contribution from people unable to take their place in the paid workforce.

The encouraging news is that international research suggests that, with early intervention, the health and wellbeing effects of poor food security can be either limited or even reversed.
The research also indicates that urgent programs to provide healthy food to pregnant women and young children who are vulnerable to food insecurity are needed. Investment in such programs can yield immediate returns in terms of improved maternal and child health and in the healthy development of children, which will in turn support improved educational and wellbeing outcomes.

Temple suggests that the multi-factorial nature of food insecurity means that nutritional programs alone will not be an effective solution and that programs must also target economic wellbeing to address the health and dietary implications that arise from food insecurity (19).
6. The Commonwealth Government's involvement

In the 2012 National Food Plan White Paper, Goal 10 was to build on Australia’s:

... high level of food security by continuing to improve access to safe and nutritious food for those living in remote communities or struggling with disadvantage (74).

The National Food Plan, developed by the then Labor Government through the then Department of Agriculture, Fisheries and Forestry, outlined how Government would balance domestic national needs with export needs. The Plan was archived by the Department on 19 July 2013 (75) and no plan or strategy has been developed to replace it. Whether there is a National Food Plan or not, there needs to be a national discussion about the twin goals of improving domestic food security while continuing to expand food exports.

Such high level documents as a Food Plan have the capacity to influence policy development across government agencies and to ensure that important issues are on the public agenda.

Policy settings relating to food security can be at high and centralised levels, such as in taxation and trade policy where food security is just one issue within a larger policy setting, right through to specific initiatives to address the needs of a defined group or location. Between these two extremes are the policies of state and territory governments, considered in detail in the next Section of this Report.

As an example of a national approach, the United Kingdom classes its domestic food supply as critical national infrastructure with sector resilience reports released annually. Food security is also considered part of the national response to climate change and in the context of changing global demand (76). The House of Commons has released reports on Food Security (June 2014), Food Security: Demand, Consumption and Waste (January 2015) and Securing food supplies up to 2050: the challenges faced by the UK (2009).

At the highest level, the Commonwealth Government has responsibilities in foreign affairs and trade, employment, agriculture, social welfare, health and education and the relationship of the Commonwealth with the state and territory governments. Each of these areas has some relevance to food policy in general, including food security.

The 2015 Reform of Federation Discussion Paper explored the way in which the Australian Federation operates and suggested options for addressing areas of overlap between the Federal Government and the states and territories. It does not mention food security in its discussion of health or in other contexts, including agriculture, social welfare or taxation. Its references to food are in terms of safety and regulation, noting that food safety is an issue for preventive health programs funded by both the Commonwealth, and state and territory governments (77). Close inspection of the partner document discussing the roles and responsibilities of players in the health sector again reveals discussion of food only in terms of safety and regulation (78).

Taxation reform, which is closely linked to the discussion about the reform of Federation, is another issue that can impact on the affordability of food and therefore food security. Recent discussions about taxation have included consideration of broadening the base for the Goods and Services Tax (GST), with suggestions that the exclusion of fresh food from the GST (79) should be reconsidered. This and other proposals for tax reform must give careful consideration to the potential impact on low income earners and other vulnerable groups within society who are already under financial stress.

The 2015 Intergenerational Report, which indicates that the issues under discussion represent a compact for the future between the generations, includes no mention of food – not even within the
context of the impact of climate change on food production, which had been included in the 2010 report (80), (81). Domestic food security is a fundamental issue for the future wellbeing of all Australians and hopefully will be included in future Intergenerational Reports.

At the highest level, the Department of Social Security funds domestic food aid and emergency relief, which are activities to support people affected by food insecurity, through the Financial Wellbeing and Capability activity of its Families and Communities Program (82). This funding also includes the Collaborative Supply Program, through which food banks purchase staple foods directly from manufacturers (83) – an arm’s length form of Commonwealth subsidy for food.

The Department of Social Security Portfolio Budget Statements (PBS) for the 2016-17 Budget indicate that funding for the program that includes food relief was $107.653 million for 2015-16 (84). The forward estimates foreshadow an increase of 2.7 per cent for the 2016-17 financial year followed by a cut of over 10.4 per cent in 2017-18. From the PBS it is not possible to ascertain the level of program cuts that may flow through to the food aid sub-program.

In 2009, the Council of Australian Governments (COAG) commissioned the development of a National Strategy to address food security issues in remote Aboriginal and Torres Strait Islander communities. The Commonwealth joined with Queensland, Western Australia, South Australia and the Northern Territory in agreeing on a five-year plan to address remote community food security under the Closing the Gap initiative.

The National Strategy for Food Security in Indigenous Communities agreed by the participating jurisdictions sets out five broad areas for action:

- develop National Standards for stores and takeaways servicing remote Indigenous communities
- develop a National Quality Improvement Scheme for remote community stores and takeaways to support implementation of the National Standards
- incorporate stores under the Corporations (Aboriginal and Torres Strait Islander) Act 2010
- develop a National Healthy Eating Action Plan for remote Indigenous communities
- develop a National Workforce Action Plan to improve food security in remote Indigenous communities.

Funding attached to the Strategy included $13.4 million over ten years commencing in 2012-13 to provide Strengthening Remote Stores Grants in the Northern Territory and $55.8 million for Infrastructure projects, including the construction of 12 new stores (85).

The Community Store is central to the success of this strategy. For many remote Indigenous communities, the community store is the only source of food other than taking a lengthy trip into the nearest major centre.

The Australian National Audit Office (ANAO) undertook an evaluation of the Strategy in 2015. It reported that, of the five key areas for action, only one, the National Healthy Eating Action Plan, had been completed (85).
Some progress had been made on the other four initiatives:

- ninety-seven of 110 Community Stores had been licensed
- refurbishment of two stores and a Manager’s house had been undertaken through the Infrastructure Grants with construction of new Managers' houses in two further communities
- development of the National Healthy Eating Action Plan also resulted in two areas of workforce development progressing (85).

The ANAO Evaluation notes many areas for improvement in implementing the Strategy, not the least being ensuring that future grants are awarded in line with the advertised grant guidelines and making use of the data collected on the patterns of food purchases made in the Community Stores (85). The majority of actions undertaken were in the Northern Territory. Of concern is the finding that more attention was given to writing a Strategy in the timeline than in developing achievable and measurable outcomes (85).

The Commonwealth has established the Healthy Food Partnership to ‘provide a mechanism for collective, voluntary action between Government, the public health sector and the food industry, to improve the dietary habits of Australians by making healthier food choices easier and more accessible, and raising awareness of appropriate food choices and portion sizes.’

The Partnership draws together representatives of food producers, retailers, dietitians and the public health sector to consider how to:

- continue to support industry to reformulate their foods supported by the Health Star Rating system
- support consumers to eat appropriate levels of core foods such as fruit, vegetables, whole grains, meat, fish and dairy, and appropriate levels of energy intake
- educate consumers on appropriate portion and serve sizes
- improve consumers' knowledge and awareness of healthier food choices, including through developing and publicising tools and resources to consumers and health professionals (86).

While initiatives such as the Health Star rating are useful in promoting healthy eating, it does not counteract poor food security. The two Communiqués issued to date, following meetings in November 2015 and February 2016, indicate that the main work of the Partnership is in three key areas.

Portion Control – promote and communicate appropriate portion sizes, and consumption of portion sizes that align with the Australian Dietary Guidelines. Encourage more appropriate packaging of products to align with consumption, to encourage purchase and minimise wastage.

Communication, education and meal planning (making healthier choices easier) – focus on whole foods and total diet. Work to explain the Australian Dietary Guidelines and how to eat a balanced diet encompassing all five food groups. Develop a long-term strategy for education which recognises different behavioural, nutritional and information needs of the population.

Reformulation – work with industry and key stakeholders to make targeted manufactured foods healthier by building on existing strategies such as the Health Star Rating system and optimising the appropriate balance of nutrients and ingredients in food (87).

These areas of work do not consider the challenges faced by those with poor food security. Food security is not considered in either the work program or the Terms of Reference of the Partnership. Since the people who will potentially benefit most from the planned initiatives are those at greatest risk of poor food security, the lack of a focus on food security may limit the Partnership's effectiveness.
The Stephanie Alexander Kitchen Gardens Program was first funded by the Department of Health and Ageing between 2008 and 2012 with a commitment of $12.8 million for the rollout of the program in up to 190 primary schools across Australia. In August 2012 the Commonwealth Government committed further funding of $5.4 million over three years to provide opportunities for 400 new schools to participate in the program (88).

The 2009 Evaluation of the Victorian sites in the program found that while the program was expensive to implement at school sites, substantial benefits accrued to the school, community and students. In particular, students with behavioural issues responded well to the program, enjoyed classes, participated in learning and developed new skills. One of the major benefits was greater linkages with the broader community to the benefit of both the school and the community (89). While the programs were not intended as a means of addressing food insecurity, the model is appropriate for consideration in this context. One of the key findings of the evaluation was that, for students from a disadvantaged background, the gardening element of the program was of great benefit in addressing, at least in part, their health inequality. The evaluation authors urged further research on this issue (89).

In 2012, the Department of Health and Ageing commissioned an evaluation of the National Program which found:

- statistically significant improvement in healthy food choices in children who had participated in the program
- greater engagement between children and parents in cooking meals and sharing time in the kitchen
- increased confidence both in the kitchen and generally from engaging in the gardening program, including about a third of participating children joining their parents in the garden at home
- greater willingness to try new foods
- some indication of increased intake of fruit and vegetables, although the measurement of this was problematic
- improvement in behaviour, with 86 per cent of teachers reporting improved teamwork in students participating in the program
- noted improvements for students at risk of social exclusion through participation and development of new skills and confidence (90).

Much can be learned about the challenge of national action on food security from the National Strategy for Food Security in Indigenous Communities. It has been difficult to implement and its five strategic actions focus on the downstream effects – addressing stores and how they operate and developing a National Healthy Eating Plan. The Strategy does not seek to address the reasons why Indigenous communities struggle to maintain food security in the first place.

Carey et al explored the way in which the task of developing the National Food Plan was undertaken and the results achieved through the process (91). They focus on the uneven levels of influence that could be exerted by different participants and how this impacted on the process and its outcomes. They argue that the development of the plan failed ultimately because influence was brought to bear by big business to place their needs ahead of community and health interests (91).

To develop a National Food Security Strategy that places the health and wellbeing of food insecure people at its centre and then works with all participants to address those needs in the short, medium and long-term will be a significant challenge – particularly in defining the roles and responsibilities of different participants and ensuring undue influence does not lead to watering down health needs.

Agreeing such a strategy will require government to balance competing interests, but the effort would be worth it. A comprehensive, integrated National Food Security Strategy would be invaluable in
protecting Australia’s domestic food supply and the long-term health and safety of the entire population. It would be vital for it to meet the needs of all Australians, not just those living in major cities.

Booth argues for a rights-based approach to food security that includes the right to food within national human rights legislation (54).

Combining social justice approaches with well-researched and negotiated needs-based planning led by communities themselves would enable a more complete response to local needs. This approach is not easy, but the easy methods have been tried and found wanting – at least in addressing the long-term and underlying needs. Given the intractable nature of these underlying issues, twin strategies are needed: one to address the current needs and the other to work within the community to build long-term food security.
7. The involvement of the state and territory governments

The Australian Capital Territory

The ACT has taken a holistic approach to food security and nutrition, establishing the ACT Nutrition Support Service (ACTNSS) to work with community organisations, individuals and workplaces to improve access to healthy food and drinks and to promote healthy eating environments (92).

In 2012, the ACT Government commissioned a report to examine food issues, including food security, in the ACT. The report examines ways to improve food security in the ACT by:

• sourcing a greater volume of food from the local region
• incorporating food sensitive planning into urban design
• promoting urban food gardens
• looking at improving the flow of transport arrangements for the food supply chain
• reducing food waste (93).

This report fed into development of the Food and Nutrition Strategic Framework 2012-18 which brings together food security with action to improve health and wellbeing in the ACT through addressing diet-related illness (94). The Strategic Framework notes that based on local data, 4 per cent of the ACT population has poor food security. The Framework includes the broad aim of working with other sectors in the ACT to address the local socio-economic determinants of food and nutrition insecurity (94).

The ACT Waste Management Strategy includes mention of the need to reduce food waste in the ACT and in Strategy 1.5 promotes recycling of food waste (95). A recent announcement has also seen the ACT Government move to allow the development of vegetable gardens on nature strips (96) in a move to promote improved food security, more environmentally friendly land use and to reduce wastage.

New South Wales

The 2013 NSW Healthy Eating and Active Living Strategy, while focussing on overweight and obesity control, includes food security with regard to Aboriginal and Torres Strait Islander people living in the State (97). The Strategy notes that food security is a critical issue to address if health outcomes are to improve. Actions in the Strategy include the following:

develop, implement and evaluate strategies to improve the availability of healthy foods in Aboriginal communities
enhance the NSW Get Healthy Information and Coaching service to provide tailored support for Aboriginal people, culturally and linguistically diverse people, pregnant women and people at risk of type 2 Diabetes
promote healthy eating and active living in Aboriginal communities.

Chapman et al discuss the cost of food in NSW, based on healthy food basket surveys between 2006 and 2009 (98). They note that there is no standard NSW healthy food basket survey, with the Illawarra survey, which has been conducted every two years from 2000, restricted to the region. Their study looked at prices, including fruit and vegetable prices, across NSW in 2006, 2008 and 2009, comparing differences between years and between regions, including rural and remote locations (98). They found
that in 2009 there were differences between locations of as much as $221 in the price of the same basket of goods.

In particular, they found:

- the price of dairy, bread/cereals and meat/seafood groups increased by more than the Consumer Price Index (CPI) over the length of the study
- energy dense, nutrient poor foods became cheaper over the length of the study
- fruit and vegetable prices were the most volatile, with price reductions between 2006 and 2008 but increases again in 2009, with further increases due to drought and climate condition noted following the completion of the study
- families shopping in disadvantaged areas pay more for their food than families shopping in advantaged areas, who also had access to a greater range of fruit and vegetables
- families in the lowest socioeconomic quintile of income used between 48 and 64 per cent of their available income to purchase a healthy food basket (98).

**Northern Territory**

The Northern Territory Government has not released a food security plan, however food security for Indigenous people in the Northern Territory is addressed within the Commonwealth Government’s 2012 Stronger Futures in the Northern Territory policy. This includes a $41 million commitment to support better access to food in remote Indigenous communities (99). The funding is to assist Community Stores to achieve financial sustainability, providing a more reliable source of fresh food (99).

As discussed above, the implementation of this program was reviewed by ANAO in 2015.

The Northern Territory Government also undertakes an annual market basket survey to determine the availability of healthy food throughout the Northern Territory. The most recent survey for which published results are available was in 2014. Key findings were that for a family of six, the weekly spend on food varied greatly across the Northern Territory:

- the average cost of the food basket was $824 in remote stores, $726 in district centre corner stores and $558 in district centre supermarkets
- East Arnhem was the most expensive remote district ($866) and Darwin the least expensive ($795)
- on average, the food basket in remote stores was 53 per cent more expensive than in the Darwin supermarket and 13 per cent higher than the average of the district centre corner stores (100).

For people living outside Darwin, the cost of the healthy food basket is significantly higher and for those on welfare benefits, the cost of food based on these prices must be at the very limit of affordability.

**Queensland**

Queensland currently lacks a food security policy. Work has been undertaken on this in the past, with a discussion paper *Food for a growing economy* released in 2011 by the then State Labor Government. This document included discussion of the lessons learnt from experiences with major tropical cyclones and the impact on food supply chains. The planning included investigation of alternative supply models, local contingency plans and supply chain recovery plans (101). The main focus of the plan was on export but the inclusion of supply chain consideration is a singular feature not seen in other jurisdictional plans.
The Queensland Education Department has developed a *Healthy Food and Drink Supply Strategy* for use in schools as both a guide to school canteens and parents, and to support food literacy programs in schools (102). It does not cover food security and the impact of poor food security on students and learning, but does provide a good resource on food literacy.

The State Department of Health also undertakes regular Healthy Food Access Basket surveys, with data for the 2014 survey the most recent available (103). Figure 10 (below) shows the cost of a healthy basket from 2006 to 2014 in major cities, inner regional, outer regional, remote and very remote locations.

The significant differences in the price of healthy food in different regions, so clearly demonstrated in the Figure, is a significant cause of concern given the concentration of Indigenous communities in remote and very remote Queensland and their poor health generally. The Queensland Council of Social Service notes that:

> Affordability of healthy food is critical for good health. Some low income families regularly go without food or resort to the cheapest food available which is often low in nutritional value.

> Fresh and healthy food is also very expensive in some rural and remote areas due to transportation and storage costs. Poor diet, due to lack of knowledge and skills to make healthy food choices, is an issue across all adult population groups in Queensland. Only 11 per cent of adults in Queensland ate enough vegetables and only 57 per cent ate enough fruit in 2010 (104).

![Figure 10: Queensland - Healthy Food Access Basket Survey by remoteness area 2006, 2010, 2014](image)


**Figure 10.** Queensland – Healthy Food Access Basket Survey by remoteness area 2006, 2010, 2014
South Australia

In 2011, the South Australian Government was a co-signatory to the development of the COAG National Strategy for Food Security in Remote Indigenous Communities. In response to their participation, the SA Government worked with the people of the remote Anangu Pitjtantjatjara Yankunytjatjara (APY) Lands to develop a Food Security Strategic Plan 2011-2016 to complement State activities undertaken within the South Australian State Strategic Plan to address health and welfare goals for Aboriginal people living in the remote APY Lands, which span the borders of South Australia, the Northern Territory and Western Australia.

The plan includes several new initiatives:

- cooking and eating together – a community healthy eating education program
- arid lands garden/horticulture project – establishing raised garden beds in two communities and establishing a quandong plantation.
- come and cook with your kids – a school holiday program for children and families providing education on nutrition, food preparation skills and healthy food to eat (105).

Beyond the APY Lands strategy, there is no State-wide food security plan. The South Australian Council of Social Service (SACOSS) notes that in South Australia the average weekly spend on food is $191 or 17.2 per cent of household expenditure (106). The fact sheet notes the growing literature indicating a link between food insecurity and obesity with comments from individuals noting that they know they should be eating more fruit, but that they simply cannot afford to do so. SACOSS also notes that in the APY Lands, food prices are 42 per cent higher than in Adelaide (106).

In comparing the cost of a healthy food basket in South Australia across regions, Ward et al found that healthy food was more expensive in rural areas and even higher in more remote areas (107). They also found that the affordability of healthy food was significantly less for low socioeconomic status families, particularly in rural and remote locations and recommended the development of policy responses to address the issue of affordability of healthy food in rural and remote South Australia (107).

Tasmania

Tasmania has approximately one third of its population depending on government benefits as their main source of income (108). One of the major challenges the State Government faced in developing a food security response was in determining the level of need. The work undertaken is in part designed to provide a better evidence base to enable effective targeting of future needs (108).

Tasmania’s food security strategy Food for all Tasmanians was released in 2012 (109). A feature of the plan is a focus upon building community-based local solutions. The plan pulls together State Government data (61) and local not-for-profit data (110) to provide an assessment of those at greatest risk and a discussion of why using community solutions is the most effective approach. The Strategy is supported by funding and resources developed by the Tasmanian Department of Health and Human Services (111).

Developed in collaboration with the not-for-profit sector, making use of local solutions and aiming to address poor food security through measures that impact both upstream and downstream of the individual, this strategy is a model for consideration more broadly.

In follow-up work undertaken by the Tasmanian Food Access Research Coalition, the history of the implementation of the Strategy is included with additional research to support the ongoing development of the project. In supporting the Strategy, the Tasmanian Government established dedicated funding to encourage the development of innovative responses to improve local community
food security (108). Since the implementation of the Strategy, the research report indicates that funding has been used to support:

- growth in community programs and partnerships to support local food production, nutrition education and socialisation
- implementation of school breakfast programs
- development of community gardens and community kitchens (108).

The Strategy has also seen a growth in other programs, including the following:

- Eat Well Tasmania (EWTi) and Healthy options Tasmania (HOT)
- TasteBuds (supporting improved food options in childcare)
- Cool CAP – targeting school canteens
- Eating With Friends (EWF) (bringing isolated people together to share a meal)
- Family Food PATCH (peer education to support better family nutrition).
- Ongoing provision of emergency food relief through the Salvation Army, St Vincent de Paul, City Missions, Anglicare and other church groups (108).

With its focus on community action and encouragement of local government to take on a role in supporting it, *Food for all Tasmanians* is a model food security strategy that deserves recognition and consideration as a framework for other jurisdictions.

**Victoria**

The Victorian State Government was probably the first jurisdictional government to take on state-wide food security issues through its *Food for All* program (112) which operated from 2005-10. The program was developed to address food access issues and worked with local government to support specified at risk populations. The program supported Forums in which participating Councils shared information, findings and outcomes with other interested parties. Among the achievements were the following:

The City of Greater Dandenong developed policies and planning around food security, housing, community centres and neighbourhood houses. Facilities were identified for the development of community kitchens and support provided to community gardens. The Council also improved promotion of local free bus services and low-cost meal options at selected cafés.

Melton Shire Council established a Veg Out Van to provide a fresh fruit and vegetable delivery service to key community outlets. The Council also encouraged businesses to increase their supply of fresh, healthy food.

Swan Hill Rural City Council encouraged local retailers to stock healthier food choices, and also worked to provide healthier food choices in school tuck shops and local government venues. Council also improved transport options for people to access food retailers. The project saw the implementation of a ‘rent to own’ program for appliances such as fridges to improve home cooking options (112).

Building on these successful projects, the Victorian Health Department went on to fund a Victorian Food Alliance, which has subsequently developed into the Victorian Food Systems Network. This Network undertakes a broad range of work focussed on supporting healthy sustainable food being accessible by all in Victoria (113). The resources they have developed include tools to assist local governments to support not only greater food security, but also sustainable local food production as part of regular Council planning.
The approaches adopted in Victoria and the resources developed provide excellent models for consideration by other jurisdictions. The evaluations of projects funded led to revision of food security policies and provide further evidence of the impact such policies can have and of how local challenges can be addressed through practical solutions.

Palermo et al explored the cost of a healthy food basket across Victoria in 2008 and found that while prices differed greatly depending on whether one shopped at a large supermarket chain or an independent store, remoteness and distance were not factors in the cost of healthy food in Victoria (114). Further information is being sought to determine whether this finding remains accurate.

**Western Australia**

Western Australia does not have a current food security plan, although issues of food security have been discussed in the past, with the State Department of Health supporting a 2001 conference on Food for All and maintaining an ongoing focus on supporting healthy food options.

The State Government has implemented a healthy food basket survey through its *Food Access and Cost Survey*, which was first undertaken in 2010, finding:

- grocery store location is associated with population density
- energy-dense foods are cheaper than less energy-dense foods
- food costs substantially more in remote areas
- food stress is greater for welfare recipients as these families needed to spend a greater proportion of their income on food than those on an average income
- access to fresh, good quality, nutritious and affordable food is limited by where people live (115).

This survey was repeated in 2013 with analysis of the data and comparisons with the 2010 survey reported in 2015. Pollard et al found that overall price increases were in line with CPI increases and that not only did price increase significantly with distance from Perth, but also that the cost differential between very remote areas and the city had increased from 20.8 per cent more in 2010 to 26.1 per cent more in 2013 (115). They also found that the quality of perishable produce, particularly fruit and vegetables, varied depending on geographic distance.

The report notes the difficulties in maintaining lengthy food supply chains throughout Western Australia, including the issue of maintaining refrigeration and storage during transportation (115).

**Discussion**

Sue Booth argues that governments (Commonwealth, state and territory) have focussed their attention on ‘downstream’ solutions to address food security and are failing to address the systemic issues that make people food insecure (83).

Nevertheless the Commonwealth, state and territory governments have adopted a range of different responses to food security in their jurisdictions, with innovative work underway in many areas. The two major innovators are Victoria and Tasmania, which have implemented state-wide initiatives, including significant community involvement and consultation in close cooperation with local governments and community-based not-for-profit organisations.

The transferability of the programs should be explored, although many will not be able to move easily across the hugely variable conditions in rural and remote Australia. However, the approaches used could be adapted and should be promoted to local governments and community organisations as examples of options that can be explored to foster ongoing development and innovation.
Increased food stress is an indicator of growing inequality and improved reporting on food security will provide governments – Commonwealth, state and territory – with information of the impact of social welfare changes enabling review and response to address any unintended consequences there might be. The role of not-for-profit organisations in reporting growing food stress to governments is vital, together with their response to support people needing emergency relief.

The question of the quality of food should also be monitored closely. Given the length of supply chains servicing the most remote communities, both the price and quality of food are of issue. And poor quality fresh food results in people choosing to eat less healthy options, which impacts eventually on the health budget through growing levels of chronic conditions.

All Governments should be encouraged to have in place a food security plan that considers the agricultural, supply, welfare and health aspects equally.

As discussed above, Australia should have a National Food Security Strategy which would be cross-referenced in other long-term policy setting documents, such as the Inter Generational Report and papers on taxation, welfare, health and agriculture. It would have to be articulated with measures of income support and security, and programs for income management.

The Strategy would consider every aspect of food production, distribution, pricing, storage and preparation. It would cover issues relating to: data, research and development; supply chain issues; pricing policies, including the possibility of cross-subsidies between goods and between different regions; and the means by which food storage and management can be improved in more remote areas. It would have agreed benchmarks, key performance indicators and funding to enable a robust evaluation, and annual reporting.

Currently in Australia, the monitoring of food prices is undertaken jurisdiction by jurisdiction. Consideration should be given to an annual national Healthy Food Basket survey, which would have adequate coverage for statistical purposes of remote and very remote areas. It should give particular attention to the foods needed by mothers and infants.

The national survey could either be a new initiative or an inter-governmental agreement to combine the results of existing jurisdictional surveys through the Australian Institute of Health and Welfare.
8. Supply chain issues

For ongoing local access to fresh food, most people living in remote Australia depend on the various elements of the supply chain.

The NRHA has previously examined the impact of supply chain issues on food security, noting in particular the need for affordable and effective transport services to remote Indigenous communities (116).

Aung and Chang note that the greatest challenge for a supply chain is to deliver perishable food with limited shelf life (117). To be effective supply chains may be agile and/or lean. An agile supply chain is flexible, responding to sudden changes quickly, whereas lean systems make use of the ‘just in time’ concept where inventory is kept to a minimum (118). Such concepts do not fit well in a country with such long supply chains as Australia.

As small businesses not aligned to the major grocery chains, local stores in remote Indigenous communities face challenges relating to sourcing foodstuffs, transport and storage, and pricing (119).

The NRHA's *Freight improvement toolkit* (2007) proposed several models for achieving better value from freight services and noted that 50 per cent of the healthy food needed by remote Aboriginal and Torres Strait Islander communities is perishable (116). The toolkit presented options including combining forces to enable remote stores to work together to achieve better freight rates. This has happened in South Australia, as reported in the State Indigenous food security plan, but remote communities everywhere still face higher costs.

Pollard et al examined the cost and supply of fresh food in Western Australia, noting that with increasing geographic isolation prices were higher and quality of perishable foods was lower (120). They note that the major challenges include distance, extreme temperatures, road conditions and access issues. They also note the introduction of store licensing in the Northern Territory as one means of improving the quality and affordability of fresh food. However, as the ANAO observe in their evaluation of the program, the poor collection of data does not enable consideration of whether the changes have had any impact on the affordability of food in the relevant communities (20).

In remote communities that experience extreme temperatures and variable road quality, finding efficiencies in the supply chain may simply not be feasible. Alternatives should be explored, including subsidisation of freight.

Lovell explores the range of issues that can occur in supplying frozen products from Perth to Dampier in Western Australia, identifying 34 steps and 10 players in the freight process (119). Lovell suggests that there are five key points for consideration in successfully supporting freighted foods to remote locations:

- commitment from suppliers, freight operators and store owner(s)
- cooperation between store owner(s) to facilitate group buying and delivery arrangements
- clear communication between all players in the supply chain
- capable and well trained operators who know how to manage remote supply chains
- capacity – under-skilled or under-resourced community stores will result in breakdown of the supply chain and Lovell argues most remote stores are both under-skilled and under-resourced (119).
Lovell argues that governments must 'step up', with their roles being to foster and facilitate:

- improved commitment throughout the supply chain to improved performance
- better cooperation between communities to support group buying, with clear benchmarks being implemented
- better communication to support supply chain flows
- improved capability to support improved performance
- capacity building – particularly with regard to improving supply chain operation and monitoring food temperatures (119).
9. The role of the charitable and not-for-profit sectors

The charitable and not-for-profit sector has a two-fold role in food security issues. The first is to monitor food stress through their interactions with vulnerable people and ensure the issue is brought to the attention of governments and the public. The second is to provide practical responses and relief to those affected by poor food security through emergency food relief and support.

Figure 11 depicts the complexity of the flows in food relief and the roles and responsibilities of different players in the sector (121).

Organisations involved in delivering food relief include religious agencies (such as Anglicare and the Society of St Vincent de Paul), social welfare agencies (such as the Red Cross) and services supporting the homeless, drug outreach, migrant and refugee services and some schools (122).

Source: (121) Used with permission of author

**Figure 11. Relationships in the Food Aid cycle**

Lindberg et al argue that since the establishment of the food banking system, food welfare has become an integral part of the Australian welfare system, but that this role is not necessarily one that should fit comfortably with the sector (121). Certainly, the role of governments in supporting food welfare should not excuse either governments or the welfare organisations from addressing the underlying
issues of poverty – including lack of food security and the sufficiency, or otherwise, of welfare payment systems.

The Commonwealth Government is a relative newcomer to the support of food relief through food banks and other emergency relief services, having only entered the scene in the 1970s in response to high levels of concern about funding variability between state and territory jurisdictions, leading to growing levels of inequality (122).

Lorenz argues that the need for food banks in the first world is indicative of the growing inequality inherent in societies moving from the concept of wealth based on production providing access to all that is needed, to a new concept of wealth that is based on the consumption of goods from a range of options (123).

Fletcher and Guttman, writing in the Treasury Economic Roundup of July 2013, comment on inequality in Australia over the preceding 20 years, noting that despite sustained economic growth throughout the period, levels of inequality had grown (124). They note that income should not be the sole arbiter of growing inequality, with access to health, education, housing and community safety also being considered (124).

Fletcher and Guttman conclude their paper by noting that it is one thing to understand the changes in income inequality in Australia, but the data on income inequality does not tell us why some households are particularly disadvantaged over others, particularly among lower income earners. They state that understanding the nature of multiple and entrenched disadvantage is the only way in which we can address wellbeing for those most at need (124). Understanding multiple and entrenched disadvantage in society is where organisations providing emergency relief can contribute significantly to the debate on food security, inequality and welfare needs.

Being able to provide food aid is one way in which relief agencies initially engage with people in crisis, and is a key means of helping people to become engaged with broader support and assistance mechanisms. Agencies acknowledge that providing food is a fundamental way in which they seek to quickly establish a trust relationship with those who approach them for assistance (122). It also provides those agencies with the data to advise the community and governments about changes in the population groups seeking assistance.

The first food bank was established in Melbourne in 1994 (83). Today food banks are spread across Australia. Food banks supply relief agencies with food for distribution, sourcing their supply from the supply chain either by purchasing food directly or accepting donations. They form part of the emergency sector, which also includes organisations that recover and recycle ‘food waste’ – unused food recovered from restaurants, university colleges and other sources for distribution.

Foodbank Australia’s Hunger Report 2014 notes that two million Australians sought food relief during 2014 (125). Foodbanks work as wholesale distributors for charitable relief providers. As the Foodbank Australia (FBA) infographic below states, every month over 516,000 people rely on emergency food relief – including over 180,000 children (125).
Figure 12. The recipients of aid through Food Banks in 2014

But as FBA also acknowledge, every month another 60,000 people (including almost 25,000 children) continue to go without, because the demand for food relief is greater than the supply.

Anglicare interviewed people accessing Emergency Food Relief to determine the extent of their food insecurity (126). From a sample of 590 people from every state and territory, 76 per cent indicated that they were severely food insecure (regularly ran out of food) and a further 20 percent were food insecure (had run out of food at least once in the last three months). They found that in adults the most common coping mechanisms were to reduce the variation in family meals, reduce their portion size, skip meals and just over 50 per cent reported not eating for a full day (126). Ninety-six percent of those interviewed indicated they worried about whether they would have enough money to buy food.

Booth and Whelan describe Australia’s food banks as providing the largest hunger relief operation in Australia with over 58 per cent of food used by charitable agencies coming from food banks (122). Food banks now cover all states and territories in Australia and the call on their services increases as the number of Australians living in poverty grows (122).

The United Nations Special Rapporteur on the Right to Food has noted that the proliferation of food banks is a ‘salient marker of social policy failure’ and a ‘failure of government to meet its right to food obligations’ (122).

Booth and Whelan examine the nature of the problems that food banks address and the way in which the prevailing economic theory of neo-liberalism is acting to influence government approaches to the problem of hunger stemming from growing inequality. Booth and Whelan argue that governments stepping back from action reflects the view that responsibility for food insecurity rests with the
individual (122). They also argue that the scope of the relief delivered by food banks has led to the view that food security is being addressed.

This is certainly not the situation as reported by FoodBank Australia in the graphic above, in which it clearly states that over 60,000 people have to be turned away because there is insufficient food or resources to support them.

The fact that greater investment is needed is further indicated by research showing that the people seeking support through food relief agencies are those in the most desperate need. The unspoken assumption is that a large number of people are food insecure but not sufficiently desperate to seek assistance.

Food banking and emergency relief are part of the solution to food security in Australia, but they should not be the whole solution.

Government support for emergency relief should not be used to step away from addressing the underlying causes of poverty and hunger. There is a need to review the level of welfare payments and the pressures on recipients to ensure payments are sufficient to meet the basic necessities. Families ought not have to choose between paying the rent and electricity or eating.
10. Addressing food insecurity in rural and remote settings

In addition to the systemic national barriers to fresh food in remote areas, there are others that are specifically rural. For instance, Pollard explores the complexities faced due to fire, flood, roads in poor repair, extreme heat and long distances (127).

Pollard asks whether food supply into these very remote communities should be left with market forces or whether they should be classified an essential service. This question has not been resolved. She discusses the nature of store ownership in remote Northern Territory communities, the size of the communities they serve and the barriers that may further exacerbate community access to fresh produce. She examines the legislative and other requirements placed upon community stores and the way in which store governance arrangements influence their ability to provide appropriate, fresh and nutritious food to the communities they serve.

Pollard argues that effective solutions have to address demand as well as supply issues. She notes that simply improving affordability and access to fresh, nutritious food alone will not translate into improved nutrition among the food insecure. She advocates strategies that increase the demand for healthy foods over unhealthy options, including options that make use of legislation and/or regulation, price control, income management and community education.

Both regulation and price mechanisms have been used in Australia and found to be effective in reducing the level of food insecurity. While the licensing scheme brought in by the Northern Territory Emergency Response Act 2007 has provided a greater range of fresh food to remote community stores, it has not addressed the issue of cost.

Bastian and Coveney sought advice from 24 South Australian food security stakeholders and developed a comprehensive list of practical policy options that could be considered to address the issues of supply, access and research (128). The suggestions include options to:

- create supportive environments (for example through more effective land use and zoning, research and infrastructure)
- strengthen community food security through shorter supply chains, assisting capture and redistribution of surplus food and support for community gardens in remote communities
- support individual food security (for example through supporting home gardens, increased food literacy and schools projects)
- improve coordination and capacity (for example, through improved monitoring and reporting and integrated agricultural, environmental and economic planning) (128).

Pricing initiatives have been used to influence purchasing patterns, with a 10 per cent reduction in the cost of fruit and vegetables resulting in a 7 per cent increase in purchase, and a 10 per cent increase in the cost of soft drinks reducing consumption by over 8 per cent (127).

Sager and De Silva examine food insecurity in the Northern Territory, noting the poor quality data on the prevalence of food insecurity and its impact on the range of high risk groups (129). They examine the relative effectiveness of food relief programs (such as soup kitchens, free community meals and emergency food parcels and/or vouchers) and food subsidy programs (school meals, subsidised meals at cafes, meal deliveries, food cooperatives and farmers’ markets) (129).

They found 53 assistance programs in the Darwin area, with the majority offering either emergency vouchers, or food parcels, or both. While attendance data was not available, services consulted reported that 17 services were meeting demand, a further 12 were able to meet demand with
assistance from partners, and a further 8 programs indicated that they were unable to meet demand and were turning individuals away (129).

Sager and De Silva went on to ask the assistance programs where they sourced their food and whether there was any effort to align foods purchased and distributed with healthy diet guidelines. Feedback was that in most cases there was not, but that most of them recognise their responsibility to provide healthy foods and would be working to redress the situation (129).

For people receiving assistance, the most acceptable form is subsidised food relief, which is a form of assistance not available in Darwin. This form of relief enables the recipient to make a subsidised payment or provide voluntary work in return for food, which they find to be more acceptable.

The paper concludes that the arrangements for supplying food assistance in the Northern Territory that existed at the time of their work were in fact not reducing food insecurity. They argue, nevertheless, that food assistance programs can play an effective role in supporting food security through promoting healthy food choices (129).

In 2005 in the Clarence Valley in northern New South Wales, the local Aboriginal community controlled health service developed a program to provide subsidised fresh fruit and vegetables to improve nutrition in disadvantaged Aboriginal families (130). Seasonal fruit and vegetables were available to participating families in return for a $5 co-payment. Complementary recipes and cooking demonstrations were provided as part of the program. The results of the program were mixed, with little change in mean body fat of the participating children after 12 months (130). However, over the term of the program there were reductions in:

- visits to the health service due to ill health
- rates of Otitis media
- rates of Pyoderma
- number of hospital attendances
- oral antibiotic prescriptions
- topical antibiotics (130).
11. Income management

One of the policies that affects food security in remote communities is income management and the use of the BasicsCard (131). Initially implemented as part of the Northern Territory Emergency Response (NTER), income management works by quarantining part of welfare payments onto a BasicsCard which can only be used to purchase food, clothing, health items, education and training, childcare, housing/rental, household utility payments, public transport and motor vehicle costs to support accessing the listed items. The BasicsCard cannot be used to purchase alcohol, tobacco, pornography, home brew items or for gambling (131).

There is considerable controversy over whether income management is an effective means of addressing issues in remote Indigenous communities. Further concerns have been raised about whether the quality of information collected for evaluation of income management is appropriate. There are concerns about the lack of quantitative data and the limited involvement in evaluation activities of residents from participating communities (131).

One of the reasons why evaluation of income management is difficult is that it was not built in to the program from the outset. The program was implemented rapidly without time taken to plan clear, measurable outcomes and without baseline measures against which progress could be gauged. While acknowledging the shortcomings in the nature of the available data, the perceptions reported are worth considering with regard to the impact residents noticed on both food security and the quality of the diet in communities in which income management operates. However, the lack of quantifiable data means that any inferences drawn are speculative.

Reporting the outcomes achieved from income management has also been confounded by the inter-relationship with other initiatives under the NTER (131).

The Australian Institute of Health and Welfare (AIHW) acknowledges these difficulties in its evaluation of income management in the Northern Territory based on data collected by a range of consultants (132). Interviews and focus group discussions found perceptions that children were eating better and appeared in better health, although no quantitative data was available to support these views (132).

With regard to food and wellbeing, the AIHW evaluation found:

- focus group participants agreed children appeared to be healthier
- 62.5 per cent of parents interviewed reported the children were eating more, weighed more and were healthier
- over 75 per cent of clients interviewed reported spending more on food, with 50 per cent buying more fruit and vegetables
- over two thirds of store operators reported increased sales of fresh fruit and vegetables (132).

The Parliamentary Library undertook an extensive review of income management in 2012, including examining the evidence on the impact income management is having on access to fresh, nutritious food. Examining a range of evaluations in different locations, the Library found that the benefits gained have been patchy and fragile and the evidence points more towards not making existing conditions worse, than to materially improving the situation (131). They conclude their overview by suggesting that long-term monitoring is needed before there is validated, accurate evidence of the impact of income management on health and wellbeing in communities in which it is used (131).

The Parliamentary Library reports two studies that have examined changes in store takings – as a proxy for changes in diet – before and after the implementation of income management in
communities. The Central Land Council (CLC) operates the Finke River store and its takings are presented in Table 2.

Table 2. Takings on major products at Finke River Mission before and after the implementation of income management

<table>
<thead>
<tr>
<th>Feb-April</th>
<th>Meat</th>
<th>Fruit</th>
<th>Bread</th>
<th>Groceries</th>
<th>Cigarettes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>$15,500</td>
<td>$6,000</td>
<td>$10,500</td>
<td>$92,000</td>
<td>$17,200</td>
</tr>
<tr>
<td>2008</td>
<td>$19,000</td>
<td>$10,500</td>
<td>$14,000</td>
<td>$108,000</td>
<td>$11,200</td>
</tr>
</tbody>
</table>

Source: CLC 2008, Reviewing the NT Emergency Response: Perspectives from six communities

These findings are at odds, however, with those reported by Brimblecombe et al, who studied patterns of purchasing in 10 Arnhem Land communities and found:

*Income management appeared to have no effect on total store sales, food and drink sales, tobacco sales and fruit and vegetable sales, independent of the government stimulus payment. Soft drink sales and turnover dropped initially with income management, but increased thereafter (133).*

These findings were disputed by the Department charged with implementing and managing the programs. However the Parliamentary Library notes that the Department’s data is based on store operator observations which had not been verified independently. The Library concludes that while there is some evidence of increased purchases of fresh food, these items remain a small percentage of store sales overall (134).

The Parliamentary Library Background Paper on income management also considers the impact of income management and the other Emergency Response initiatives on children. They find:

- In the NT, there has been an increase in the purchase of fruit and vegetables, although this still represents a small percentage of store sales.
- Indigenous children aged under five living in remote communities in the Northern Territory show statistically positive improvements in the age-standardised rates of anaemia, underweight, wasting and stunting over the period 2004-10. Most of these improvements show a steady change over the period rather than any direct impact from the introduction of income management in 2007-08.
- In Cape York, there is no clear pattern in changes in school attendances and no discernible trend in measures of wellbeing.
- In Western Australia, 61 per cent of participants felt their children's lives were better and that income management helped them manage their money better, with less likelihood of running out of money for food and other essentials (131).

Puszka et al examined the impact of income management in an Aboriginal community in North East Arnhem Land (135). Puszka argues that in the community of Mapuru, income management failed and that the result of that failure was increased food insecurity and greater marginalisation of community members (135). Puszka describes how the community store at Mapuru was not licensed under the Corporations (Aboriginal and Torres Strait Islander) Act 2006 (CATSI Act), resulting in considerable hardship for community members with regard to their shopping for food and essential items. The result of the income management provisions in this community was reduced food security (135).
12. Insights from international research

International research on food security related to specific age groups has been included in the relevant sections above.

In 2014, the *Journal of Public Health Nutrition* dedicated an issue to research on food security and insecurity globally. In his editorial, Nord suggested that the quantum of research over the preceding twenty years had enabled some significant insights into the issue, including:

- Robust and appropriate measurement tools were now widely used to determine the impact of food insecurity in different national and cultural settings.
- Further refinement is needed following observed differences due to gender, culture and age, and to include food gathering behaviours of many Indigenous people.
- Outcomes of food insecurity have been described well, but causal links have not been established.
- Outcomes through adulthood and older adulthood are still being studied.
- Food insecurity is often one of many complex issues being faced and it is difficult to separate them and their effects.
- Food insecurity may be a marker of health and development risk rather than a risk factor.
- Income is a key determinant of food security.
- Other factors effecting food security include low levels of education, violence and history of violence, holding multiple jobs, unemployment, visible minority status, poor knowledge about food and healthy eating and being separated, divorced or widowed.
- Disability has also been recognised as a risk factor (136).

These insights provide significant points of reference for developing future policy and research directions on food security in Australia.

In *Food Wars*, Lang and Heasman argue that a way needs to be found to bring together corporate interests and healthy food policy in order to address the rising level of obesity and chronic diseases (151). Certainly this is critical for rural and remote Australia.

Lang and Heasman argue that when supply chains can deliver energy-dense, nutritionally poor foods at affordable prices but cannot do the same for healthy, nutritious foods, the point has been reached at which national economic and health interests must bring corporate interests into closer alignment. Their thesis is that health policy has been marginalised in the food policy debate, and that the growing burden of chronic disease can only be addressed by ending this marginalisation and placing health at the centre of the debate.

Evidence from the range of market basket surveys demonstrates that a healthy and nutritious diet is least affordable in the most remote communities, and the growing burden of chronic disease in remote Australia raises the urgency of addressing this fundamental need. To address the growing tide of obesity and chronic disease it is essential to make food affordability a universal right, universally available.

Marsden argues that to address food security, ‘place-based solutions’ are needed at both the macro and micro level – national approaches that encourage location-specific solutions (152).

...Agriculture will have to return to being what it was: a more embedded, connected and localised activity largely serving and being served by its city regions.
Marsden goes on to encourage agriculture to be viewed in this way – not as a stand-alone sector but as part of a broader system. The corporatisation of production and move to mega-farms has severed the link between people and agriculture and both are poorer for this: people because of loss of employment, knowledge and skills; and agriculture because it has lost the flexibility to adapt to changing market conditions.

Garnett examines the three main models used to consider sustainability of the food system: increasing production through efficiencies, restraint on demand through redistribution and transformation of the food system, which places agriculture within the broad context of society, the economy and the environment (154).

Carolan refers to three international models for analysing food security. They are what he calls:

- Calorisation of food – or increasing production
- Neo-liberalisation of food security – or opening up trade markets and globalisation
- The empty calorisation of food security – where processed foods ‘take national food systems by storm’ following the liberalisation of markets (137).

Carolan argues that addressing food security can only be done in a societal context and requires policies that address inequality and ‘uneconomic growth’ – that is growth that ‘costs’ more than the accrued benefits. He argues that addressing inequality not only provides better food security, but also leads to better health and wellbeing (155).

Popkin also focuses on the complexity of addressing food insecurity (156). He notes that concurrently we deal with people who are food insecure and need to focus on the first 1000 days of a person's life, while also dealing with rapidly rising rates of obesity and chronic disease. And driving this is a significant shift in the food system based around the rapid growth in consumption of packaged foods and sourcing from supermarkets, rather than local traders. He suggests that of these two phenomena, the shift to supermarket sourcing has had the most profound effect on the diet, and represents the greatest challenge of all if we are to address both food insecurity and chronic disease.

Pollard wonders whether food supply to people in very remote communities should be left with market forces or whether they should be classified as an essential service. This question is still to be resolved.
13. Community agency and food security

Parker and Morgan discuss the Sydney Food Fairness Alliance, established in 2005 to advocate for a socially just and equitable food system for New South Wales (138). The Alliance brings together primary producers, farming networks, community gardeners, academics and health and agricultural professionals to advocate for better access to sustainably grown food. It works as a grassroots organisation seeking to influence state food policy to better reflect the specific issues and concerns of the community (138).

Robin Krabbe argues that building sustainable agri-food networks through a community supported model can facilitate direct benefit to local community members impacted by food insecurity through provision of boxes of local fresh produce to those who sign up as shareholders (139).

Krabbe’s model is based on community commitment to local food security by groups that support producers. Krabbe provides two Australian models of community supported agriculture for consideration:

- Food Connect in Brisbane, in which produce from 80 farmers is pooled to provide more than 1500 fruit and vegetable boxes weekly. The model is premised on a fair price paid to the grower and the grower supplying directly to an organisation which handles the ordering. Attempts at replicating this model elsewhere have had mixed results. In Adelaide, Food Connect ceased after one year’s operation. In Sydney, Food Connect combined with another local food operator, Oob, in 2014. In Melbourne, local food connect is thriving, but using a different model again of selling local produce through local farmers’ markets.

- Local Food for Local People operates in Kingston Tasmania where local people subscribe through the Co-op Store and receive a weekly box of seasonal produce from local growers, including backyard growers. This model provides an expanding local clientele that assists local farmers’ financial viability.

Krabbe goes on to discuss the emergence of the Australian Food Sovereignty Alliance (AFSA) which seeks to empower individuals to have the opportunity to choose, create and manage their food supply from the paddock to the plate (139). The aim of this and other like organisations is to achieve local food security that is sustainable and in which the economic benefits are locally maintained. The subtext of the approach is to avoid the grocery duopoly and work directly with local providers who also establish linkages with local consumers who gain greater social understanding of the importance of agriculture and farming in their day to day life.

Krabbe contends that combining food safety and good use of information and communication technology offers an effective way of preserving sustainable community living (139).

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8 http://channelliving.org/?page_id=1273
14. Conclusion

Food insecurity exists but is largely hidden in Australia. At its heart lies poverty. The fact that there is a growing divide between rich and poor does not augur well for the future. Specific, targeted action on food insecurity and its causes is therefore needed urgently.

Food insecurity exists in all states and territories, and in both rural and urban settings, but those most seriously affected are in remote Aboriginal and Torres Strait Islander communities. The impact of food insecurity is felt progressively, and is more challenging to deal with, as one moves from city to rural and then remote areas. The effect of food insecurity in those communities is significant, with childhood malnutrition rates in the Northern Territory approaching 20 per cent and ongoing poor food security and poor nutrition affecting the health and behaviour of children in their school years and beyond.

International studies show that addressing poor food security early can lead to better school outcomes for children and reduce the ongoing burden of disease related to the onset of chronic diseases at young ages.

As many Australian and international studies have commented, food becomes a discretionary item in situations where financial stress is strong and persistent.

There is an epidemic of obesity in Australia, especially among people living with low incomes and among those in rural and remote areas. While there are current interventions targeting obesity, they do not specifically do so using a food security lens. Without addressing food security, interventions to address obesity are unlikely to realise their full potential.

One of the key issues that is not available in the literature is the economic cost of food insecurity, including its impact on the health system, economic productivity and social dysfunction. It is difficult to make the economic case for investment in food security without this data.

The human rights and ethical imperatives for universal access to fresh healthy food are, however, undeniable.

This report has drawn attention to a number of areas in which additional research and data are needed. One of the most pressing is in the area of economic evidence. Economic data can provide the evidence to governments of the ongoing costs, should nothing be done about food insecurity, and the potential benefits once effective actions are taken to rid Australia of food insecurity.
Development of a National Food Security Strategy

Coordination of action to address food security nationally requires a National Food Security Strategy. It could cover:

- the research and development needs of agricultural producers to support increased yields, better pest, weed and water management and development of produce that is adaptive to the range of climate variation and change that is being encountered across Australia
- exploring options to support access to affordable healthy food in remote communities, including effective supply chains
- application of existing and potential cross-subsidies in the distribution and pricing of food
- agreed benchmarks, key performance indicators and funding to enable a robust evaluation, and annual reporting.
15. Future Options

The key findings of this report are that:

- Australia lacks a National Food Security Strategy, which builds on plans at state and territory level.
- Data describing food security in Australia is incomplete and under-sampled in remote and isolated communities.
- There is a need for a comprehensive cost benefit analysis of the impact of food insecurity for remote and rural Australian communities.
- Food insecurity is worst in remote Aboriginal and Torres Strait Islander communities. Improved food security will help to close the health gap.
- Food insecurity has adverse health and social effects across the whole of life – from infancy through to old age. The human health impact includes higher rates of chronic diseases and this is felt most significantly in rural and remote communities.
- Food insecurity results in lower levels of educational achievement and poorer health, both of which negatively influence productivity and growth in rural and remote communities.
- International research demonstrates that food insecurity in childhood can be addressed and that adverse health impacts can be reduced.
- A range of options to address food security at the community level currently exist and are presented.
- Government policy needs to recognise the links between food insecurity and obesity, including for women from vulnerable populations.

Future Options

To help address the incidence and impacts of food insecurity in rural and remote Australia, consideration could be given to the following options:

Strategy

1. A National Food Security Strategy developed and managed jointly by the Departments responsible for health, agriculture and natural resources.

Research agenda

2. A National Food Security Strategy that includes an appropriately funded research agenda that addresses:

   i. Economic research into the cost of food insecurity in Australia today and modelling the benefits of different policy interventions.
   ii. Agricultural research into improved productivity and increased yields, improved pest and weed management, better use of water resources and development of crops that adapt to variable climatic conditions.
iii. Innovative approaches to addressing food insecurity and translation of successful models into different community settings.
iv. Longitudinal research on the effect of food insecurity on children over the life course.
v. Regular communication of the range and status of research projects and emerging issues in food security research.

Data collection
3. A review of the adequacy of statistical collections measuring food insecurity in Australia by Commonwealth, state and territory governments.
4. Adjustment of sampling methodologies for surveys measuring food security in Australia to ensure data from remote and very remote participants is collected for analysis and reporting. Additional questions could be included to improve the sensitivity of measures of food security.
5. The annual conduct and reporting of a National Healthy Basket Survey, with results analysed by remoteness area. The foods included should reflect the needs of nursing mothers and children aged up to 3 years of age.

Policy
6. The inclusion of food security in national policy discussions about tax, the environment, trade and income support.
7. The development of policies addressing food insecurity that consider and respond to both its causes and effects.
8. Reporting on national rates of food security coordinated by a single agency, working with all jurisdictions.
9. Promoting food security as part of a coordinated national approach to addressing poverty and inequality.

Potential approaches
10. Making available small (e.g. up to $5000) start-up grants to support local community action to address food insecurity. Activities funded could include development of a local community garden and/or kitchen, establishing a local farmers’ market, and establishing a community cooperative to support the sale of locally grown produce.
11. Should subsidisation of healthy foods be considered, options to fund the subsidy could be developed by an independent agency, such as the Productivity Commission, and may include consideration of a 'Healthy food levy' applied to energy-dense foods to support the distribution of healthy foods into rural and remote communities.
12. Recognising that not-for-profit and charitable food aid is one approach to addressing food insecurity but should not be the only approach supported.
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NATIONAL RURAL ISSUES

Food Security and Health in Rural and Remote Australia

Report from the National Rural Health Alliance

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