Author:

Sophie Wright-Pedersen (on behalf on the Alice Springs Food Security Reference Group), Public Health Dietitian, Urban Health, Central Australian Health Service, Department of Health, Northern Territory Government.

Acknowledgements to:

The Alice Springs Food Security Reference and Working Group Members (current and previous), from key organisations in Alice Springs. This includes the below organisations.

- Aboriginal Medical Services Alliance Northern Territory (AMSANT)
- Arid Lands Environment Centre (ALEC)
- Central Australian Aboriginal Congress (Congress)
- Central Land Council (CLC)
- Disability Advocacy Service (DAS)
- Northern Territory Council of Social Service (NTCOSS)
- Northern Territory Government, Department of Health, Central Australian Health Service
- Tangentyere Council

Co-researchers for Part 2, Anthea Brand (Flinders University) and Leisa McCarthy (Menzies School of Health Research)

All organisations and individuals who participated and contributed to the research and data collection phases.

The Alice Springs Food Security Reference and Working Groups would also like to acknowledge the Traditional Owners of the land on which this report has been developed upon, the Arrernte people, and to pay our respect to the Elders past, present and emerging.

Contact: Alice Springs Food Security Reference Group, secretariat Sophie Wright-Pedersen
Email: sophie.wright-pedersen@nt.gov.au
Phone: (08) 8951 6017


Front Cover: Developed by Sophie Wright-Pedersen using Canva


This Report and any accompanying documents is for information purposes only. While every effort has been made to ensure that the information is accurate, Alice Springs Food Security Reference and Working Groups will not accept any liability for any loss or damage which may be incurred by any person acting in reliance upon the information.
# Contents

Abbreviations and Definitions ........................................................................................................... 3  
Tables and Figures ............................................................................................................................. 4  
Alice Springs Food Security Reference Group .................................................................................. 5  
Executive Summary ............................................................................................................................ 6  
Recommendations ............................................................................................................................... 8  
Introduction ........................................................................................................................................ 11  
**PART ONE** ................................................................................................................................... 13  
Food and Nutrition Security Discussion Paper ................................................................................ 13  
Community Profile – Alice Springs .................................................................................................... 19  
Food and Nutrition Program Audit ................................................................................................... 27  
Spatial Mapping ............................................................................................................................... 32  
Market Basket Survey ........................................................................................................................ 37  
Recommendations ............................................................................................................................... 43  
References ......................................................................................................................................... 46  
Appendix 1: Spatial Mapping ............................................................................................................ 53  
Appendix 2: List of foods in the Market Basket Survey baskets ....................................................... 59  
Appendix 3: Market Basket Survey by district and food group, 2017-2019 .................................... 60
Abbreviations and Definitions

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aboriginal and Torres Strait Islander peoples&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Aboriginal peoples and Torres Strait Islander peoples have a great diversity of cultures, histories and values. For the sake of readability, and in recognition that the term Indigenous is a sensitive one for many Aboriginal and/or Torres Strait Islander people, this document will use the term Aboriginal, which should be taken to include Torres Strait Islander people. Where the term 'Indigenous' is used in this report it has originated from documents referred to and has been kept to ensure consistency.</td>
</tr>
<tr>
<td>ABS</td>
<td>Australian Bureau of Statistics</td>
</tr>
<tr>
<td>AIHW</td>
<td>Australian Institute of Health &amp; Welfare</td>
</tr>
<tr>
<td>CALD</td>
<td>Culturally and Linguistically Diverse</td>
</tr>
<tr>
<td>CDB</td>
<td>Current Diet Basket</td>
</tr>
<tr>
<td>CLS</td>
<td>Community Store Licensing Scheme</td>
</tr>
<tr>
<td>CPI</td>
<td>Consumer Price Index</td>
</tr>
<tr>
<td>DALY</td>
<td>Disability-Adjusted Life Year</td>
</tr>
<tr>
<td>EFR</td>
<td>Emergency Food Relief</td>
</tr>
<tr>
<td>Food Security</td>
<td>Where the term 'Food Security' has been used it should be taken to include 'Food and Nutrition Security'.</td>
</tr>
<tr>
<td>HFB</td>
<td>Healthy Food Basket</td>
</tr>
<tr>
<td>IRS</td>
<td>Index of Relative Socio-economic Disadvantage</td>
</tr>
<tr>
<td>LGA</td>
<td>Local Government Area</td>
</tr>
<tr>
<td>MB</td>
<td>Market Basket Survey</td>
</tr>
<tr>
<td>NRHA</td>
<td>National Rural Health Alliance</td>
</tr>
<tr>
<td>NILS</td>
<td>No Interest Loans</td>
</tr>
<tr>
<td>NT</td>
<td>Northern Territory</td>
</tr>
<tr>
<td>NTCOSS</td>
<td>Northern Territory Council of Social Services</td>
</tr>
<tr>
<td>NTG</td>
<td>Northern Territory Government</td>
</tr>
<tr>
<td>NUTTAB</td>
<td>Nutrient Tables; now known as the Australian Food Composition Database</td>
</tr>
<tr>
<td>NZ</td>
<td>New Zealand</td>
</tr>
<tr>
<td>SA&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Statistical Area Level 1: Smallest unit for the release of census data. Population of between 200 and 800 people with an average population size of approximately 400 people</td>
</tr>
<tr>
<td>SA&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Statistical Area Level 4: Largest sub-State regions. In regional areas, SA4s tend to have populations between 100,000 - 300,000.</td>
</tr>
<tr>
<td>SEIFA</td>
<td>Socio-Economic Indexes for Areas</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>USA</td>
<td>United States of America</td>
</tr>
<tr>
<td>USDA</td>
<td>United States Department of Agriculture</td>
</tr>
<tr>
<td>YLD</td>
<td>Years Lived with Disability</td>
</tr>
<tr>
<td>YLL</td>
<td>Years of Life Lost</td>
</tr>
</tbody>
</table>
Tables and Figures
Table 1: Alice Springs ISRD\textsuperscript{6} ................................................................. 21
Table 2: Life Expectancy 2015-2017 SA4\textsuperscript{17} in years .................................................. 23
Table 3: The number of times a program or policy addressed each of the food security dimensions ................................................................. 28
Table 4: The number of programs addressing each of the food security determinants and the characteristics of these programs .................................................. 29
Table 5: Cost of food baskets by district and type of store, 2019 ........................................... 38
Table 6: Variation in the cost of the food groups in the Healthy Food Basket (HFB) and Current Diet Basket (CDB) by district, supermarkets, 2017 to 2019 ........................................... 39

Figure 1: Diagram of recommendations from Parts One and Two of the Alice Springs Needs Assessment report ................................................................. 10
Figure 2: The Public Health Nutrition Bi-cycle\textsuperscript{13} framework ........................................... 12
Figure 3: Determinants of Food Security\textsuperscript{3} ................................................................. 14
Figure 4: Food Security Framework modified from De Rose et al. (2011)\textsuperscript{12} with extra information from Friel et al. (2017)\textsuperscript{5} and Australian Institute of Health & Welfare (AIHW) (2016)\textsuperscript{13} ................................................................. 18
Figure 5: Alice Springs SA1s, ISRD 2016 ........................................................................... 21
Figure 6: Age-standardised mortality rate, by cause and Indigenous status, Northern Territory and NSW, Qld, WA, SA and NT combined, 2011-2015 ........................................... 24
Figure 7: Age-standardised avoidable death rate (0-74 years), by Indigenous status, Northern Territory and NSW, Qld, WA, SA and NT combined, 2011-2015 ........................................... 24
Figure 8: Age-standardised burden of disease (DALY) rates, by disease group and state or territory .................................................................................. 26
Figure 9: Inclusion and Exclusion Flow Chart for Food and Nutrition Program Audit ............... 27
Figure 10: Proximity (500m) to outlets selling majority healthy items (supermarket) within Alice Springs considering IRSD index and town camps ........................................... 34
Figure 11: Proximity (500m) to outlets selling majority unhealthy items (convenience stores, takeaway) within Alice Springs considering IRSD index and town camps ........................................... 35
Figure 12: Accessibly via public transport to outlets selling majority healthy items (supermarket) within Alice Springs considering IRSD index and town camps ........................................... 35
Figure 13: Average cost of the NT Healthy Food Basket, store type, 2000–2019 .................... 40
Figure 14: Cost of the Healthy Food Basket compared with projected cost of the Healthy Food Basket with annual Consumer Price Index (CPI) increase, supermarkets, 2000 – 2019 ........................................... 40
Figure 15: Density of outlets selling majority healthy items (supermarket) and outlets selling majority unhealthy items (convenience, takeaway) in Alice Springs considering IRSD index and town camps ........................................... 53
Figure 16: Proximity (500m) to outlets selling majority healthy items (supermarket) within Alice Springs considering IRSD index and town camps ........................................... 54
Figure 17: Proximity (500m) to outlets selling majority unhealthy items (convenience stores, takeaway) within Alice Springs considering IRSD index and town camps ........................................... 55
Figure 18: Accessibly via public transport to outlets selling majority healthy items (supermarket) within Alice Springs considering IRSD index and town camps ........................................... 56
Figure 19: Alice Springs Public Transport Network. Current as of July 2019 ........................................... 57
Figure 20: Online bus timetable for Route 300-301 (Ross, Ilparpa, The Gap and Alice Springs Hospital). Current as of July 2019 ........................................... 58
Alice Springs Food Security Reference Group

Food insecurity is an overtly apparent issue in Alice Springs. The Alice Springs Food Security Reference Group (the Reference Group) was established in 2019 with the aim of increasing food security for all Alice Springs community members. The Reference Group is a collaboration between individuals and representatives of a variety of targeted local community groups, charities, government and non-government organisations identified as instrumental to improving local food security. The Reference Group was established to encourage coordination, collaboration and advocacy within Alice Springs for food security. Terms of Reference for the Reference Group are available upon request.

The objectives of the Reference Group are:

- To develop an Interagency Food Security Action Plan for Alice Springs incorporating aims, progress indicators and key actions in collaboration with community groups and key stakeholders to be in-line with their own objectives
- To assist planning, implementation and evaluation of food security initiatives against plan
- To facilitate collaboration and engagement between different food security working groups (including overcoming issues within or between projects)
- To consult with those most affected by food insecurity and therefore most influenced by plans and projects arising from the Reference Group to ensure these are as community driven and sustainable as possible
- To raise awareness and understanding of food security and identify gaps in service, particularly the need for culturally appropriate food on a regular and reliable basis for all people
- To collate, record and distribute information and share skills, resources and expertise about food security related programs in Alice Springs
- To work with partners to develop and secure larger funding for interagency projects that promote food security, as seen necessary
- To coordinate messages through individual organisations to lobby and advocate for food security to influence policy, where seen appropriate
- To facilitate organisational collaboration and engagement in food security initiatives (including identification of other organisations to be involved)

Members of the Reference Group meet quarterly and have informed project activities and agreed to all documents and recommendations produced by the group.

Organisations include:

- Aboriginal Medical Services Alliance Northern Territory (AMSANT)
- Arid Lands Environment Centre (ALEC)
- Central Australian Aboriginal Congress (Congress)
- Central Land Council (CLC)
- Disability Advocacy Service (DAS)
- Northern Territory Council of Social Service (NTCOSS)
- Northern Territory Government, Department of Health, Central Australian Health Service
- Tangentyere Council
Executive Summary

“Food and nutrition security exists when all people at all times have physical, social and economic access to food, which is safe and consumed in sufficient quantity and quality to meet their dietary needs and food preferences, and is supported by an environment of adequate sanitation, health services and care, allowing for a healthy and active life.” (FAO 2012)

This report was prepared by the Reference Group to collate current knowledge and perceptions surrounding food security in Alice Springs as the first step in developing a community-wide approach to addressing the issue. Its intent is to bring food security to the attention of local decision makers for discussion and consideration. It is well recognised that collective action needs to occur as a cross-sectional approach across systems including government, non-government organisations and community members to see positive change.

As stated by the NRHA (2016): “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.”

Fundamentally, food and nutrition security is influenced by the social determinants of health and the specific dimensions of availability, access, utilisation and stability over time. Influences at a local level have been interpreted at a household and community level within this report.

Key Findings:

- Alice Springs is home to a large proportion of groups identified at high risk of facing food insecurity, inclusive of Aboriginal (17.6%) and other Culturally and Linguistically Diverse (23.4%) peoples. This highlights the importance of working in the food security space to address the unjust disadvantage faced by these populations.
- Alice Springs sits close to the median relative disadvantage compared to other parts of Australia (396 of 543) and the NT (13 of 18). However, we have severely disadvantaged pockets within the Alice Springs local government area.
- Key determinants of food insecurity are present in Alice Springs. Housing availability and affordability are a prominent issue resulting in high levels of overcrowding and other forms of homelessness, especially for at-risk groups. For Aboriginal people, transport and utility access and affordability is lower than the rest of the NT population.
- The NT faces greater health disparity compared to the rest of Australia in many areas including life expectancy (4.9 years lower), and greater burdens of disease (1.4x higher) particularly in kidney and urinary (4.5x higher), blood and metabolic (2.4x higher), and cardiovascular diseases (2.0x higher). Dietary risk factors contribute 7.3% to this disease burden. Some of these disease are well correlated with food insecurity, especially Type 2 diabetes and obesity.
- Food and Nutrition programs within Alice Springs are plethoric (113 identified) but are uncoordinated across providers and focus mainly on Emergency Food Relief and Education of individuals, with large gaps in the Access dimension and Promotion determinant.
- The food system within Alice Springs is not tailored towards healthy eating behaviours. Mapping reveals that there is an abundance of outlets selling majority unhealthy items that are easier to access than outlets selling majority healthy items, especially in lower socioeconomic areas; and food deserts (where no food outlets are
within 500m) exist in entire suburbs, especially outside of town limits, and in extremely disadvantaged locations.

- Some public transport infrastructure is adequate and affordable to access, however improvements to frequency of services, communication of services, spread of bus stops in disadvantaged areas are recommended as the current system as whole may not meet the needs of the most vulnerable community members of which it aims to serve i.e. the elderly, young people or those with mobility impairments.

- Healthy food costs less than unhealthy/current food choices in Alice Springs and is comparable with Darwin prices. However, current data does not reflect the extra costs that may be incurred when utilising healthy food. These costs need to be investigated in greater detail to establish true affordability indices.

- Research has been conducted with service providers who described determinants, coping mechanisms and impacts of food security for Alice Springs community members. They also reported on current activities addressing food security and where they would like to see further action. For reasons described in this report, these have not been reported here but are considered in the recommendations and have been reported back to participants. They are planned to be published at a later date following research into community perspectives of food security in Alice Springs.

Recommendations from Parts One and Two are reported below.
Recommendations

From Parts One and Two

The recommendations proposed in this report aim to address food security through immediate, intermediate and longer-term actions with consideration given to both the outcomes and determinates, at all levels, of food security. The Alice Springs Food Security Reference Group will aim to facilitate and support the achievement of these actions.

1. Reference Group to identify and establish a lead organisation and position to coordinate and enable sustained action for food security in Alice Springs and continue the work of the Reference Group

2. Identified organisation from Recommendation One to collaborate with appropriate individuals and agencies to achieve the recommendations within this report.

This organisation would take over ownership of below recommendations where deemed appropriate i.e. scope; and dependent on point in time organisation identified.

3. Reference Group to support capacity building activities and adequate resourcing of local individuals, communities and agencies to collectively act upon food security within Alice Springs

4. Reference Group to support the development of or utilise an existing communication platform to promote food security activities and outcomes in Alice Springs

Intelligence Phase

5. Urban Health to undertake Part Three: community member consultation

6. Urban Health with support from Reference Group to map issues, their determinants, proposed actions for change; and research, and prioritise interventions known to address these issues and determinants to provide further recommendations for action.

7. Urban Health and Health Improvement to improve food environment data collection processes.

8. Urban Health to repeat Part One every 5-6 years.

Action Phase

Outcomes from Recommendation 5 will inform all recommendations in the Action phase

Policy

9. Reference Group to support the development and implementation of policies that positively influence food security within Alice Springs collaborate with all levels of government and non-government organisations.


11. Urban Health with support from the Reference Group to support organisations involved in food provision and food security related programs to develop and implement food and nutrition security policies to enable strategies that address the recommendations listed.

Other Action

12. Reference Group to support current action in the social determinants, and the development of a social determinants action plan for Alice Springs
13. Reference Group to facilitate and support the Emergency Food Relief sector within Alice Springs to address issues raised in Parts One and Two.

14. Reference Group to facilitate and support coordination and collaboration between programs and services currently addressing food security.

15. Urban Health with support from the Reference Group to ensure that food and nutrition information provided through Alice Springs organisations supports healthy eating and ensures food safety.

16. Urban Health with support from the Reference Group to facilitate and support improvements to the wider and in-store food environment including affordability, accessibility, availability, quality and promotion of healthy food and local food production.

Evaluation and Dissemination

17. Reference Group to increase awareness of the food security issue

18. Reference Group to develop and undertake evaluation strategies at process, impact and outcome levels to understand appropriateness and effectiveness of strategies.
Figure 1: Diagram of recommendations from Parts One and Two of the Alice Springs Needs Assessment report. Green = complete. Orange = next stages. Grey = in progress, will be complemented by Part Three. White = future actions once prerequisites complete or after specific time period. SDoH = Social Determinants of Health
Introduction

This report was developed to collate the current knowledge and perceptions surrounding food security in Alice Springs as the first step in developing a community-wide approach to addressing the issue. It is hoped that this report will be used to inform discussions, projects and policies within the Alice Springs community. This report does not extend to remote communities who have their own discrete issues that may vary from the urban context.

This report presents Part One of a three-part series.

Part One details statistical and local organisation and community data surrounding food security determinants and current activities addressing the issue within Alice Springs and, where relevant, the Northern Territory and Australia.

Part Two has been collected however is not reported here. The decision to not publicly release this data at this point in time was made to avoid presenting service provider perspectives of food security within Alice Springs before community members were consulted and their perceptions equally conveyed. The results of Part Two have been reported back to those who participated in the research. Service providers were consulted first to gain an understanding of who best to engage with for Part Three.

Part Two presents data obtained through local research conducted with service providers on their perceptions of food security determinants, coping mechanisms, and impacts within Alice Springs. Service providers also offered insight into how organisations are currently addressing food security within Alice Springs and where they thought further action could take place to better address the issue. Recommendations have been developed from information gathered in Part Two, with some recommendations awaiting completion of Part Three to be confirmed and undertaken.

Part Three is not reported here but is planned to be undertaken as the next step in this project. It will aim to approach community members within Alice Springs to gain further insight into food security determinants, coping mechanisms and impacts from those witnessing or experiencing it first-hand. It will also seek to provide opportunity for community member input into the future direction of food security action in Alice Springs with the longer term aim of community engagement throughout the entire planning, implementation and continuous improvement process in this space.

There are multiple Northern Territory Government policies and strategies supporting work in the food security space. Within the Department of Health these include:

- Northern Territory Health Promotion Framework. Recognised as a social determinant of health when looking at upstream factors contributing to health outcomes.
- Northern Territory Nutrition and Physical Activity Strategy (2015-2020). Directive under Objective 1: Improve food security particularly in remote communities. With specific actions that relate to this report:
  o Support research related to food systems and factors that influence purchasing and consumption decisions.
  o Contribute to projects researching options to improve food security in disadvantaged areas.
Northern Territory Aboriginal Health Plan (2015-2018). Recognised as an immediate factor contributing to health outcomes.

This report process was guided by the Public Health Nutrition Bi-cycle (Figure 2) framework\(^\text{13}\) Intelligence phase. Parts One, Two and Three address Stages 1-7 of the Intelligence phase. Following this report and completion of Part Three, further work will commence in Stages 7-8 and then flow into the Action and Evaluation phases.

![Figure 2: The Public Health Nutrition Bi-cycle\(^\text{13}\) framework. Stages addressed through Parts One, Two and Three are highlighted in yellow.](image)

Recommendations concluded from Parts One and Two are listed above in this report. These recommendations relate to actions that can be delivered prior to community engagement (Part Three) has been completed. Further recommendations will be made upon completion of Part Three. The Reference Group will consider all recommendations and progress into Stages 7-8 of the Intelligence phase and then into the Action and Evaluation phases of the Public Health Nutrition Bi-cycle framework\(^\text{13}\) (Figure 2).
PART ONE

Food and Nutrition Security Discussion Paper

Defining Food and Nutrition Security

In 2012 the Committee on World Food Security recommended use of the term “food and nutrition security” as it “best describes the conceptual linkages between food security and nutrition security” whilst “expressing a single integrated development goal to help guide policy and programmatic action effectively”¹.

The following definition was agreed upon by the Committee on World Food Security: “Food and nutrition security exists when all people at all times have physical, social and economic access to food, which is safe and consumed in sufficient quantity and quality to meet their dietary needs and food preferences, and is supported by an environment of adequate sanitation, health services and care, allowing for a healthy and active life.”

This definition will be used for the remainder of this document and will be applied at both a community and household/individual level.

Dimensions of Food and Nutrition Security

Within this definition sit the four dimensions of food security: availability, access, utilisation and stability, as well as the three determinants of nutrition security: access to food; care and feeding; health and sanitisation. Again, these will be applied at both a community and household/individual level. The dimensions of food security are:

1. **Food availability**: The availability of sufficient food, quantities of food and appropriate quality food supplied through stores, food outlets, imports and primary production.
2. **Food access**: The access of individuals, households and populations to adequate economic and physical resources to acquire and consume a nutritious diet.
3. **Food utilisation**: The utilisation of food based on knowledge and an understanding of an adequate diet to ensure nutritional well-being and meet all human physiological needs.
4. **Food stability**: Food insecurity is ultimately determined by the stability of the above three dimensions, that is, everyone, at the population, community, household and individual levels, must have sustained access to adequate and nutritious food at all times².

What determines food security?

Rychetnik et al. (2003) presented the following Figure (3) on the determinants of food security within the general Australian population.

This is broken into two parts: 1. **Food Supply** (availability) and 2. **Access to Food** (inclusive of utilisation), affected at a wider level by the food and nutrition system and the social and economic determinants, respectively.

It is noted that when promoting food security for disadvantaged groups focus should be on the local food supply as inadequacies affect purchasing patterns among local residents. The National Rural Health Alliance (NRHA) 2016 paper comments that rural and remote communities are home to larger proportions of those most vulnerable to food insecurity. In these areas, geographic isolation exacerbates access to affordable and acceptable foods.
Aspects of the **food supply** include:

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location of food outlets</strong> (retail and prepared foods)</td>
<td>Location is a key feature of food supply, especially larger supermarkets that supply a full range of food and groceries at competitive prices. Conversely small convenience stores tend to be expensive and do not provide the same range of foods. Supermarkets should be in areas where people live and/or work or easily reached by public transport.</td>
</tr>
<tr>
<td><strong>Availability of food within those stores</strong></td>
<td>Regular availability of healthy and appropriate foods (cultural or otherwise) should be seen within stores.</td>
</tr>
<tr>
<td><strong>Price of foods available</strong></td>
<td>Significant for those on low incomes. This determines purchasing, consumption and impacts disposable income. Fresh produce and low-fat/low-sugar/high-fibre products should be affordable and competitively priced against alternatives.</td>
</tr>
<tr>
<td><strong>Quality of foods available</strong></td>
<td>Needs to meet acceptability standards in quality, food safety and nutritionally. This affects acceptability of foods. Price and quality are related where high quality foods should not be more expensive than those of a lower quality.</td>
</tr>
<tr>
<td><strong>Variety of the food (fresh and processed)</strong></td>
<td>Reflect a variety from all five core food groups, plus water.</td>
</tr>
<tr>
<td><strong>Promotion and identification of different foods</strong></td>
<td>Healthy foods should be heavily promoted over less nutritious choices. Includes the use of ‘specials’, ‘combo deals’, pricing policies, in-store promotions and positioning, local advertising in local media and around the community. Positioning of food outlets and their relation to public venues i.e. schools, workplaces, social housing should be considered.</td>
</tr>
</tbody>
</table>

*Figure 3: Determinants of Food Security*. 
Access to food refers to resources and abilities of communities and individuals have to acquire and consume a healthy diet. Aspects include:

<table>
<thead>
<tr>
<th><strong>Financial resources</strong> i.e. money to buy good quality food</th>
<th>With lower disposable incomes, food is one of the first items to be sacrificed. Immediate relief can come in the form of food coupons, meal vouchers, or financial assistance with other social determinants i.e. housing for increased money for food. The NRHA paper reports that income for some rural and remote families are 15-20% lower than those in major cities.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Distance and transport to shops</strong> (especially affordable supermarkets) both public and private transport</td>
<td>Needs to be adequate to access appropriate foods. Those that face greater access difficulties generally live greater distances from shopping centres, in poorly serviced public transport areas i.e. very new or run-down housing estates, those living rural and remote where both households and suppliers face greater obstacles.</td>
</tr>
<tr>
<td><strong>Knowledge, skills and preferences</strong></td>
<td>In relation to acquiring and using food, especially those on a limited budget. Preferences may include personal, cultural or social however consider that these may be driven by food and drink advertising.</td>
</tr>
<tr>
<td><strong>Storage, preparation and cooking facilities</strong></td>
<td>Including secure and working fridge, freezers, and animal and pest-resistant dry storage that has the capacity for bulk food purchases; and to facilitate home cooking which is known to be cheaper and more nutritious. This is often lacking in cheaper housing, hostels, shelters or for those that are homeless.</td>
</tr>
<tr>
<td><strong>Time and mobility to purchase, prepare and consume healthy meals</strong></td>
<td>A lack of this can result in high consumption of processed, ready-made/take-away foods. These foods are generally higher in less healthy nutrients including saturated fat, sodium and sugar and lower in fibre, fresh fruit and vegetables. Those at greater risk are households with full-time adult workers, people with disabilities or frail, elderly people.</td>
</tr>
<tr>
<td><strong>Social supports</strong></td>
<td>Social isolation may lead to loss of appetite and less home cooking. Less social supports mean greater financial and time burdens on the individual for purchase and preparation as well as less coping mechanisms when food insecure. Importantly, social networks positively contribute to a community’s capacity to identify local food security problems, and to collaborate on initiatives to solve those problems.</td>
</tr>
</tbody>
</table>

Friel et al. (2017) developed a systems map on determinants of inequities in healthy eating (HE² model) which includes many of the same concepts as Rychetnik et al.’s (2003) Figure (3), however adds interconnecting arrows to demonstrate how each determinant relates to one another and elaborates in greater detail within the determinants and systems.

**Australian food insecurity prevalence data and those most at risk**
The Australian Health Survey 2011-12 showed that nationally 4.0% of Australians lived in a household that had run out of food in the previous 12 months and could not afford to buy more. Further, 1.5% of all Australians were in a household where someone went without food when they ran out of food. Within the Northern Territory (NT) these rates rose to 4.7% and 2.6% respectively.

Australian Aboriginal and Torres Strait Islander peoples are at greater risk of food insecurity. The Australian Aboriginal and Torres Strait Islander Health Survey 2012-13 showed that 22% were living in a household that had run out of food and could not afford to buy more, where 7% lived in a household that had gone without food when they ran out. Aboriginal and
Torres Strait Islander people living in remote areas were more likely than those in non-remote areas to be living in a household that had run out of food and couldn’t afford to buy more (31% compared with 20%). This includes 9.2% of people in remote areas and 6.4% of people in non-remote areas who went without food when they ran out.

Lawlis et al. (2018)² conducted a systematic literature review into Australian refugee groups, including participants from multiple parts of Africa, Somalia (woman), Swahili-speaking communities, Middle Eastern countries and mixed cultural groups. They found the prevalence of food security varied from 35% to 90%, and between 11% and 40% of participants were found to have experienced severe hunger.

Other groups at greater risk of food insecurity include⁴,⁶:

- families with no employment or low income
- welfare recipients
- single parent families
- others in more remote areas of the nation
- more likely to be public housing tenants or renters
- culturally and linguistically diverse groups
- those without access to public transport
- people with a disability, mental health condition, ill and/or frail people
- those suffering from homelessness

Within the NT there were 123 agencies affiliated with Foodbank (mainly in the Top End) that provided 31,000 meals in 2019. This was a 27% increase since 2018 with 48% more food required to meet total demand (the highest in Australia)⁸. Other Emergency Food Relief (EFR) organisations also operate across the NT.

The consequences of food insecurity

There are multiple documented consequences resulting from food insecurity⁴,⁸,⁹,¹⁰. These generally stem from inadequate dietary intake both qualitatively and quantitatively resulting in malnutrition in both forms of over- and under-nutrition. The results of this include:

- Overall poorer health, in both adults and children
- Reduced life expectancy with poor nutrition recognised as a significant contributing factor to the total burden of disease for Indigenous Australians. Dietary risks and high body mass account for 15% and 14% of the health gap.
- Changes in weight status including overweight and obesity, higher gestational weight gain with an inability to return to pre-pregnancy weight status; and weight loss, in both adults and children
- Development of chronic disease i.e. Type II diabetes, early onset dementia and iron deficient anaemia, especially in rural and remote communities; and poorer chronic disease management i.e. increased hypoglycaemic events
- Social isolation and deprivation, especially for refugees
- Mental health decline, including feelings of depression (including maternal), stress, hopelessness, shame, embarrassment, sadness, loss of confidence
- Disturbed sleep patterns, lethargy and tiredness and loss of concentration
- Work performance drop, thus negatively influencing productivity and growth
- Exclusively affecting children:
  - Poor pregnancy outcomes, including low birth weight and gestational diabetes and an increased risk of certain birth defects; and irreversible effects on intellectual development and behaviour
  - School absenteeism and lower educational achievement
- Higher rates of hospitalisation
- Poor developmental outcomes and high rates of growth retardation
- High rates of microcephaly this is associated with lower IQ, poor verbal, mathematical and visuo-spatial skills together with increased risk of depression, social dysfunction and hypertension in adulthood

The consequences of food insecurity at the individual and household level interact with the larger environment, having broader implications for society\textsuperscript{11}. As stated by the NRHA (2016)\textsuperscript{4}: “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.” Food insecurity reinforces socioeconomic inequities and affects the potential for social and economic development\textsuperscript{11}.

**Food Security Framework**

The following Framework has been developed by the Food Security Reference and Working Group Members.
Figure 4: Food Security Framework modified from De Rose et al. (2011)\textsuperscript{12} with extra information from Friel et al. (2017)\textsuperscript{5} and Australian Institute of Health & Welfare (AIHW) (2016)\textsuperscript{13}.

<table>
<thead>
<tr>
<th>Social Determinants of Health</th>
<th>Determinants of Food Security</th>
<th>Consequences of Food Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underlying social, physical, environmental, economic and political factors that lead to elevated food insecurity risk.</td>
<td>Indicators of risk for food insecurity</td>
<td>Indicators of food insecurity</td>
</tr>
<tr>
<td>Socioeconomic position</td>
<td>Food Supply</td>
<td>Acute</td>
</tr>
<tr>
<td>Education</td>
<td>Proportion healthy vs. unhealthy</td>
<td>Food Insufficiency (quality and quantity)</td>
</tr>
<tr>
<td>Occupation and Employment</td>
<td>Location of food outlets</td>
<td>Reliance Emergency Food Relief services</td>
</tr>
<tr>
<td>Income</td>
<td>Availability in outlets</td>
<td>Hunger and malnutrition</td>
</tr>
<tr>
<td>Early Life</td>
<td>Price</td>
<td></td>
</tr>
<tr>
<td>Social exclusion/support</td>
<td>Quality</td>
<td></td>
</tr>
<tr>
<td>Housing</td>
<td>Variety</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Promotion</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chronic</td>
</tr>
<tr>
<td>Built and Residential Environment</td>
<td>Financial Resources</td>
<td>Reduced life expectancy</td>
</tr>
<tr>
<td>Transport</td>
<td>Distance and transport to shops</td>
<td>Change in weight status (gain or loss)</td>
</tr>
<tr>
<td>Government policy</td>
<td>Mobility</td>
<td>Increased chronic disease and poorer management</td>
</tr>
<tr>
<td>Social protection policy</td>
<td>Social support</td>
<td>Decline in physical ability</td>
</tr>
<tr>
<td>International trade</td>
<td>Shopping and budget skills</td>
<td>Social isolation</td>
</tr>
<tr>
<td>Climate change, drought and soil quality</td>
<td></td>
<td>Mental health decline</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Work performance drop</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Poor pregnancy outcomes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Poor development and higher growth retardation in children</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Microcephaly in children</td>
</tr>
<tr>
<td></td>
<td></td>
<td>School absenteeism and lower educational attainment</td>
</tr>
</tbody>
</table>

- Geographic Location
  - Area of low SEIFA index
  - Geographic isolation
  - Remoteness

- Sub-population Groups
  - At greater risk

- Stability
  - Of the above 3 dimensions (access, supply, utilisation)
  - War
  - Economic crises
  - Climate crises
  - Seasonality of foods

Community Profile – Alice Springs

Demographic Data (Alice Springs)\textsuperscript{2,3,4}

Alice Springs is home to approximately 26,000 people. It is the third largest city in the Northern Territory and is located in the centre of Australia with vast distances from any other large town or capital city. In accordance with the Australian Bureau of Statistics (ABS) Australian Statistical Geographic Standard Remoteness Structure, Alice Springs is classified as a Remote area of Australia\textsuperscript{1}. However, in the NT context Alice Springs is an urban setting and food security issues are likely different to those experienced in small remote communities due to different characteristics. Remoteness plays a large role in whether people are susceptible to food insecurity.

The median age of people in Alice Springs is 35 years (28 years for Aboriginal peoples) with the large majority of people within the 25-59 year age bracket. Over a 5 year period those aged 0-24 and 35-49 had the greatest reduction in population, with growth in the 60-85+. This is combined with a 3.4% increased need for assistance with core activities that increased with age.

Alice Springs is culturally diverse town with 17.6% of the population identifying as Aboriginal, and those born overseas making up 23.2%. Of those who spoke another language, most people (89%) identified as speaking English well or very well.

### Box 1: Population of Alice Springs of those identified at risk of Food Insecurity (as per discussion paper)\textsuperscript{2,3,4}

- **Aboriginal Peoples**: 17.6%
- **Other Culturally and Linguistically Diverse (CALD)**: 23.4% (born overseas; 8.9% from New Zealand (NZ), United Kingdom (UK), United States of America (USA)); 35% of these people had arrived in the past 5 years.
- **Single parent families**: 16.5% of families
- **Families with no employment or low income**: 8.1% both not working, 2.5% one part-time, one not working; 12.6% one employed full-time, other not working
- **Welfare recipients**: >23% (unemployed and not in the labour force)
- **More likely to be public housing tenants or renters**: 43.7% renting
- **Those suffering from homelessness**: 1.9% (up to 25% in Aboriginal populations)
- **Those without access to public transport**: Refer to mapping section (pages 32-36)
- **People with a disability, mental health condition, ill and/or frail people**: 3.4% needing assistance with core activities
- **Those in more remote areas of the nation**: 100% of Alice Springs residents

### Box 2: Main multicultural groups (change over 5 year period)

- NZ: 3.5% (growing)
- USA: 2.7% (growing)
- UK: 2.7% (declining)
- India: 2.7% (growing)
- Philippines: 2.0% (growing)
- Zimbabwe: 0.7% (stable)
- South Africa: 0.6% (stable)

### Box 3: Main language groups

- English (only): 68.6%
- Australian Indigenous Language: 5.5%
- Filipino/Tagalog (Philippines): 1.6%
- Malayalam (Indian-Kerala): 1.6%
- Mandarin: 0.8%
- Punjabi: 0.7%
- Hindi: 0.6%
Determinants of Health and Food Security (Alice Springs and Northern Territory)
For more in depth determinants of health statistics for NT Aboriginal peoples refer to the AIHW Aboriginal and Torres Strait Islander Health Performance Framework 2017 Report: NT.

Socioeconomic Data (Alice Springs)

Education
In Alice Springs, 35.4% of the population attended an educational institution. Of these, 24.1% were in primary school, 17.1% in secondary school, and 14.9% in a tertiary or technical institution.

Highest education level achieved by those over 15 years in Alice Springs was dominated by obtaining a Bachelor Degree level or above (21.7%); Certificate III or IV (16.4%); up to Year 9 or below (7.2%); no educational attainment (0.9%)

Employment
For all those over 15 years the unemployment rate was 3.3% within Alice Springs, for Aboriginal people it was 19.7%. However, this only takes into account those "looking for work". Those not in the labour force made up another 20.4% and not stated was 12.8%, meaning that the unemployment rates are most likely higher.

The most common occupations in Alice Springs were professionals (24.2%), community and personal service workers (16.2%), clerical and admin workers (14.1%) and technical and trades workers (12.3%)

Income
The median weekly personal income in Alice Springs was $1,002, for households this was $1,937 (for Aboriginal households $1,314), and for families $2,259. For those on welfare payments, single people receive approx. $325/wk or $500/wk as a couple.

SEIFA Indices
The Socio-Economic Indexes for Areas (SEIFA) is a suite of four indexes that have been created from social and economic Census information. Each index ranks geographic areas across Australia in terms of their relative socio-economic advantage and disadvantage. The Index of Relative Socio-economic Disadvantage (IRSD) is used to measure disadvantage. Numbers below 1,000 are low scores and more disadvantaged than those above 1,000.

Table 1 below shows that the Local Government Area (LGA) of Alice Springs sits within the 7th decile for the NT and is ranked 13 of 18 LGAs. However, when observing individual SA1 areas (smaller areas within the LGA detailed on the map below (Figure 5)) the lowest score for Alice Springs was 354 and the maximum score was 1138 showing disparity across the district. Looking at the map below (Figure 5) those with lowest IRSD quintiles were town camp areas and the southern end of The Gap (dark red). The least disadvantaged quintile areas were mainly found in Desert Springs, Mt Johns and northern parts of East Side (light yellow).

---

*IRSD: accounts for low income, unemployment, no internet, level of qualification, low-skilled occupations, low rent dwellings, single parent families, disability, separation, car ownership, overcrowding and poor English in a certain area.*
Table 1: Alice Springs ISRD

<table>
<thead>
<tr>
<th>Australia</th>
<th>Northern Territory</th>
<th>Alice Springs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decile</td>
<td>Rank*</td>
<td>Decile</td>
</tr>
<tr>
<td>Alice Springs</td>
<td>8</td>
<td>7</td>
</tr>
</tbody>
</table>

*Out of 543 LGAs in Australia
**Out of 18 LGAs in NT

Figure 5: Alice Springs SA1s, ISRD 2016

Housing Data (Alice Springs and Northern Territory)

The main household structures within Alice Springs were couples with children (25.4%), lone persons (21.9%), couples without children (20.2%), and single parent families (9.0%) which were dominated by mothers (83.2%). The average child per families with children was 1.9

There are 18 town camps in Alice Springs, as of 2017 there were 285 houses. As reported by Foster et al. (2005) “The town camps are small communities made up of family members or members of the same language groups, gathered together in one area. They are situated in and around the fringes of the Alice Springs township”. In 2005, there were approximately 1,765-2,065 Aboriginal people residing in town camps. This population is extremely transitory where the actual estimated service population is between 2,560-3,300 mainly due to visitors from remote communities around Alice Springs.

Overcrowded housing is a dominant issue in the NT with 52% of Aboriginal Territorians living in overcrowded housing in 2014. This figure is more than double the amount of any other state or territory with ACT only reporting at 4%. Occupancy rates on Alice Springs Town Camps were estimated between 10.8-16.1 people per house in 2005 and 1.2 people per room in 2017 (excluding visitor rates). Over a 15 year period (2000-2015) there was a 72% increase of families on the public housing waitlist for Greater Darwin and Alice Springs.
Reports reveal a 12% decline in NT public housing stock, due to transfer to non-government providers and sale to private investors\(^9\). 

Northern Territory homelessness rates are up to 25% amongst the Aboriginal population, with a large majority (92%) living in severely overcrowded housing\(^9\). 

In the NT 31% of Indigenous Australians reported living in dwellings of an unacceptable nature where 19% didn’t have access to food preparation facilities\(^5\).

**Housing Expenditure**

In Alice Springs the median mortgage repayments were $487/wk (both Aboriginal and non-Aboriginal) and rent approx. $350/wk ($200/wk for Aboriginal). The NTCOSS 27th cost of living report reveals median rental prices for houses and units went up by between $10-25 per week (exception being 2 bedroom units – down $25 per week) from Dec 2018-19\(^10\).

Expenditure on rent is considered acceptable under 30% of total income, with the remainder to provide adequate basic living needs\(^11\). Overall, 9.5% and 5.7% of households in Alice Springs spent more than 30% of income on rent and mortgage, respectively. The below figures have been calculated from the above income and expenditure data:

- Lone households may be at greater risk as spending >35% on rent (unacceptable)
- Single people on welfare at significant risk as spending >65%-100% on rent (unacceptable)
- Couples on welfare at significant risk as spending >40-70% on rent (unacceptable)

**Transport Data (Alice Springs and Northern Territory)**

In Alice Springs 7.6% of occupied private dwellings reported not having a registered motor vehicle\(^2,3\). Most journeys to work in Alice Springs were by motor vehicle (over 80%) and walking (7.5%). Only 5.4% travelled by bicycle and 4.5% by public transport\(^12\).

In the NT (2014-15)\(^5\):

- 18% of Aboriginal people reported not being able to get to places needed, never went out or were housebound (<1% for non-Aboriginal peoples).
- 66% of Aboriginal people (\(\geq 15\) years old) had access to a motor vehicle (85% non-Aboriginal people)
- 15% of Aboriginal people (\(\geq 15\) years old, not housebound) had used public transport in the past two weeks
- Public transport was available to 36% of Aboriginal people (\(\geq 15\) years old). Of those who could access it, 72% reported they preferred to use their own transport or walk.

**Transport Expenditure**

The NTCOSS 27th Cost of Living report reveals that fuel prices in Alice Springs were on average 189 cents per litre, up 2.1% between Feb 2019-20. It also reports that Alice Springs is the 3rd least affordable region (compared to similar regions in Australia) for transport expenditure as a proportion of incomes, at 13.8%\(^10\).

**Utility Data (Alice Springs and Northern Territory)**

Smart Meters (Urban e-token meters) are able to be programmed as either pre-paid power, where credit is purchased in advance, or as an account (billable) meter, where a retailer will send an invoice for the power used\(^13\). In Alice Springs approx. 570 houses use a Smart meter.
(2018-19 Q4). Of these 570 houses, 420 (74%) had at least one self-disconnection eventb for a mean duration of 455 minutes (7.5 hours) within a 3 month period. Most of these households are Public Housing. 285 of these households are located on Town Camps14.

In Alice Springs, 15.8% of households did not have access to internet connection2,3.

Utility Expenditure

The 26th NTCOSS Cost of Living report reveals that NT households spend 3.9% on utilities (electricity, gas and other fuels, water and sewerage), the third lowest in the country. However, NT has the highest level of average weekly household utility expenditure at $64.53 ($10 above the national average). The difference in the analysis of these results stems from the NT population having a high average disposable income which needs to be considered when applying data analysis to low income households15.

Health Status and Outcomes (Northern Territory)

A large proportion of the NT population (59.5%) considered themselves to be in excellent or very good health (vs. Aus. 56.2%)c,16. Although, rates were lower for Aboriginal people at 43%5. Table 2 below shows that the NT has a lower life expectancy compared to the rest of Australia, largely attributed to those areas outside of Darwin (NT Outback) in which Alice Springs is included.

For more in depth and broader health statistics:

- on Aboriginal peoples in the NT refer to the Aboriginal and Torres Strait Islander Health Performance Framework 2017 Report: NT from the AIHW5
- on non-Aboriginal peoples in the NT refer to the National Health Survey (2014-15)16

Life expectancy

Table 2: Life Expectancy 2015-2017 SA417 in years

<table>
<thead>
<tr>
<th></th>
<th>NT – Outback</th>
<th>Darwin/Greater Darwin</th>
<th>NT</th>
<th>Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>75.7</td>
<td>84.5</td>
<td>79.4</td>
<td>84.6</td>
</tr>
<tr>
<td>Male</td>
<td>72.8</td>
<td>79.4</td>
<td>75.9</td>
<td>80.5</td>
</tr>
</tbody>
</table>

Mortality rate

Figure 6 reveals the leading causes of death for Aboriginal and non-Aboriginal people within the NT compared to combined parts of Australia. Figure 7 reveals avoidable and preventable death rate. Avoidable death refers to deaths from conditions that are considered avoidable, given timely and effective health care (including disease prevention and population health initiatives). Deaths from most conditions are influenced by various factors in addition to health system performance, including the underlying prevalence of conditions in the community, environmental and social factors and health behaviours5. From these it can be

---

b an interruption to the supply of energy because a prepayment meter system has no credit (including emergency credit) available

c National Health Survey: Urban and rural areas in all states and territories were included, while Very Remote areas of Australia and discrete Aboriginal and Torres Strait Islander communities were excluded. These exclusions are unlikely to affect national estimates, and will only have a minor effect on aggregate estimates produced for individual states and territories, excepting the NT where the population living in Very Remote areas accounts for around 23% of persons.
determined that Aboriginal peoples face heightened health outcome disparities that are largely preventable.

Figure 6: Age-standardised mortality rate, by cause and Indigenous status, Northern Territory and NSW, Qld, WA, SA and NT combined, 2011-2015. From AIHW Report. Note neoplasms refer to tumours.

Figure 7: Age-standardised avoidable death rate (0-74 years), by Indigenous status, Northern Territory and NSW, Qld, WA, SA and NT combined, 2011-2015. From AIHW Report.

Obesity Rates
Rates of overweight and obesity in the NT are higher at 64.3% (vs. Aus. 63.4%). This is higher in males (72.9% vs. 70.8%) as female rates mirror National rates (56.3%). Waist circumference is higher for both genders compared to the rest of Australia.

Overall, children had similar rates of overweight and obesity (25.6% vs. 25.8%) however for males this is higher (32.6% vs. 26.8%) and highest in the 12-15 year category. There were
lower female rates compared to the national average (17.4% vs. 24.8%), highest in the 8-11 year category.

**Diet Quality**

In the NT, diet quality did not comply with the National Dietary Guidelines for both adults and children, similar to the rest of Australia.

<table>
<thead>
<tr>
<th>Box 4: Percentage of population meeting recommended fruit and vegetable serves</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adults: NT (vs. Australia)</strong></td>
</tr>
<tr>
<td>- Fruit (2 serves/day): 47.4% (vs. 49.8%)</td>
</tr>
<tr>
<td>- Vegetables (5 serves/day): 7.3% (vs. 7.0%)</td>
</tr>
<tr>
<td>- Fruit and Vegetable: 5.3% (vs. 5.1%)</td>
</tr>
<tr>
<td><strong>Children: NT (vs. Australia)</strong></td>
</tr>
<tr>
<td>- Fruit (2 serves/day): 67.4% (vs. 68.1%)</td>
</tr>
<tr>
<td>- Vegetables (5 serves/day): 7.4% (vs. 5.4%)</td>
</tr>
<tr>
<td>- Fruit and Vegetable: 7.7% (vs. 5.1%)</td>
</tr>
</tbody>
</table>

**Burden of Disease**

The burden of disease facing the NT is higher than the national average in total burden (DALY, 1.4x) made up of non-fatal (YLD; 1.1x) and fatal (YLL; 1.8x) burden exceeding all other states and territories.

The higher rates for total burden for the NT are attributable to higher rates in almost all disease groups, except for mental & substance use disorders, musculoskeletal conditions, reproductive & maternal conditions, skin disorders and neurological conditions (Figure 8, below).

In particular, in the Northern Territory,
- Kidney & urinary diseases were 4.5 times as higher than the national rate
- Blood & metabolic disorders were 2.4 times higher
- Injuries 2.1 times higher
- Cardiovascular diseases 2.0 times higher
The risk factors contributing the most disease burden were:

- Tobacco use (9.3%),
- Overweight & obesity (8.4%),
- Dietary risks (7.3%),
- High blood pressure (5.8%)
- High blood plasma glucose (including diabetes) (4.7%).

Among the dietary risk factors, a diet low in whole grains and high fibre cereals contributed the most to disease burden (1.6%). For cardiovascular disease, dietary risks contributed 40.2% of total burden, and for endocrine disorders (including diabetes) it contributed 34.2%. Higher rates of dietary risks and overweight and obesity were found in the lowest socioeconomic group compared with the highest.
Food and Nutrition Program Audit

Aims
1. To understand and map current food and nutrition related programs operating in the Alice Springs Urban region and the food security determinants that they address.
2. To identify gaps in food security determinants addressed within projects/policies applicable to Alice Springs Urban.

Scope
Current projects and policies that directly address the determinants of Food Security (see Figure 3 – Discussion Paper) within the Alice Springs Urban context were analysed.

Included if they:
- Currently operated within the Alice Springs Urban community.
- Were a structured program or policy that specifically and directly addressed one or more food security determinant/s with the aim of sustainable ongoing effects. If sustainability was not achieved it was classed as a form of Emergency Relief (i.e. housing, food) where Emergency Food Relief was documented.
- Were a structured program/policy that targeted a cohort of people, or a specific setting.

Excluded if they:
- Had a remote only-focus (outside of Alice Springs Urban).
- Could not be supported or advocated for at a local level i.e. Centrelink payments.
- Individual case-based service (i.e. dietetic consult, financial counselling) rather than a program
- All other forms of Emergency Relief besides food.

*FSD: Food Security Determinant; ASP: Alice Springs

Figure 9: Inclusion and Exclusion Flow Chart for Food and Nutrition Program Audit. Green boxes reveal path to inclusion.
Method
Methods were similar to that conducted by De Rose, Roberts & Nobes (2011). Organisations and their programs were first identified via internet based searches, local knowledge and focus groups/interviews with staff from community organisations. Organisations identified as potentially running food security related programs were then contacted either face-to-face or via email or phone to confirm details of the program and ensure correct determinants were identified. Details were entered into an excel spreadsheet to map against the determinants. Depending on results, programs were included or excluded as per Figure 9.

Limitations to this audit include possibly missing organisations in initial search, programs being missed if informant wasn’t fully aware of the audit scope or all programs run by the organisation. Some data could only be collected off the internet when no response was obtained from an organisation. Programs regularly being developed and ceased mean the data collected will become outdated very quickly. It was recognised that some case management programs (i.e. financial counselling, cooking and shopping assistance, and dietetic services) do address food security determinants particularly within the access and utilisation dimensions and that other forms of Emergency Relief/temporary housing programs also address storage, preparation and cooking facilities determinants. However due to the ad-hoc and short-term nature of these programs they were not included as it could not be certain that they would have lasting impacts or determinants would be addressed on a consistent basis, if at all.

Results
A total of 64 organisations were identified as being relevant to food security and delivered a combined total of 113 programs or policies relevant to Alice Springs Urban that addressed one or more food security determinants. Detailed Food and Nutrition Audit tables are available upon request.

Table 3: The number of times a program or policy addressed each of the food security dimensions

<table>
<thead>
<tr>
<th>Food Security Dimension</th>
<th>Number of Times Dimension Addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability (location of food outlets, availability in outlets, price, quality, variety, promotion)</td>
<td>94</td>
</tr>
<tr>
<td>Utilisation (Knowledge, skills and preference; storage, preparation and cooking facilities)</td>
<td>64</td>
</tr>
<tr>
<td>Emergency Food Relief*</td>
<td>58</td>
</tr>
<tr>
<td>Access (financial resources, distance and transport to shops; time and mobility; social support)</td>
<td>52</td>
</tr>
</tbody>
</table>

*Not a Food Security Dimension but included for comparative purposes
Note that totals will be greater than the number of programs as some programs address more than one dimension.

*d refer to Discussion Paper, page 13, for definition
Programs were mapped against determinants commonly reported in other food security research as per the Discussion Paper above (pp. 13-19) and Emergency Food Relief.

Table 4: The number of programs addressing each of the food security determinants* and the characteristics of these programs (dot pointed below each determinant).

<table>
<thead>
<tr>
<th>Determinant</th>
<th>Number of Programs/Policies</th>
<th>Proportion of Programs/Policies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Food Relief</td>
<td>58</td>
<td>51%</td>
</tr>
<tr>
<td>- EFR funded programs that provided food vouchers or food packages</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- provision of free food as part of a service, especially youth and accommodation services,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- food suppliers donating food i.e. Second Bite via Coles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- free fruit for kids schemes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- subsidised form of food i.e. Meals on Wheels programs, School Nutrition Programs (SNPs).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Knowledge, skills and preferences        | 40                         | 35%                            |
| - food and nutrition education programs in preschools and schools |                           |                                |
| - life skills programs involving cooking and nutrition education |                           |                                |
| - general community nutrition education programs/sessions |                           |                                |
| - community/school garden/horticulture programs |                           |                                |
| - hospitality courses/cooking classes    |                           |                                |
| - home maintenance programs              |                           |                                |
| - advocacy groups                        |                           |                                |
| - high-level plans                       |                           |                                |

| Financial resources                      | 23                         | 21%                            |
| - subsidies for public transport, electricity and water |                           |                                |
| - life skills sessions on budgeting      |                           |                                |
| - No Interest Loans (NILS) programs     |                           |                                |
| - money management programs             |                           |                                |
| - advocacy groups                        |                           |                                |
| - high-level plans                       |                           |                                |

| Storage, preparation and cooking facilities | 24                         | 20%                            |
| - long-term subsidised housing provision  |                           |                                |
| - housing maintenance and upgrade programs |                           |                                |
| - subsidy schemes for electricity and water |                           |                                |
| - accessible kitchen facilities at organisations |                           |                                |
| - transitional housing/tenancy support programs |                           |                                |
| - NILS loans for household items         |                           |                                |
| - advocacy groups                        |                           |                                |
| - high-level plans                       |                           |                                |

* refer to Discussion Paper, pages 13-15, for definition
<table>
<thead>
<tr>
<th>Availability of healthy food in outlets</th>
<th>20</th>
<th>18%</th>
</tr>
</thead>
<tbody>
<tr>
<td>• policies addressing food provision i.e. healthy canteens and the venues that these were implemented in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• community/school gardening/ agriculture programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• local fruit and vegetable producers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• advocacy groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of food</td>
<td>19</td>
<td>17%</td>
</tr>
<tr>
<td>• policies surrounding healthy fresh food provision (i.e. better nutritional quality) and the venues that these were implemented in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• community/school gardening/ agriculture programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• local fruit and vegetable producers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• advocacy groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variety of food</td>
<td>18</td>
<td>16%</td>
</tr>
<tr>
<td>• policies surrounding healthy fresh food provision (i.e. greater variety) and the venues that these were implemented in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• community/school gardening/ agriculture programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• local fruit and vegetable producers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• advocacy groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price of food</td>
<td>14</td>
<td>12%</td>
</tr>
<tr>
<td>• policies addressing overall food pricing and pricing differentials between healthy and unhealthy products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• community/school gardening/agriculture programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• advocacy groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• reports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location of food outlets</td>
<td>13</td>
<td>11.5%</td>
</tr>
<tr>
<td>• healthy food outlets i.e. canteens, food gardens, fruit and veg market stalls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• local fruit and vegetable producers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• advocacy groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• high-level plans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promotion of healthy food</td>
<td>11</td>
<td>10%</td>
</tr>
<tr>
<td>• policies surrounding healthy fresh food promotion (i.e. product placement and marketing) and the venues that these were implemented in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• food suppliers providing free fruit for kids</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• advocacy groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Support</td>
<td>10</td>
<td>9%</td>
</tr>
<tr>
<td>• group activity programs centred around sharing a meal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• advocacy groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• high-level plans</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Distance and transport to shops

- public transport
- transport subsidy schemes
- Meals on Wheels programs
- pay-for-service food delivery programs
- advocacy groups
- high-level plans

| Distance and transport to shops | 10 | 9% |

### Time and Mobility

- transport accessibility schemes
- Meals on Wheels programs
- pay-for-service food delivery programs
- advocacy groups
- high-level plans

| Time and Mobility | 9 | 8% |

Note that totals will be greater than the number of programs as some programs address more than one determinant.

**Analysis**

The Food and Nutrition Program Audit revealed an overwhelming number of Alice Springs organisations working in the food security space through multiple programs. The main focus being on EFR (51%), and programs that address knowledge, skills and preferences (35%). Educational (Knowledge, Skills and Preference) programs, although necessary for improved food security, they cannot be delivered in isolation. This puts emphasis on the individual’s responsibility to procure healthy foods without considering whether or not there is adequate access and facilities to support this. Meanwhile, EFR is a short term solution to a problem that has underlying factors needing to be addressed on a long-term and sustainable manner.

Gaps in service mainly revolved around the Food Access dimension particularly Time & Mobility, and Distance & Transport to Shops. No programs assisted people to get directly from their home to a supermarket for free or significantly subsidised costs. Instead, they mainly focused on delivering food to the person’s residence for a fee. Focus in these areas could also address short-falls in the Location of Food Outlets determinant. Food Promotion was seen to be a gap with minimal efforts in this space except for some government facilities that implemented policies supporting healthy food promotion. With the amount of unhealthy food marketing being delivered to the general public on a daily basis, healthy food promotion is necessary to influence consumer choice.
Spatial Mapping

Aim
1. To spatially map outlets selling majority healthy or unhealthy items in Alice Springs Urban to determine food desert\(^f\) areas
2. To spatially map outlets selling majority healthy or unhealthy items in Alice Springs Urban against public transport to determine levels of access

Scope

<table>
<thead>
<tr>
<th>Included:</th>
<th>Excluded:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Supermarkets</td>
<td>• Outlets not accessible to the general public i.e. wholesalers</td>
</tr>
<tr>
<td>• Convenience stores</td>
<td>• Providing a limited supply of food i.e. speciality stores</td>
</tr>
<tr>
<td>• Takeaway outlets</td>
<td>• Outlets not open regularly enough to provide a steady food supply</td>
</tr>
</tbody>
</table>

Introduction

Access to outlets selling majority healthy items has a significant impact on the health of communities and wider populations\(^1,2\). As stated by the Heart Foundation\(^1\) "A considerable body of literature exists relating to the association between the community food environment and diet quality (such as through purchasing and consumption behaviours); the association between the community food environment and obesity; and the association between neighbourhood characteristics (i.e. disadvantage) and the food environment."

Method

Methods were adapted from those conducted by De Rose, Roberts & Nobes (2011)\(^3\). Food outlets were first identified using Google Maps and local knowledge and entered into an excel spreadsheet. Researchers then visited outlets to classify them as supermarkets, convenience stores, takeaway or other (i.e. wholesaler, restaurant, café, specialty store). Supermarkets were identified as healthy food sources as they are thought to provide the majority of people's healthy food items, including fruit and vegetables\(^4\).

- Supermarkets were classified using the Northern Territory Government Community Store Licensing Scheme (CLS) framework\(^5\) which refers to quantities of fresh produce.
- Takeaway outlets were classified according to the ABS definition for takeaways\(^6\) and had to meet all criteria.
- Convenience stores were classed as outlets that served as a supermarket however did not meet the CLS framework or ABS takeaway definition.

Once classified, items were located using Google My Maps\(^7\) and separated into distinct categories. Public bus stops and town camps\(^8,9\) were also mapped using this software.

Each individual category was then exported as a .kmz file and uploaded into QGIS\(^10\) Geographic Information System software. SEIFA Index of Relative Socio-economic Disadvantage (IRSD, 2016)\(^11,12\) data was also uploaded into QGIS. The IRSD\(^12\) accounts for low income, unemployment, no internet, level of qualification, low-skilled occupations, low rent dwellings, single parent families, disability, separation, car ownership, overcrowding and poor English in a certain area. The lower the score the greater the disadvantage.

\(^f\) Food Desert: Defined in this report as living outside of the 500m radius zone from all food outlets (healthy and unhealthy).
Five hundred metre (500m) buffer zones were placed around all food outlets and bus stops as this is considered a reasonable distance to measure physical access to shops when considering people's physical abilities, the weight of shopping and mental barriers of larger distances\textsuperscript{13,14,15,16}. It should be noted that this is a linear measurement and does not necessarily take account of the actual routes people take to shops.

Screenshots were taken of maps and entered into Appendix 1 along with current Alice Springs bus route map and sample timetable.

Limitations

This study used a five hundred metre (500m) buffer zone around all food outlets and bus stops. It should be noted that this is a linear measurement and does not necessarily take account of the actual routes people take to shops. Further, it is recognised that for those living with mobility impairments or unable to carry heavy/lots of shopping (elderly, physical disability, families with small children) a 500m distance may still be too far to walk. Food outlets changing mean the data collected will become outdated after a period of time.

Results and Analysis

Density and Proximity

Figures 12, 13, 14 and 15 (also in Appendix 1), reference food outlet density and proximity and reveal that:

1. There are more outlets selling majority unhealthy items than those selling majority healthy items

   - Alice Springs has a substantially higher proportion of outlets selling majority unhealthy items (takeaway and convenience outlets, 59 (87%)) than outlets selling majority healthy items (supermarkets, nine (13%)). Outlets selling majority unhealthy items have a greater spread across Alice Springs.
   - The highest density of food outlets is within Alice Springs town centre; with 28 in total (three supermarkets, and 25 convenience or takeaway outlets; 1:8 ratio).

2. Outlets selling majority healthy items cannot be accessed in the absence of outlets selling majority unhealthy items

   - There is at least one outlets selling majority unhealthy items within the same vicinity as nearly every outlets selling majority healthy items, with the exception of Food Town (supermarket) in Gillen.
   - Takeaway and convenience stores are predominantly located along major roads between low SEIFA areas and supermarkets and in higher concentration around major shopping areas.

3. Food deserts exist in entire suburbs

   - There are no food outlets located in the areas of Illpara, Kilgariff, Ross, Sadadeen, New East Side and Desert Springs. Some of these areas contain town camps.

4. It's easier to access outlets selling majority unhealthy items compared to outlets selling majority healthy items, especially for low socio economic groups
- Eighty-nine percent (89%) of town camps (all but two) are located outside of the 500-metre radius of any supermarket.
- There is a greater number of, and closer proximity to (within 500m), takeaway outlets and convenience stores compared to supermarkets in more socio-economically disadvantaged communities, particularly town camp areas.
- Takeaways and convenience stores were also located close to schools and sporting facilities.

**Access**

Anecdotal (collected in Part 2) and observational data indicates that use of the Alice Springs public transport (bus) system is low and disadvantaged groups are less likely to have regular access to private transport. Instead disadvantaged groups are relying on taxis (costing up to $70 for a return trip), borrowing private vehicles, or walking long distances.

Figures 15 (below), 16 and 17, Appendix 1 reveal the following:

5. **Affordable Public Transport Infrastructure exists in most areas, although improvements can be made**

- All supermarkets have a bus stop within 500m (usually less)
- Most public transport infrastructure is adequate within Alice Springs. Some areas are serviced by a bus and all buses and bus stops are disability friendly
- Public transport is affordable\(^{16}\) with subsidised rates for concessions i.e. $1 for single, $2 daily tickets.

![Figure 10: Proximity (500m) to outlets selling majority healthy items (supermarket) within Alice Springs considering IRSD index and town camps.](image-url)
Figure 11: Proximity (500m) to outlets selling majority unhealthy items (convenience stores, takeaway) within Alice Springs considering IRSD index and town camps.

Figure 12: Accessibly via public transport to outlets selling majority healthy items (supermarket) within Alice Springs considering IRSD index and town camps.
6. However, public transport may not meet the needs of the most vulnerable community members of which it aims to serve.

Some areas are located outside of a 500m public transport radius and it should be noted they exist in food deserts also.

- Mainly in the most disadvantaged areas (as per IRSD) and include town camps in the West: Larapinta Valley; North: Basso’s Farm, Warlpiri (partially); East: Ilpe Ilpe (partially), Hidden Valley (partially); South: Karnte, Drive In, Little Sisters (partially).
- Middle disadvantaged areas include parts of Braitling and Kilgariff.
- Less disadvantaged areas with poor access include northern East Side, far west Larapinta, Desert Springs, Mt Johns, Ross and Ilparpa. Although less disadvantaged some residents may not own private transport and may encounter physical mobility issues i.e. elderly or those living with a disability.
- For those living with mobility impairments or unable to carry heavy/multiple shopping bags (elderly, physical disability, families with small children) a 500m distance may still be too far to walk.
- The logistics of the public bus system are a barrier through infrequent services (minimum 45 minutes, up to 1.5hrs between buses) and short operating times (Mon-Fri 7am-5.30pm; Saturday 8am-2pm; and no service on Sunday).
- The timetable/map are complex to interpret and not all stops are listed on timetables. Those displayed at bus stops do not identify where the person currently is on the map.
- Additionally, most bus routes are uni-directional meaning passengers may need to travel an entire route to access a supermarket 1km away.

People in socio-economically disadvantaged areas face increased nutrition-related health condition risk; exacerbated by living in food deserts\(^{18}\). Further, a higher proportion of outlets selling majority unhealthy items compared to those selling majority healthy items (as seen in this study) influences food purchasing and diets, contributing to a greater risk of overweight and obesity\(^4\). Areas with an increased density (proportion) of outlets selling majority healthy items are associated with an increased fruit, vegetable and other healthier purchases, and consumption of these items, whereas areas with high densities of takeaway outlets and convenience stores result in poorer diet quality, and increased sugar sweetened beverage, saturated fat and fast food intake. Studies have found that an increased density of outlets selling majority healthy items are associated with a lower likelihood of obesity, and other diseases linked to poor nutrition\(^1,2\).

Proximity to supermarkets has been shown to influence health outcomes and dietary intake particularly in lower socioeconomic areas\(^{19}\). While proximity alone may only play a small role in food security of communities, this role is far greater in groups who have less access to transportation and/or adequate footpaths\(^{20}\). As people living in areas of socioeconomic disadvantage are less likely to have access to adequate transport, distance may have a bigger impact on diet and health outcomes as ease of access has been shown to be a common barrier for purchasing fruit and vegetables\(^{21}\).

Anecdotal (collected in Part 2) and observational data suggests that Alice Springs’ populations with low socio economic status are highly prone to convenience eating habits, due to considerable barriers faced including poor transport options and storage issues. These populations are more likely to shop meal-to-meal, meaning that a high density, closer proximity and greater access to outlets selling majority healthy items play an integral role in increasing Alice Springs’ food security status.
Market Basket Survey

Aim
1. To understand the cost of healthy and current diets within Alice Springs
2. To understand how healthy and current diet costs in Alice Springs compare to other Urban areas of the Northern Territory.

Scope
In scope
- Supermarket and corner store data from Alice Springs collected through the Market Basket Surveys (MBS) 2000-2019.
- Supermarket and corner store data from all Urban NT areas collected through the MBS 2000-2019.

Out of scope
- All other data to that listed above collected through the MBS 2000-2019

Method
Surveys conducted from 2000-2015 priced a basket of foods that would meet the average energy and recommended nutrient needs of a hypothetical family of six for a fortnight. The family was chosen to represent a cross-section of people who have different nutrient requirements because of their age and sex. The family consists of:
- a grandmother aged 60 years,
- a man aged 35 years,
- a woman aged 33 years,
- a male aged 14 years,
- a girl aged eight years, and
- a boy aged four years.

The NUTTAB 2010\(^1\) database and Nutrient Reference Values for Australia and New Zealand\(^2\) were used to determine the quantities of each food in the basket required to provide 95% of the family's energy requirements and 100% of selected nutrient requirements for a fortnight.

In 2016, the cost of a wider range of foods was collected to enable the comparison of two baskets, a Healthy Food Basket (HFB) and a Current Diet Basket (CDB). The HFB is based on recommendations for number of serves of food from each of the food groups detailed in the Australian Guide to Healthy Eating\(^3\). The CDB is based on information from the ABS\(^4\) on the average diet Aboriginal people in Australia consumed in 2012-13. It contains both healthy and unhealthy foods. Both baskets contain sufficient food to feed the family of six described above for a fortnight. Details of the foods contained in the HFB and CDB are contained in Appendix 2.

As part of the survey, a major supermarket and corner store in each of the urban district centres are surveyed.

---

\(^{\text{6}}\) Methodology, results and analysis from MBS's 2000-2017 have been extracted from the 2017 MBS Report\(^5\)
Results and Analysis
Food basket Costs

Table 5: Cost of food baskets by district and type of store, 2019

<table>
<thead>
<tr>
<th></th>
<th>Alice Springs</th>
<th>Darwin</th>
<th>East Arnhem</th>
<th>Katherine</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Supermarket</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy food basket</td>
<td>$530</td>
<td>$517</td>
<td>$552</td>
<td>$569</td>
<td>$542</td>
</tr>
<tr>
<td>Current diet basket</td>
<td>$593</td>
<td>$672</td>
<td>$676</td>
<td>$661</td>
<td>$650</td>
</tr>
<tr>
<td><strong>Corner store</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy food basket</td>
<td>$736</td>
<td>$757</td>
<td>-</td>
<td>$907</td>
<td>$800</td>
</tr>
<tr>
<td>Current diet basket</td>
<td>$770</td>
<td>$811</td>
<td>-</td>
<td>$959</td>
<td>$847</td>
</tr>
</tbody>
</table>

Supermarkets & Corner Stores

- In supermarkets in 2019, the HFB was the most expensive in Katherine ($569) and cheapest in Darwin ($517); the CDB was the most expensive in East Arnhem ($676) and cheapest in Alice Springs ($593).
- In 2019, Alice Springs had the cheapest corner store HFB ($736) and CDB ($770).
- In 2019, Alice Springs supermarket HFB was 2.5% more expensive and the CDB was 11.8% cheaper than in Darwin; and in the corner store HFB was 2.8% and CDB was 5% cheaper than in Darwin.

HFB vs CDB

- The CDB was more expensive than the HFB in all districts and store types.
- The CDB was 6% more in corner stores ($847 compared to $800) and 17% more expensive in district centre supermarkets ($650 compared to $542) compared to the HFB.
Table 6: Variation in the cost of the food groups in the Healthy Food Basket (HFB) and Current Diet Basket (CDB) by district, supermarkets, 2017 to 2019

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Supermarket (Alice Springs)</th>
<th>Supermarket Average (NT)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HFB</td>
<td>CDB</td>
</tr>
<tr>
<td>Bread &amp; cereals</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>Fruit</td>
<td>-16%</td>
<td>-17%</td>
</tr>
<tr>
<td>Vegetables</td>
<td>-12%</td>
<td>-17%</td>
</tr>
<tr>
<td>Meat &amp; alternative</td>
<td>17%</td>
<td>-1%</td>
</tr>
<tr>
<td>Dairy</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Takeaway foods</td>
<td>-14%</td>
<td>-20%</td>
</tr>
<tr>
<td>Other</td>
<td>26%</td>
<td>26%</td>
</tr>
<tr>
<td>Total basket</td>
<td>-2%</td>
<td>-9%</td>
</tr>
</tbody>
</table>

Between 2017 and 2019 in the average NT district centre supermarket

- The average cost of the HFB increased (1%) and the CDB decreased (-1%)
- The ‘meat’ portion of the HFB had the greatest average cost increase (14%); and the ‘takeaway’ portion of the HFB had the greatest average cost decrease (-25%)
- The ‘bread and cereal’ portion of the CDB had the greatest cost increase (14%); and the ‘vegetable’ portion of the CDB decreased the most (-10%).

Between 2017 and 2019, the NT average cost of both the HFB and CDB rose significantly in corner stores (by 14% and 16% respectively).

Between 2017-2019 in the Alice Springs supermarket:

- The average cost of both the HFB and CDB decreased (-2% and -9% respectively)
- The ‘meat’ portion of the HFB had the greatest average cost increase (17%); and the ‘fruit’ portion of the HFB had the greatest average cost decrease (-16%)
- The ‘other’ portion of the CDB had the greatest cost increase (26%); and the ‘takeaway’ portion of the CDB decreased the most (-20%).

From Appendix 3 detailing the MBS by district and food group for 2019

- ‘Vegetables’ ($133), ‘meat and alternatives’ ($126) and ‘dairy’ ($102) were the most expensive groups in the Alice Springs supermarket HFB.
- ‘Takeaways’ ($192) and ‘meat and alternatives’ ($129) were the most expensive groups in the Alice Springs supermarket CDB
- The greatest difference between the HFB and CDB in Alice Springs supermarket were the vegetables group ($133 vs. $42), dairy ($102 vs. $51) and takeaways ($4 vs. $192)
Price comparisons
As discussed previously, a number of new food items were added to the survey in 2016 to enable the calculation of the CDB. As these products were not included in prior surveys, comparison of the CDB is not possible. Data shown below is therefore for the HFB only.

Figure 13: Average cost of the NT Healthy Food Basket, store type, 2000–2019

- The average cost of the HFB for urban centre supermarkets trended upwards from 2000 to 2008; however, from 2008 to 2019, the cost has stabilised within a range from $510 (2012) to $606 (2016). The average annual increase for NT HFB from 2000-2019 in supermarkets has been 2.1%; and 3.0% in corner stores.

Figure 14: Cost of the Healthy Food Basket compared with projected cost of the Healthy Food Basket with annual Consumer Price Index (CPI) increase, supermarkets, 2000 – 2019.
In the district centre supermarkets the actual cost tended to be above projected cost between 2005 and 2011 and in 2016.

Discussion

Basket costs

Healthy diet costs compared to current diet costs

The CDB basket was more expensive than the HFB in all store types and all districts in this survey suggesting a healthy diet is less expensive than the current diet consumed by Aboriginal and Torres Strait Islander people. Whilst the CDB contains both healthy and unhealthy foods, the most expensive portion of the CDB was the ‘takeaway’ portion which contains only discretionary (unhealthy) foods (Appendix 3). These findings are similar to those of Lee et al. (2016) who found ‘healthy diets can be more affordable than current (unhealthy) diets in Australia’. Lee et al. (2016) used a similar methodology but costed a more comprehensive range of foods and included alcohol in the current (unhealthy) diet.

Other studies have had different findings and it is commonly cited that healthier foods are more expensive than less healthy foods. A report by the United States Department of Agriculture (USDA) investigated different measures of costing healthy foods compared to unhealthy foods and concluded healthy foods cost more than unhealthy foods if measured on the basis of energy (cost/calorie). However healthy foods cost less than unhealthy foods if measured on the basis of edible weight (cost/100 edible grams) or average portion (cost/average portion).

The 2019 MBS compared the cost of a healthy basket to the current diet (mostly unhealthy) using serve sizes, so findings are consistent with the USDA report, findings may have been different if the baskets of food were compared on the cost per calorie.

The affordability of healthy diets compared to currently consumed diets (highly dependent on take-away and convenience foods) however may need to consider other costs such as those involved in transporting to stores, utility consumption to store and prepare foods, and cooking and eating utensil costs required to prepare foods, amongst others.

Alice Springs HFB and CDB compared to other Urban sites

The HFB in Alice Springs supermarkets were $13 more expensive per fortnight than Darwin supermarkets (Darwin was the cheapest HFB in the NT). The Alice Springs CDB was the cheapest in the NT, $79 cheaper than in Darwin. Corner stores in Alice Springs were cheapest across the NT for both the HFB and CDB. Therefore food costs in Alice Springs are not significantly different from Darwin prices and in some cases more affordable.

Limitations of the survey

When interpreting the results of this survey, a number of issues must be considered. These include the following:

The food basket contains a relatively small number of items (41). The prices of these items are then multiplied by varying amounts to provide the total cost in each of the food baskets.

---

h 2016, 2017 & 2019: Barkly supermarket not surveyed; both Barkly supermarket and Katherine supermarket were not surveyed in 2017, historically these supermarkets have been more expensive than others.
Therefore significant changes in the price of one or two items may have an unduly inflated effect on the total cost of the basket. An example of this occurred in 2006 and 2011 when banana crops in Queensland were destroyed by tropical cyclones, resulting in an increase in the price of bananas. As a result, the cost of the ‘fruit’ portion of the basket in NT supermarkets increased by 68% in 2011, compared to the preceding years.

Items in the food baskets are chosen from those that are commonly found in remote stores, this limits the occasions when the price for a substitute product is recorded and minimises inaccuracies in price comparisons between stores. It does however, limit the number of items that can be included in the survey, particularly as some stores are in small communities and stock a smaller range of foods than larger stores and supermarkets in urban areas.

While efforts are made to include the same stores in the survey each year this is not always possible. For example in 2015 only one store in the Barkly district was able to be surveyed (as opposed to an average of six). Data from this store was therefore amalgamated with data from the Alice Springs district. Further, the district centre supermarket in Tennant Creek (Barkly Region) was not able to be surveyed in 2017 or 2019. This supermarket is historically more expensive than other supermarkets. The absence of this supermarket is likely to account for lower supermarket averages in 2019 compared to 2016. The large difference in cost in district centre corner stores is due to the small number of corner stores surveyed and different corner stores were surveyed between 2017 and 2019. Additionally, not all corner stores are surveyed in town centres and may change each year meaning corner store results are not always comparable with previous years.

The results from the 2019 NT MBS are not comparable to other areas in Australia. As the tool is only used in the NT, items listed within the tool are not the same as those in other basket pricing tools such as the Health Diets ASAP tool which has been utilised in remote and metropolitan areas across Australia.8,9
Recommendations

From Parts One and Two

The recommendations proposed in this report aim to address food security through immediate, intermediate and longer-term actions with consideration given to both the outcomes and determinates, at all levels, of food security. The Alice Springs Food Security Reference Group will aim to facilitate and support the achievement of these actions.

1. **Reference Group** to identify and establish a lead organisation and position to coordinate and enable sustained action for food security in Alice Springs and continue the work of the Reference Group.

2. Identified organisation from Recommendation One to collaborate with appropriate individuals and agencies to achieve the recommendations within this report.

This organisation would take over ownership of below recommendations where deemed appropriate i.e. scope; and dependent on point in time organisation identified.

3. **Reference Group** to support capacity building activities and adequate resourcing of local individuals, communities and agencies to collectively act upon food security within Alice Springs.

4. **Reference Group** to support the development of or utilise an existing communication platform to promote food security activities and outcomes in Alice Springs.

**Intelligence Phase**

5. **Urban Health** to undertake Part Three: community member consultation

To understand the lived and witnessed experience of food security; and to provide the opportunity for community participation and empowerment for the future direction of food security action in Alice Springs.

6. **Urban Health** with support from Reference Group to map issues, their determinants, proposed actions for change; and research, and prioritise interventions known to address these issues and determinants to provide further recommendations for action.

7. **Urban Health and Health Improvement** to improve food environment data collection processes.

Urban Health to work collaboratively with all stores and consider the use of existing tools to map the in-store environment. Including price (in-line with the Market Basket Survey (MBS)), placement, promotion and the type of products sold in store.

Urban Health in consultation with Health Improvement to collect pricing data from all consenting supermarkets and corner stores within Alice Springs for future MBSs.

Health Improvement to consider adapting the local implementation of the MBS to be comparable against other Food Basket Pricing Surveys (whilst ensuring comparability with previous NT MBSs) now being trailed in multiple major Australian metropolitan sites i.e. Healthy Diets ASAP tool\(^1\).
Health Improvement to consider adding foods to the MBS to allow an additional Current Diet Basket (CDB) modelled for non-Aboriginal people (as per National Health Surveys) and inclusive of home-brand items to better reflect the Urban setting.

Urban Health to refer to NTCOSS cost of living reports when analysing the ‘total cost’ of healthy and current diet affordability in future MBSs. This aims to account for transport, storage, preparation and consumption costs involved. This is also recommended to be done at an NT wide level.

Urban Health to compare the cost of the HFB and the CDB to current income levels, including social welfare payments, to understand if healthy and current eating patterns are affordable. This is also recommended to be done at an NT wide level.

8. **Urban Health to repeat Part One every 5-6 years.**

To coincide with National Census, National Health and National Aboriginal and Torres Strait Islander Health Survey data releases.

**Action Phase**

*Outcomes from Recommendation 5 will inform all recommendations in the Action phase*

**Policy**

9. *Reference Group* to support the development and implementation of policies that positively influence food security within Alice Springs collaborate with all levels of government and non-government organisations.


This includes applying multiple strategies across multiple settings that consider and respond to both the causes and effects of food security at all levels. Recognition that not-for-profit and charitable food aid is one approach to addressing food insecurity but should not be the only approach supported. Priority should be given to gaps in service, i.e. Access dimension and Food Promotion determinant.

11. Urban Health with support from the *Reference Group* to support organisations involved in food provision and food security related programs to develop and implement food and nutrition security policies to enable strategies that address the recommendations listed.

**Other Action**

12. *Reference Group* to support current action in the social determinants, and the development of a social determinants action plan for Alice Springs

Including housing, socio-economic equity, transport, utilities access, cost of living, food environment modification, environmental protection and anti-discrimination.

13. *Reference Group* to facilitate and support the Emergency Food Relief sector within Alice Springs to address issues raised in Parts One and Two.

This includes improved access for community members; greater coordination and collaboration between services; and communication with the wider community.
14. **Reference Group** to facilitate and support coordination and collaboration between programs and services currently addressing food security.  

This includes improved access for community members; greater coordination and collaboration between services; and communication with the wider community.

15. **Urban Health with support from the Reference Group** to ensure that food and nutrition information provided through Alice Springs organisations supports healthy eating and ensures food safety.

Based on current NT healthy food provision policies and inclusive of staff training for food handling and nutrition training.

16. **Urban Health with support from the Reference Group** to facilitate and support improvements to the wider and in-store food environment including affordability, accessibility, availability, quality and promotion of healthy food and local food production.

Urban Health to facilitate improvements to the in-store environment through working collaboratively with food outlets. Consider the use of existing tools to make tailored improvements.

**Reference Group** to support reorientation of outlets selling majority healthy to currently underserved areas, including through the use of food delivery services and online ordering. Explore options that promote access to raw (e.g. farmers markets) and pre-prepared healthy food options.

**Reference Group** to liaise with decision makers to understand current planning laws and advocate for strategies that improve the density of outlets selling majority healthy items vs. or unhealthy items.

**Reference Group** to investigate viability of community transport schemes and improved access to public transport for direct access to outlets selling majority healthy items.

- Extending routes to current un-accessed parts of Alice Springs, including Town Camps, and making services bi-directional.
- Improving bus transport logistics i.e. more frequent services, extending running times (especially on the weekend), and simplifying timetables and maps.
- Replicating community transport models including the Tennant Creek Transport Service\(^15\) or the previous Tangentyere Food Order Bus\(^16\)

**Evaluation and Dissemination**

17. **Reference Group** to increase awareness of the food security issue

Through release and presentation of this report; presentation of Part Two to those who participated; and release of and Parts Two and Three when Part Three is complete; as well as social marketing campaigns.

18. **Reference Group** to develop and undertake evaluation strategies at process, impact and outcome levels to understand appropriateness and effectiveness of strategies

This includes repeating Parts Two and Three every 10 years to understand current needs and any impacts and outcomes in the Alice Springs Food Security space. As well as evaluating overarching Food Security Plans and Strategies developed. These results need to be fed back to the Alice Springs community.
References

Front Pages, Introduction & Recommendations (pages 1-12, 43-45)


15. Tennant Creek Transport. Available at: https://www.tennantcreektransport.org/

Discussion Paper References (pages 13-18)
Community Profile References (pages 19-26)


13. Power and Water Corporation [Online]. Northern Territory; Prepayment power meters; 2020 [accessed 07 May 2020]; Available at:


Food and Nutrition Program Audit (pages 27-31)


Spatial Mapping References (pages 32-36)


---

† National Health Survey: Urban and rural areas in all states and territories were included, while Very Remote areas of Australia and discrete Aboriginal and Torres Strait Islander communities were excluded. These exclusions are unlikely to affect national estimates, and will only have a minor effect on aggregate estimates produced for individual states and territories, excepting the NT where the population living in Very Remote areas accounts for around 23% of persons.


10. QGIS. QGIS Software. [Accessed 11 February 2020]. Available at: https://www.qgis.org/en/site/


Market Basket Survey References (pages 37-42)


9. Lee A & Lewis M. Testing the price of healthy and current diets in remote Aboriginal communities to improve food security: Development of the Aboriginal and Torres Strait Islander healthy diets ASAP (Australian Standardised Affordability and Pricing) methods. 2018; 15
Appendix 1: Spatial Mapping

Figure 15: Density of outlets selling majority healthy items (supermarket) and outlets selling majority unhealthy items (convenience, takeaway) in Alice Springs considering IRSD index and town camps.
Figure 16: Proximity (500m) to outlets selling majority healthy items (supermarket) within Alice Springs considering IRSD index and town camps.
Figure 17: Proximity (500m) to outlets selling majority unhealthy items (convenience stores, takeaway) within Alice Springs considering IRSD index and town camps.

Key for Maps

**Blue Dot:** Town Camp  
**Green Dot (ring):** Supermarket (500m buffer)  
**Orange Dot (ring):** Convenience Store (500m buffer)  
**Red Dot (ring):** Takeaway (500m buffer)  
**Black Dot (ring):** Bus Stop (500m Buffer)  

**IRSD**

- Quintile: 1 (most disadvantaged)  
- Quintile: 5 (least disadvantaged)
Figure 18: Accessibly via public transport to outlets selling majority healthy items (supermarket) within Alice Springs considering IRSD index and town camps

Key for Maps

Blue Dot: Town Camp

Green Dot (ring): Supermarket (500m buffer)

Orange Dot (ring): Convenience Store (500m buffer)

Red Dot (ring): Takeaway (500m buffer)

Black Dot (ring): Bus Stop (500m Buffer)
Figure 19: Alice Springs Public Transport Network. Current as of July 2019.¹
Figure 20: Online bus timetable for Route 300-301 (Ross, Ilparpa, The Gap and Alice Springs Hospital). Current as of July 2019.
### Appendix 2: List of foods in the Market Basket Survey baskets

<table>
<thead>
<tr>
<th>Serve size</th>
<th>Volume in basket</th>
<th>Number serves</th>
<th>Serve size</th>
<th>Volume in basket</th>
<th>Number serves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bread, white high fibre, iron enriched</td>
<td>40g</td>
<td>8400g 12 X 700g loaves 120</td>
<td>40g</td>
<td>8400g 12 X 700g loaves 210</td>
<td></td>
</tr>
<tr>
<td>Flour, white, plain</td>
<td>50g</td>
<td>4000g 4 X 1kg bags 80</td>
<td>50g</td>
<td>4000g 4 X 1kg bags 80</td>
<td></td>
</tr>
<tr>
<td>Weetbix</td>
<td>30g</td>
<td>1500g 4 X 375g packets 50</td>
<td>30g</td>
<td>1125g 3 X 375g boxes 38</td>
<td></td>
</tr>
<tr>
<td>Oats, rolled</td>
<td>30g</td>
<td>1000g 2 X 500g packets 33</td>
<td>30g</td>
<td>0g - 0</td>
<td></td>
</tr>
<tr>
<td>Rice, white</td>
<td>35g</td>
<td>2000g 2 X 1kg packet 57</td>
<td>35g</td>
<td>0g - 0</td>
<td></td>
</tr>
<tr>
<td>2 minute noodles</td>
<td>26g</td>
<td>0g - 0</td>
<td>26g</td>
<td>0g - 0</td>
<td></td>
</tr>
<tr>
<td>Spaghetti in tomato &amp; cheese sauce, canned</td>
<td>200g</td>
<td>840g 2 X 420g tins 4</td>
<td>200g</td>
<td>840g 2 X 420g tins 4</td>
<td></td>
</tr>
<tr>
<td>Total serves</td>
<td>435</td>
<td>Total serves</td>
<td>353</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended number serves</td>
<td>434</td>
<td>Serves from ATSI Health survey</td>
<td>154</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apple, red</td>
<td>150g</td>
<td>4500g 30 apples 30</td>
<td>150g</td>
<td>3150g 21 apples 21</td>
<td></td>
</tr>
<tr>
<td>Orange, navel/valencia</td>
<td>150g</td>
<td>5075g 35 oranges 34</td>
<td>150g</td>
<td>3045g 21 oranges 20</td>
<td></td>
</tr>
<tr>
<td>Banana</td>
<td>150g</td>
<td>4340g 35 bananas 29</td>
<td>150g</td>
<td>3100g 25 bananas 21</td>
<td></td>
</tr>
<tr>
<td>Peach, canned in light syrup</td>
<td>150g</td>
<td>3280g 8 X 410g cans 22</td>
<td>150g</td>
<td>3280g 8 X 410g cans 22</td>
<td></td>
</tr>
<tr>
<td>Orange juice, 100% no added sugar</td>
<td>125ml</td>
<td>5000ml 5 X 1 litre bottles 40</td>
<td>125ml</td>
<td>4000ml 4 X 1 litre bottles 32</td>
<td></td>
</tr>
<tr>
<td>Total serves</td>
<td>155</td>
<td>Total serves</td>
<td>116</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended number serves</td>
<td>154</td>
<td>Serves from ATSI Health survey</td>
<td>116</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tomato</td>
<td>75g</td>
<td>2000g 2kg 27</td>
<td>75g</td>
<td>1000g 1 kg 13</td>
<td></td>
</tr>
<tr>
<td>Potato, washed</td>
<td>75g</td>
<td>8000g 8kg 107</td>
<td>75g</td>
<td>2500g 2.5kg 33</td>
<td></td>
</tr>
<tr>
<td>Pumpkin</td>
<td>75g</td>
<td>3000g 3kg 40</td>
<td>75g</td>
<td>500g 0.5kg 7</td>
<td></td>
</tr>
<tr>
<td>Cabbage</td>
<td>75g</td>
<td>3000g 1 cabbage 40</td>
<td>75g</td>
<td>750g 0.25 cabbage 10</td>
<td></td>
</tr>
<tr>
<td>Carrots</td>
<td>75g</td>
<td>4000g 4kg 53</td>
<td>75g</td>
<td>500g 0.5kg 7</td>
<td></td>
</tr>
<tr>
<td>Onions, brown</td>
<td>75g</td>
<td>3000g 3kg 40</td>
<td>75g</td>
<td>500g 0.5kg 7</td>
<td></td>
</tr>
<tr>
<td>Peas and carrots, canned</td>
<td>75g</td>
<td>2520g 6 X 420g cans 34</td>
<td>75g</td>
<td>1680g 4 X 420g cans 22</td>
<td></td>
</tr>
<tr>
<td>Mixed vegetables, frozen</td>
<td>75g</td>
<td>3000g 6 X 500g packets 40</td>
<td>75g</td>
<td>1500g 3 X 500g packets 20</td>
<td></td>
</tr>
<tr>
<td>Tomatoes, canned</td>
<td>75g</td>
<td>2075g 5 X 415g cans 28</td>
<td>75g</td>
<td>1245g 3 X 415g cans 17</td>
<td></td>
</tr>
<tr>
<td>Baked beans, canned in tomato sauce</td>
<td>150g</td>
<td>3080g 14 X 220g cans 21</td>
<td>150g</td>
<td>0g - 0</td>
<td></td>
</tr>
<tr>
<td>Total serves</td>
<td>428</td>
<td>Total serves</td>
<td>136</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended number serves</td>
<td>427</td>
<td>Serves from ATSI Health survey</td>
<td>136</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meat and alternatives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baked beans, canned in tomato sauce</td>
<td>75g</td>
<td>3080g 14 X 220g cans 41</td>
<td>75g</td>
<td>0g - 0</td>
<td></td>
</tr>
<tr>
<td>Beef, corned, canned</td>
<td>65g</td>
<td>0g - 0</td>
<td>65g</td>
<td>3060g 9 X 340g cans 47</td>
<td></td>
</tr>
<tr>
<td>Meat and vegetable meal, canned</td>
<td>375g</td>
<td>4000g 10 X 400g cans 11</td>
<td>375g</td>
<td>4000g 10 X 400g cans 11</td>
<td></td>
</tr>
<tr>
<td>Beef mince (medium fat)</td>
<td>90g</td>
<td>6000g 6kg 67</td>
<td>90g</td>
<td>2000g 2kg 22</td>
<td></td>
</tr>
<tr>
<td>Sausages</td>
<td>90g</td>
<td>0g - 0</td>
<td>90g</td>
<td>2000g 2kg 22</td>
<td></td>
</tr>
<tr>
<td>Chicken drumsticks</td>
<td>90g</td>
<td>6000g 6kg 67</td>
<td>90g</td>
<td>2500g 2.5kg 28</td>
<td></td>
</tr>
<tr>
<td>Eggs</td>
<td>132g</td>
<td>792g 2 dozen 6</td>
<td>132g</td>
<td>1400g 2 dozen 11</td>
<td></td>
</tr>
<tr>
<td>Total serves</td>
<td>191</td>
<td>Total serves</td>
<td>141</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended number serves</td>
<td>182</td>
<td>Serves from ATSI Health survey</td>
<td>141</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dairy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milk, powdered, full cream</td>
<td>34g</td>
<td>3600g 9 X 400g packets 106</td>
<td>34g</td>
<td>1600g 4 X 400g packets 47</td>
<td></td>
</tr>
<tr>
<td>Milk, UHT, full cream</td>
<td>250ml</td>
<td>25000ml 25 X 1 litre cartons 100</td>
<td>250ml</td>
<td>12000g 12 X 1 litre cartons 48</td>
<td></td>
</tr>
<tr>
<td>Iced coffee, full cream</td>
<td>250ml</td>
<td>0ml - 0</td>
<td>250ml</td>
<td>2400g 4 X 600ml cartons 10</td>
<td></td>
</tr>
<tr>
<td>Cheese cheddar</td>
<td>40g</td>
<td>750g 3 X 250g packets 19</td>
<td>40g</td>
<td>0g - 0</td>
<td></td>
</tr>
<tr>
<td>Total serves</td>
<td>225</td>
<td>Total serves</td>
<td>105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended number serves</td>
<td>224</td>
<td>Serves from ATSI Health survey</td>
<td>104</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Margarine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sugar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil, monounsaturated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scotch Finger biscuit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cordial base</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Takeaway items</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pie</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chips</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coke</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy provided</td>
<td>645,980kJ</td>
<td>639,111kJ</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

1 Baked beans have been counted in both ‘vegetable’ and ‘meat and alternatives’ group

---


Page 59 of 61
## Appendix 3: Market Basket Survey by district and food group, 2017-2019

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bread &amp; cereals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HFB</td>
<td>$73</td>
<td>$72</td>
<td>$76</td>
<td>$73</td>
<td>$68</td>
<td>$65</td>
<td>$75</td>
<td>$74</td>
</tr>
<tr>
<td>CDB</td>
<td>$92</td>
<td>$87</td>
<td>$107</td>
<td>$100</td>
<td>$101</td>
<td>$90</td>
<td>$101</td>
<td>$93</td>
</tr>
<tr>
<td>Fruit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HFB</td>
<td>$92</td>
<td>$71</td>
<td>$77</td>
<td>$58</td>
<td>$87</td>
<td>$67</td>
<td>$84</td>
<td>$64</td>
</tr>
<tr>
<td>CDB</td>
<td>$111</td>
<td>$85</td>
<td>$114</td>
<td>$88</td>
<td>$114</td>
<td>$88</td>
<td>$135</td>
<td>$105</td>
</tr>
<tr>
<td>Vegetables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HFB</td>
<td>$152</td>
<td>$50</td>
<td>$133</td>
<td>$42</td>
<td>$139</td>
<td>$44</td>
<td>$131</td>
<td>$44</td>
</tr>
<tr>
<td>CDB</td>
<td>$138</td>
<td>$42</td>
<td>$153</td>
<td>$50</td>
<td>$154</td>
<td>$48</td>
<td>$170</td>
<td>$54</td>
</tr>
<tr>
<td>Meat &amp; alternative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HFB</td>
<td>$107</td>
<td>$130</td>
<td>$126</td>
<td>$129</td>
<td>$123</td>
<td>$135</td>
<td>$140</td>
<td>$136</td>
</tr>
<tr>
<td>CDB</td>
<td>$198</td>
<td>$186</td>
<td>$207</td>
<td>$184</td>
<td>$170</td>
<td>$170</td>
<td>$219</td>
<td>$205</td>
</tr>
<tr>
<td>Dairy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HFB</td>
<td>$102</td>
<td>$51</td>
<td>$102</td>
<td>$51</td>
<td>$103</td>
<td>$53</td>
<td>$98</td>
<td>$50</td>
</tr>
<tr>
<td>CDB</td>
<td>$137</td>
<td>$71</td>
<td>$142</td>
<td>$75</td>
<td>$145</td>
<td>$74</td>
<td>$161</td>
<td>$83</td>
</tr>
<tr>
<td>Takeaway</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HFB</td>
<td>$3</td>
<td>$241</td>
<td>$4</td>
<td>$192</td>
<td>$5</td>
<td>$248</td>
<td>$4</td>
<td>$237</td>
</tr>
<tr>
<td>CDB</td>
<td>$11</td>
<td>$214</td>
<td>$5</td>
<td>$214</td>
<td>$4</td>
<td>$196</td>
<td>$5</td>
<td>$240</td>
</tr>
<tr>
<td>Other foods</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HFB</td>
<td>$10</td>
<td>$38</td>
<td>$12</td>
<td>$48</td>
<td>$9</td>
<td>$47</td>
<td>$9</td>
<td>$50</td>
</tr>
<tr>
<td>CDB</td>
<td>$11</td>
<td>$62</td>
<td>$9</td>
<td>$59</td>
<td>$11</td>
<td>$64</td>
<td>$10</td>
<td>$67</td>
</tr>
<tr>
<td>Total basket</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HFB</td>
<td>$541</td>
<td>$653</td>
<td>$530</td>
<td>$593</td>
<td>$535</td>
<td>$658</td>
<td>$542</td>
<td>$650</td>
</tr>
<tr>
<td>CDB</td>
<td>$691</td>
<td>$747</td>
<td>$736</td>
<td>$770</td>
<td>$699</td>
<td>$730</td>
<td>$800</td>
<td>$847</td>
</tr>
</tbody>
</table>