



MONASH University

**Exploring the existence and
experience of food insecurity in
low-to-middle income Melbourne,
Victoria households**

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Bachelor of Science (Hons), Bachelor of Nutrition and Dietetics

A thesis submitted for the degree of *Doctor of Philosophy* at
Monash University in 2017

Department of Nutrition, Dietetics and Food

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Abstract

Access to food is a fundamental human right and a determinant of health. Food insecurity, the limited or uncertain availability of individuals' and households' physical, social and economic access to sufficient, safe, nutritious and culturally relevant food, affects physical, mental and emotional health, in both adults and children. Recent estimates in Australia indicate that four percent of people were living in a household that was food insecure. Food insecurity is determined by a complex interaction of factors, but income and financial constraints are the major determinants. International evidence suggests that households beyond those on very low incomes are experiencing episodes of food insecurity. There is an absence of Australian data on the prevalence and/or the experiences of food insecurity beyond these groups. This thesis aimed to investigate the **EXISTENCE** and **EXPERIENCE** of food insecurity in low-to-middle income (A\$40,000-\$80,000) households in Melbourne, Victoria.

Part 1 examined data from the cross-sectional Victorian Population Health Survey 2006-2009 confirming the **EXISTENCE** and frequency of food insecurity. Food insecure households were those that responded 'yes' to the question *'In the last 12 months, were there any times that you ran out of food and couldn't afford to buy more?'* The prevalence was found to be 3.9 to 4.8% of low-to-middle income respondents and for some this was weekly or fortnightly. Univariable and multivariable logistic regression analysis of 2008 survey data explored factors associated with food insecurity in low-to-middle households. Food insecurity was associated with having limited help from friends, absence of home ownership, inability to raise money in an emergency and cost of food. The associations between the variable *'ability to raise A\$2000 in an emergency in two days'* as an indicator of financial stress and food insecurity were explored in detail. Regardless of ability to raise money, food insecurity was associated with inability to obtain food due to its cost.

Part 2 explored the **EXPERIENCE** of food insecurity using a sequential explanatory mixed method methodology, with connected quantitative and qualitative phases. A cross-sectional 'Food Security in Melbourne Households' survey including the United States Department of Agriculture Household Food Security Survey Module was administered to 134 participants and identified 42 low-to-middle income participants.

Eight food secure and eight food insecure participants were interviewed to compare and contrast their **EXPERIENCES**. These were summarised as five key themes: 1) complexity of food decisions, 2) complex and varied triggers, 3) an array of protective and coping assets and 4) amplified when needed and a food insecurity experience with 5) extensive consequences. The Sustainable Livelihood Framework was applied as a lens to further explore these findings. This application is novel to understand food insecurity in Australia.

This research has identified, for the first time that food insecurity exists in low-to-middle income households in Australia. The experience of food insecurity varies for this income group. Food insecurity was both episodic and chronic, with differing degrees of severity and consequences. There is a need for a regular, more sophisticated measurement and monitoring that reflects the prevalence, severity and understanding of the determinants of food insecurity across income groups, to inform public health policy and practice responses that address these determinants.

Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

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Publications, presentations and other food security activities during candidature

Publication arising from this thesis

1. **Kleve S**, Davidson Z, Gearon E, Booth S, Palermo C. Are low to medium income households experiencing food insecurity? An examination of the Victorian Population Health Survey 2006-2009. *Australian Journal of Primary Health*, 2017, 23(3): 249-256. doi: 10.1071/PY16082

Oral and poster presentations

1. **Kleve S**, Palermo C, Booth S, Davidson Z., 2017 Oral Presentation, 'Mixed Methods Research methodology to explore a wicked health problem – food insecurity' World Public Health Congress, Melbourne, Australia.
2. **Kleve S**, Palermo C, Booth S, Davidson Z., 2016 Oral Presentation, 'Exploring the experience of food insecurity in low-to-middle income Melbourne households using a mixed methods design.' PROOF Advancing Food Insecurity Research in Canada Conference, Toronto, Canada:
3. **Kleve S**, Barons M, Gallegos D, Barbour L, Palermo C, 2016 Oral Presentation, 'Reframing food insecurity in high income countries for policy reform' PROOF, Advancing Food Insecurity Research in Canada, Toronto, Canada
4. **Kleve S**, Davidson Z, Gearon E, Booth S, Palermo C., 2016 Poster presentation, 'Low to medium income Victorian households experiencing food insecurity. An examination of Victorian Population Health Survey, 2006-2009.' 17th International Congress of Dietetics, Granada, Spain:
5. **Kleve S**, 2016 Oral Presentation, 'Food insecurity – The Australian Perspective'. International Food Security in High Income Countries Research Forum, University of Warwick, Coventry, UK
6. **Kleve S**, Palermo C, Booth S, Davidson Z., 2016 Poster Presentation, 'Exploring the experience of food insecurity in low-to-middle income Melbourne households using a mixed methods design.' 33rd Dietitians Associations of Australia National Conference, Melbourne, Australia:

7. **Kleve S**, Davidson Z, Booth S, Palermo C, 2015 Poster presentation, 'The changing face of food insecurity: Are Victorian low-to-middle income households running out of food?' 32nd Dietitians Associations of Australia National Conference, Perth, Australia
8. Gallegos D, **Kleve S**, Ramsey R , Booth S, 2015 Conference Workshop, 'Monitoring Food Insecurity within households and communities' co facilitated with researchers from QUT, Flinders University: 32nd Dietitians Associations of Australia National Conference, Perth, Australia
9. **Kleve S**, Davidson Z, Booth S, Palermo C, 2014 Oral presentation, 'The Changing Face of Food Insecurity: Are low to middle income households running out of food? An examination of data from the Victorian Population Health Survey 2006-2010' Are Victorian low to middle income households running out of food?' Putting Food on the Table Conference, Sydney, Australia.
10. **Kleve S**, 2014 Oral presentation, 'When there is not enough to eat: Food Stress in low to medium income Melbourne households' - Monash University 3 Minute Thesis. Melbourne, Australia.

Print Media

1. **Kleve S**, 2016 Letter to the Editor – '*Financial and food stress bites hard.*' Australian Financial Review. In response to "CEOs who know that households are under financial stress", Australian Financial Review Nov 30 2016)
2. **Kleve S**, 2016 Letter to the Editor – '*Secret Shame precursor to another secret shame: food insecurity*'. 1st July 2016 Australian Financial Review. In response to Neal Gabler's article in the Australian Financial Review 1st July 2016 detailing the secret shame of financial stress and its implications
3. **Kleve S**, 2015 Article Progress Newspapers all Melbourne editions, 'Demand for help growing' Feed Melbourne Campaign Article on food insecurity in Melbourne

Other food security publications:

Book Chapters

1. Gallegos D, Booth S, **Kleve S**, McKenchie R, Lindberg R. Chapter 4 Food Insecurity in Australian Households From Charity to Entitlement. In: Germov J, Williams L. A sociology of Food and Nutrition, The social appetite. 4th edition. Melbourne: Oxford University Press; 2017. p 55-74.

Peer reviewed journal articles

2. **Kleve S**, Gallegos D, Ashby S, Palermo, C, McKenchie R. Preliminary validation and piloting of a comprehensive measure of household food security in the Australian context. Public Health Nutrition. Published online: 10 November 2017.doi.org/10.1017/S1368980017003007
3. Ashby S, **Kleve S**, Ramsey R, Palermo C. Measurement of the dimensions of food insecurity in developed countries: A systematic literature review. Public Health Nutrition. 2016; 19(16):2887-2896. doi:10.1017/S1368980016001166
4. Palermo C, McCartan J, **Kleve S**, Sinha K, Shiel A. A longitudinal study of the cost of food in Victoria influenced by geography and nutritional quality. Aust and New Zealand Journal of Public Health. 2016; 40(3): 270–273. Doi: 10.1111/1753-6405.12506.
5. Palermo C, McCartan J, **Kleve** Allen L, O'Connor J, Amezdroz E, Bucello P, Mitchell H, Thomas A, Wallis L, Bernardi A, **Kleve S**, Palermo C. Impact of the Social Café Meals program: a qualitative investigation. Australian Journal of Primary Health. 2014;20(1):79-84. doi: 10.1071/PY12102.

Honours student supervision

1. **2014/2015** Co-Supervision with Assoc. Prof C Palermo, Department of Nutrition, Dietetics and Food, Monash University. Project title, '*Measuring food security.*'

Other food security research activities

1. Monash Warwick Alliance:-Food security research collaboration.

2017 (September-December) In collaboration with Dr Martine Barons,(University of Warwick) research project - Development of a Food Security Decision Support

System for Victoria. Successful funding application Monash Warwick Visiting Educator Scheme.

2016 (September). Organised, attended and presented at the International Research forum on 'Food insecurity high income countries.' Warwick University, UK, Successful funding application Monash Warwick Alliance Seed Funding.

2. Farms to Families Evaluation: 2016-2017 team member of evaluation consultancy.

3. Australian Food Security Research Collaboration (ongoing): a national collaboration formed late 2014 between food security researchers from Flinders University, Monash University, Queensland University of Technology and Curtin University.

4. Heart Foundation Tasmania (2016): 'Food Access - Dishing up the facts: Going without healthy food in Tasmania' advisor in the report development.

5. Secondbite Food Security Research Advisory Committee: Monash University Representative 2015-2016

6. Australian Red Cross Evaluation of Australian School Breakfast Programs (2015) – External consultant.

7. Online Charitable Food Sector Community Practice establishment (2015 – ongoing) Monash University, Department of Nutrition, Dietetics and Food initiative

Thesis including published works General Declaration

I hereby declare that this thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

This thesis includes one original paper published in peer reviewed journals. The core theme of the thesis is '*Exploring the EXISTENCE and EXPERIENCE of food insecurity in low-to-middle income Melbourne, Victoria households.*' The ideas, development and writing up of the paper in the thesis were the principal responsibility of myself, the PhD candidate, working within the *Department of Nutrition, Dietetics and Food* under the supervision of *Associate Professor Claire Palermo, Dr Sue Booth and Dr Zoe E Davidson*. The inclusion of co-authors reflects the fact that the work came from active collaboration between researchers and acknowledges input into team-based research

In the case of *Chapter 3* my contribution to the work involved the following:

Thesis chapter	Publication title	Publication status*	Nature and extent (%) of student's contribution	Co-author name(s), nature and extent(%) of co-author contribution
3	Are low-to-middle-income households experiencing food insecurity in Victoria, Australia? An examination of the Victorian Population Health Survey, 2006–2009	Published <i>Australian Journal of Primary Health</i>	Study design/Designed the study, sought permission from Department of Health Victoria; the Victorian Government to access the data for analysis. Conceptualised and conducted data analysis and interpretation and manuscript development 70%	1) Zoe E. Davidson - conceptualised and conducted analysis of the data and manuscript development 10%. 2) Emma Gearon - conducted and reviewed analysis, development and review of manuscript 10%. 3) Sue Booth - conceptualised the study, development and review of manuscript 5%. 4) Claire Palermo - conceptualised the study, sought permission from Department of

				Health Victoria; the Victorian Government to access the data for analysis, development and review of manuscript 5%.
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I have not renumbered sections of submitted or published papers in order to generate a consistent presentation within the thesis.

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The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the student and co-authors' contributions to this work.

Main Supervisor signature: 

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Abbreviations

ABS	Australian Bureau of Statistics
AHS	Australian Health Survey
CCHS	Canadian Community Health Survey
CPS	Current Population Survey
FIS	Food insecure
FS	Food secure
FSiMHS	Food Security in Melbourne Households Survey
HES	Household Expenditure Survey
MMR	Mixed Methods Research
SLF	Sustainable Livelihood Framework
SNAP	Supplemental Nutrition Assistance Program
USDA HFSSM	United States Department of Agriculture Household Food Security Survey Module
VAMPIRE	Vulnerability Assessment for Mortgage, Petrol and Inflation Risks & Expenditure
VDoH	Victorian Department of Health
VPHS	Victorian Population Health Survey

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Chapter 1

Introduction

Chapter 1: Introduction - Food insecurity is not a simple problem with a simple solution

1.1 Introduction

This chapter introduces the thesis which explores the **EXISTENCE AND EXPERIENCE of food insecurity in low-to-middle income households in Melbourne, Australia**. First, the chapter provides a background to the public health issue of food insecurity. It then describes the research aims and an overview of the corresponding studies. Finally, the structure of the thesis, outlining the eight chapters, will be discussed.

1.2 Food insecurity: a complex problem

Access to food is a fundamental human right and a determinant of health.(1) Food security as defined by the United Nations Food and Agriculture Organisation (FAO) 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.'(2)

Food security is supported by a framework of four dimensions (3, 4):

1. *Food supply*: the physical availability of food that is sufficient in choice and nutritional quality to meet consumer needs at competitive prices
2. *Food access*: the adequate financial and physical resources to acquire food which is safe, affordable, nutritious and culturally acceptable

3. *Food utilisation*: the utilisation of food after it has been accessed. This dimension includes food storage, preparation skills and cooking facilities
4. The *stability*: of the three dimensions over time through seasonal and temporal change.

Food insecurity may occur when the availability of or access to nutritionally adequate foods are limited/uncertain or the limited ability to obtain such foods by socially-acceptable means.(5) The experiences of food insecurity are described as having four components; quantity of food, dietary quality, psychological (worry) and social.(6) Food insecurity is a comprehensive term that applies to countries (global and domestic), communities or regions.(7) It may also be considered in context of households and individuals.(8) Despite an abundance of food, there is increasing evidence that food insecurity at a household level is a public health concern in high income countries.(9-13)

Food insecurity has a temporal dimension and households may transition between episodic or chronic experiences.(14) Additionally, the experience may vary in severity along a continuum.(15) At one end of the continuum are the initial indicators of food insecurity, such as anxiety and concern about adequate food budget or food supply. At the other end of the continuum, the more severe indicators, such as changes in diet quality, reduction in food intake and hunger, become apparent.(14-16)

Evidence suggests that food insecurity is associated with poor physical, social and emotional health in both adults and children.(17-22) More explicitly, food insecurity has been associated with chronic conditions such as: cardiovascular disease, diabetes (23-25), depression and psychological distress (26, 27); poorer diet quality (28, 29); lower education achievement in kindergarten children (30); poor health outcomes and development in children. The food insecurity-obesity paradox is contentious with the literature varying on this relationship.(31-35)

The prevalence and severity of food insecurity is influenced by a range of factors including: certain household or family type (17, 36); geographic location (26, 37); education level (36); and income level or financial resources for purchasing food or

resources in general available to a household (36, 38, 39). Much of this literature has focussed on food insecurity experienced by those in very low income groups.

The prevalence of food insecurity in high income countries, using differing multi-item tools administered as cross-sectional surveys, ranges from 15% in New Zealand (40), 12.3% or 1 in 8 households in Canada (41), and 14% in the United States (US).(42) In the absence of data on the prevalence of food insecurity in the United Kingdom (UK), the use and number of food banks has been used as an indicator. Loopstra (43) reported that in 2011-2012 there were 29 Trussell Trust food banks in operation across the UK; by 2013-2014 this had increased to 251. The most recent estimates, in Australia from the 2011-2012 Australian Health Survey (AHS), indicate that four percent of people were living in a household that was food insecure.(44) Some population subgroups are known to experience higher levels of food insecurity in Australia. These include: lower income households, specific groups such as newly arrived refugees, Aboriginal and Torres Strait Islander communities and those who are homeless or residing in supported accommodation.(37, 45-49)

The frequency of, and tools used in, surveillance of food insecurity, varies across countries. In the US a multi-item tool assessing national food insecurity prevalence and severity is implemented annually. In contrast, in Australia, monitoring at a national level occurs at best every three years in the Australian Health Survey (AHS) using a single item tool. However, this single item tool has been described as a crude measure of the economic aspect of food security or respondents' ability to afford food; and may be a gross underestimate of food insecurity, as it fails to take into account other factors such as temporality.(50)

Food insecurity has an inverse relationship with income or wealth level; however, data from Canada, United States and France indicate that households beyond very low incomes are experiencing episodes of food insecurity.(11, 51-53) American and Canadian households that are above the poverty line, or on low-to-medium income are experiencing food insecurity.(9, 52, 54, 55) Current Australian research into the prevalence and experiences of food insecurity has only focussed on people in the very low-to-low income bracket.(37, 56, 57) Australian data on the prevalence and/or the experiences of food insecurity of low-to-middle income households is absent.

The current research will explore this evidence gap specifically in Melbourne, Australia, and will inform the understanding of this phenomenon. First, at a state level (Victoria) the **EXISTENCE** of food insecurity in low-to-middle income households will be explored. Second, the **EXPERIENCE** of food insecurity in low-to-middle income households will be explored across metropolitan Melbourne.

1.3 Research aims

The aim of this research is to investigate the **EXISTENCE** and **EXPERIENCE** of food insecurity in low-to-middle income (A\$40,000-\$80,000) households in Melbourne, Victoria.

This research comprises two distinct but interrelated parts illustrated in Figure 1-1.

1.3.1 Part 1: **EXISTENCE**

This section will address the following research questions:

- 1) Does food insecurity EXIST in low-to-middle income Victorian households?
- 2) What factors are associated with food insecurity in this income group?

An analysis of the Victorian Population Health Survey (2006-2009) is conducted in two sub sections:

Part 1A Prevalence of food insecurity and predictors

Objectives:

- To document the prevalence of food insecurity in low-to-middle income Victorian households.
- To explore potential determinants of food insecurity in low-to-middle income Victorian households.

Part 1B Relationship between food insecurity and an indicator of financial stress

Objective:

- To explore the relationship and factors associated with ability or inability to raise \$2000 in an emergency in 2 days (indicator of financial stress) and food insecurity in low-to-middle income Victorian households.

1.3.2 Part 2: EXPERIENCE

This section will address the following research question:

- 1) What are the EXPERIENCES of food insecurity in low-to-middle income Melbourne households?

The Part 2 research question will be addressed through a mixed methods research methodology study with quantitative and qualitative phases.

Objectives:

- To identify low-to-middle income Melbourne households who are food secure and food insecure (or at risk of food insecurity).
- To explore and compare the food security and insecurity experiences of these households in this income group, specifically exploring precursors, strategies to prevent or address, and the implications of the experience of food insecurity.

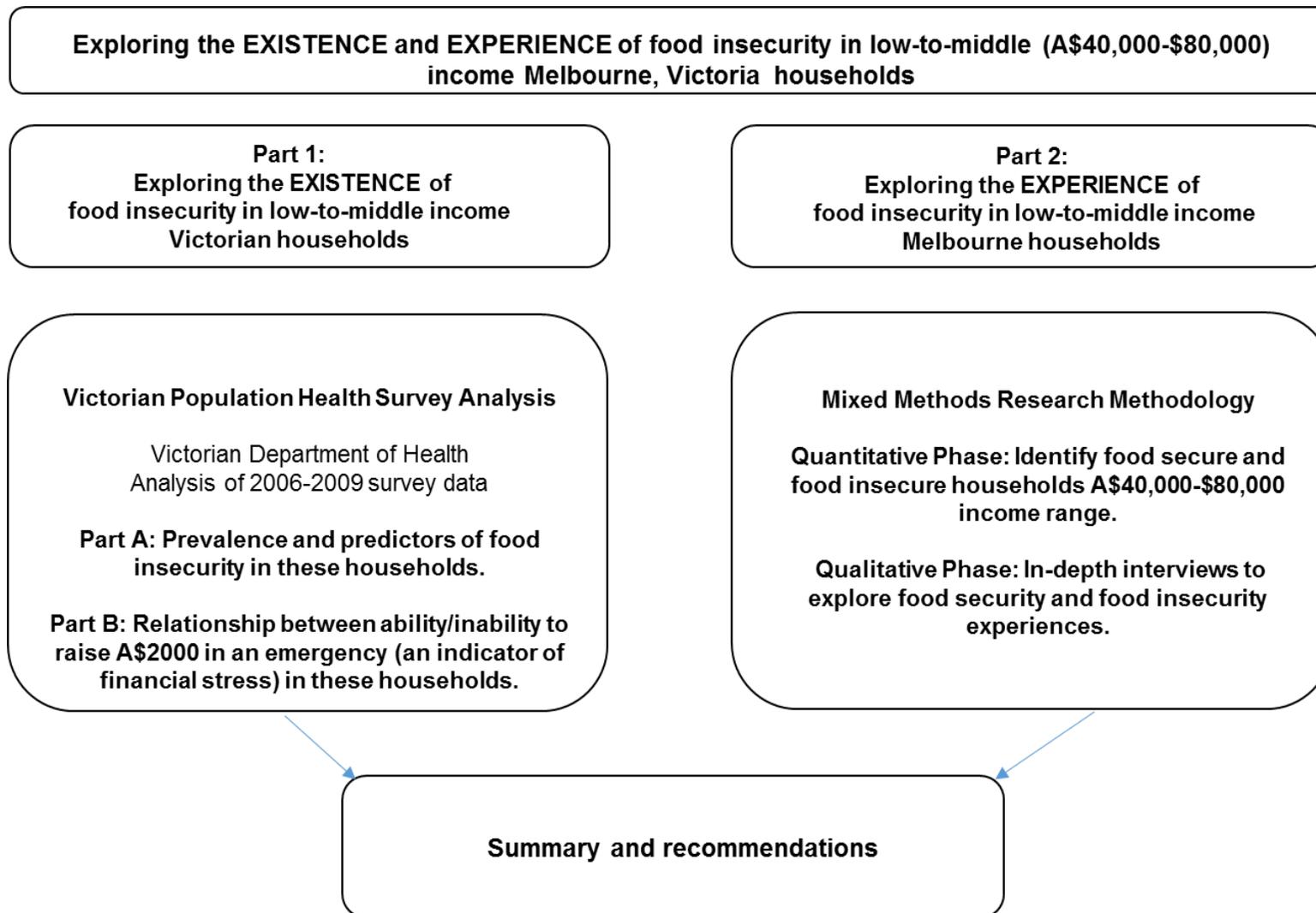


Figure1-1 Diagram providing an overview of the PhD research

1.4 Contents of the Thesis

This thesis is presented in the form of a traditional thesis with eight chapters but with the inclusion of a publication in Chapter 3.

Chapter One provides an introduction to the thesis with an overview of food insecurity and the overarching aims of this research.

Chapter Two describes the literature specifically related to the relationship between income level and food insecurity internationally, with the primary focus on what is known in the Australian context. This chapter will focus on what is known in relation to food insecurity in low-to-middle income households regarding prevalence, the factors (including potential determinants) associated with food insecurity, and the lived experience. Income as one of the major determinants of food insecurity and other economic factors will be discussed in the context of existing literature.

Part 1: the EXISTENCE of food insecurity

Chapter Three - Part 1A reports the manuscript that has been published in the Australian Journal of Primary Health. This manuscript outlines the prevalence, frequency and determinants of food insecurity reported in low-to-middle income respondents to the Victorian Population Health Survey (VPHS) (2006-2009). Food insecurity is defined by an affirmative response to the single question: *'in the last 12 months did you run out of food and were unable to buy more?'*

Chapter Four - Part 1B reports the findings exploring the associations between food insecurity and an indicator of financial stress: *'Ability to raise A\$2000 in an emergency in 2 days'* and associated variables from the 2008 VPHS.

Part 2: the EXPERIENCE of food insecurity

Chapter Five details the mixed methods research (MMR) methodology study design implemented to explore the **EXPERIENCE** of food insecurity in low-to-middle income households in Melbourne. It outlines the methodological framework underpinning the research and researcher positioning. The two distinct phases (quantitative and qualitative) of the sequential explanatory mixed methods design

will be discussed, detailing the sampling, data collection, analysis and integration of data from both phases.

Chapter Six presents the analysis of the data on the experience of food insecurity from both the quantitative and qualitative phases of the study. The quantitative phase includes key demographic data and food security status of participants in the '*Food Security in Melbourne Households Survey*' and the identification of low-to-middle income households. The synthesis of the qualitative phase in-depth interviews discusses the similarities and differences within and across food secure and food insecure low-to-middle income households.

Chapter Seven discusses the key findings of this mixed methods research methodology study in the context of existing literature.

The thesis concludes with **Chapter Eight** which provides a synthesis of the findings from Part 1 and Part 2. Directions for future research and the public health significance of the findings of this research are also presented.

1.5 Contribution of this thesis

To the authors knowledge this research is the first of its kind in Australia to investigate both the **EXISTENCE and EXPERIENCE** of food insecurity in low-to-middle income households. As such this work stands to make a seminal contribution to the limited understanding of the issue in these households. Furthermore, the research has considerable implications for policy, measurement and practice which is likely to be realised in future responses to address food insecurity.

Chapter 2

Review of the Literature

Chapter 2: Review of the Literature - Setting the Scene

2.1 Introduction

This chapter describes what is known regarding the **EXISTENCE** and **EXPERIENCE** of food insecurity in **low-to-middle income households** in high income countries, more specifically in Australia. The chapter will provide context on the prevalence of household food insecurity in Australia; monitoring and measurement; predictors increasing vulnerabilities to household food insecurity and an overview of current approaches to address food insecurity in Australia. It will then review the literature according to the evidence of food insecurity in low-to-middle income households; looking beyond income; impact of financial stress and cost of living pressures, and the experience of food insecurity in low-to-middle income households.

A narrative review of the literature was chosen to identify gaps and omissions in the literature specific to the **EXISTENCE** and **EXPERIENCE** of food insecurity in low-to-middle income households, both nationally and internationally. Such a review also allowed for identification and consolidation of what already was known and how to build upon and extend this evidence base.(58)

2.2 Household food insecurity in high income countries

Food insecurity, the limited or uncertain availability of individuals' and households' physical, social and economic access to sufficient, safe, nutritious and culturally relevant food, is a complex and multidimensional phenomenon.(2) Food insecurity may result from compromise in one or more of the supporting dimensions of food: supply, access (social and economic determinants), utilisation, stability, and impacts on health (Figure 2-1).(3)

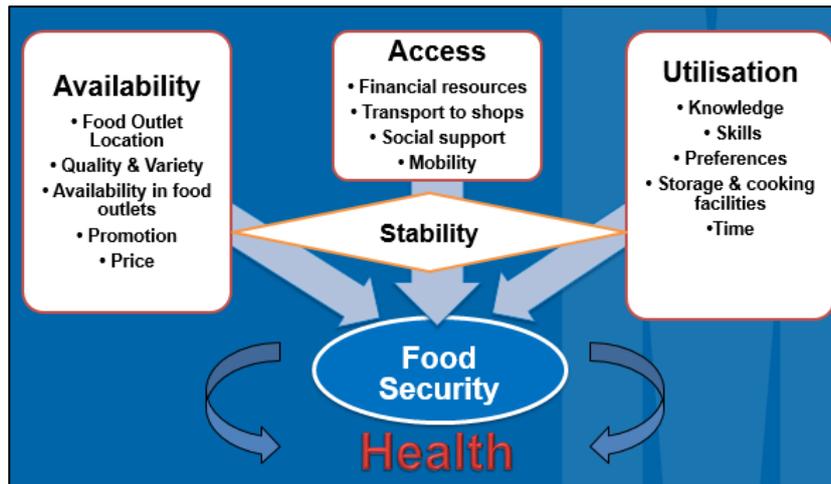


Figure 2-1 Summary of the dimensions of food security and relationship to health

The core characteristics of the of food insecurity experience have been described at both a household and individual level. These may include: anxiety, concern, compromise to the quantity and nutritional quality of food and social alienation. These experiences may manifest in the acquisition of food, eating patterns, relationships within families, psychological distress and the feeling of hunger.(6, 59)

Food insecurity has been described as a complex public health issue or a ‘wicked health’ problem (12), impacting on the physical, social and emotional health and wellbeing of both adults and children.(9, 17-20, 23, 28, 30, 31, 33, 60). Wicked problems are highly complex and are therefore difficult to solve. These complexities may arise due to the problem being difficult to define or understand, having multi-causal pathways and stakeholders having differing views of the problem.(61, 62) Food insecurity is a predictor of use of health care with high associated costs to the health care system. In 2010, the *Hunger in America* report calculated that those experiencing food insecurity had greater health care needs and that the indirect costs of food insecurity were US\$130.5 billion.(63) In Ontario, Canada the adjusted annual health care costs for food insecure households when compared to food secure households was between 16%-76% higher, increasing with higher severity levels.(21) Data on the costs of food insecurity in Australia are scarce (50), with one conservative estimate for the state of Tasmania being approximately 60 million dollars per year.(22)

2.3 Prevalence of household food insecurity in Australia - measurement and monitoring

2.3.1 National level

At a national household level food insecurity is measured every three years by the Australian Bureau of Statistics (ABS) as part of the Australian Health Survey (AHS) via a single item tool '*in the last 12 months, have you run out of food before you had money to purchase more?*'(44) For those who respond affirmatively, a follow up question provides insight into the severity of the experience by asking if a household member went without food. In 2011-2012 four percent of people (approximately 900,000 people) in the last 12 months were living in a household that was food insecure.(44). Additionally, of these, one and a half percent were in a household where someone went without food because they could not afford to buy more. The prevalence in Indigenous Australians was 22% and for those Australians living in remote areas the level rose to 20% of non-Indigenous but 30% of Indigenous Australians.(44, 45) As food security monitoring was excluded from the 2007-2008 National Health Survey (NHS) the most recent data prior to 2011-2012 was from the 2003-2004 NHS.

This single item tool, attributing the cause to lack of finances, has been described as an indicator of risk of food insecurity rather than a true measure of prevalence.(50) This tool provides a simplistic view of the complexities of food insecurity by focussing on the impact of quantity alone and not quality of food, as described in the FAO definition of food security.(2) The tool is insensitive to the continuum of experiences and behavioural responses described by Radimer(6) to food insecurity, where successive stages become more severe, varying from stress, anxiety, worry and concern, compromise on diet quality to food insufficiency, the running out of food. The tool does not reflect reduced intake, changes to food selection and lower nutritional quality, all of which are part of the experience and may also be used as a coping strategy of food insecurity by some members of a household. A variety of indicators is needed to capture the various combinations of food experiences, and behaviours that collectively describe each stage.(14, 37, 64-66) Additionally, the follow up question provides limited insight into the severity of

food insecurity experienced. Using the single item and follow up question, Temple modelled classification beyond food secure or food insecure, dependent on an affirmative response to the follow up question and further classifying those who are food insecure as moderate or severe.(64) However this classification has not been further adopted, with Temple recognising the limitation of this measure in its classification of food insecurity attributed to financial causes alone.

A tool that encapsulates these aforementioned points assessing food insecurity due to financial constraints is the United States Department of Agriculture Household Food Security Survey Module (USDA HFSSM), an 18-item set of indicators used at a national level in both the United States and Canada.(14, 67) This tool encapsulates Radimer's conceptual work of the four components of food insecurity.(6, 16) A severity classification can be determined for households dependent on the number of affirmative responses.(14)

1. Food secure, households show no or minimal signs of food insecurity
2. Low food security, with reduced quality and variety of food with little or no indication of reduced intake.
3. Very low food security, multiple indications of disrupted eating pattern and reduced food intake.

An additional classification exists namely very-low food insecurity in children: Households in which children also experience reduced food intake and disruptions in eating habits due to insufficient money or other resources with which to obtain food.

A USDA expert panel convened in 2006, further refined the language describing food security as follows(68):

1. High food security, no reported indications of food-access problems or limitations.
2. Marginal food security, one or two affirmative responses, with anxiety over food sufficiency or shortage of food in the house. Little or no indication of changes in diets or food intake.
3. Low food security, no definition change.
4. Very low food security, no definition change.

Two Australian studies in very low-to-low income households report the single-item tool may underestimate the actual prevalence of food insecurity by up to ten percentage points, when compared to the validated USDA HFSSM.(37, 49) Subsequently this suggests that current estimates of the prevalence of food insecurity are in fact conservative.

2.3.2 State level

In Australia, food insecurity data from state based population health surveys vary across states. Between 2010-2014, using the single item tool, approximately five to seven percent of respondents to the New South Wales (NSW) Population Health Survey were food insecure.(69) Between 2010-2014 using the same measure in the South Australian Monitoring and Surveillance System (SAMSS), approximately three and a half to five percent of respondents were food insecure (70). An adaptation to the question in the Western Australian Population Health Survey asks if respondents *'in the last 12 months ate less than they should as they could not afford enough food'* and, in 2012, approximately three percent responded affirmatively.(71) Interestingly, this was not reported under the term of food security/food insecurity but rather 'Could not afford food.'

The Victorian Population Health Survey (VPHS) includes the single item question but also asks about additional factors associated with food security including: inability to get food due to cost, quality, variety, culturally appropriate food and transport. In 2011-12, approximately four and a half percent reported being food insecure.(72) At a state level this data can provide insight into food insecurity and allow for some comparison within and between states on a more frequent basis; but this data are still likely to underestimate the true prevalence of food insecurity due to the use of the single item tool.

2.3.3 Prevalence and monitoring in subpopulations at the local level

A limited number of Australian studies have measured food insecurity across a region or suburb level using either or both of the single item question and the USDA HFSSM (37, 49, 73) and have reported higher levels of food insecurity. Nolan(37) implemented both the single item measurement and multi-item US tool, found a Sydney population to be experiencing food insecurity at 15.8% and 21.9%

respectively. Using the USDA HFSSM, Ramsey(49) reported that 25% of respondents residing in households in disadvantaged areas of Brisbane were food insecure.

In Australia, some marginalised individuals have been reported to be at greater risk of experiencing food insecurity with significantly greater levels than the general population, including those on very low incomes (57); those who identify as Aboriginal and / or Torres Strait Islander (45); refugees and asylum seekers (46, 47); and those experiencing homelessness.(48, 74) The experience of food insecurity in some of these groups may be both chronic and of greater severity.

A major contributor to the Australian evidence of the existence and experience of food insecurity is in very low income households from services that are working front line in the welfare and charitable food sector.(57, 75-78) Nationally in 2012, 473,000 people presented each month for support including food relief, with increasing numbers of families needing assistance.(75) Canadian evidence suggests that food bank/relief usage is a poor indicator of food insecurity across the population. This is due to the number of people experiencing food insecurity who may not access or may not be eligible to access these services.(79)

An Anglicare (2012) report entitled, *'When there is not enough to eat'*, presented both quantitative (using the USDA HFSSM) and qualitative data to explore food insecurity in very low-to-low income clients accessing their emergency food relief services.(57) While nine out of ten respondents indicated that their households did not have enough money to buy the food they needed, it was lack of sufficient income that led to a precarious existence where an unexpected expense could tip a household into crisis. These unexpected expenses included: unusually high or unexpected bills such as utility expenses, health issues, car maintenance and repairs, school-related expenses, a death or funeral in the family, supporting an extended family member and relationship breakdown. This experience was consistent with further research across these groups.(78)

Nolan (37) used quantitative data to describe the experience of food insecurity in respondents (n=1719) living in three disadvantaged locations in south-western Sydney. The findings demonstrated that households were cutting down on the variety of food and delaying paying bills; or a parent or guardian was skipping meals

or cutting down on the quantity of food as a means to cope.(37) Considering these experiences on a severity continuum, there is no doubt that they are aligned with more severe forms of food insecurity.

2.3.4 Prevalence of food security in Australia compared to other high income countries

Comparative to other high income countries the prevalence of food insecurity in Australia is significantly lower. This is likely due to the insensitive single item tool used in Australia. In the United States, approximately 12.7% of households are food-insecure using the USDA HFSSM. Of the total 7.7% had low food security and 5.0% had very low food security.(80) The Canadian Community Health Survey (CCHS), using the USDA HFSSM, found approximately 12% of Canadians were food insecure.(41) More specifically according to the Canadian severity level classification, 3.7% were marginally food insecure, 5.5% were moderately food insecure and 2.7% were severely food insecure.(67) In New Zealand using a three-item tool the prevalence of food insecurity was 15%.(40) These figures may suggest that multi-item tools provide more accurate reflection of the prevalence rates of food insecurity due to their greater sensitivity.

As food security is dynamic and can be both episodic and chronic in nature, the data collected in cross-sectional surveys such as the Australian Health Survey does not reflect the duration of the experience of both food security and food insecurity. Annual monitoring occurs across all US states and the majority of Canadian provinces and territories at one point in time using multi-item tools occurs within cross-sectional population surveys. Over the last ten years, academics in Australia have expressed a need for a more regular monitoring and sophisticated measurement system. There is a need for a comprehensive tool that is able to accurately measure the depth of food insecurity experienced and potentially to mitigate the risk of food insecurity in population groups.(81-83)

2.4 Predictors increasing vulnerability to household food insecurity

Regardless of households' geographic location, food insecurity is influenced by the interactions of a range of factors as described by the four dimensions of food security - food availability, supply, utilisation and stability, and socio-demographic characteristics of households. Potential sociodemographic determinants include: gender, (40, 84); household composition (sole parent or couples with children, one person households) (17, 36, 51); younger age (85); diverse cultural backgrounds (36); experience of violence (86); home ownership (renting vs. owning) (11, 87); geographic location (37, 88, 89); and education level.(36)

2.4.1 Food insecurity and income

The major predictor for food insecurity is a low income or limited available financial resources for purchasing food or general resources in a household.(36, 38, 39, 49, 51, 57, 90)

Food insecurity has an inverse relationship with income.(39, 51, 91) In contrast to other high income countries such as Canada and the United States, population level food security data has not been reported according to income levels in Australia.(41, 80) However, some state-based surveys in Australia report the prevalence of food insecurity according to socioeconomic status level.(69) In the New South Wales based survey, the relationship between food insecurity and socioeconomic status (reported as quintiles) is evident; with the prevalence estimated for least disadvantage (1st quintile) at 4.5%, 3rd quintile is 6.7% and the most disadvantaged at 10.3 %(5th quintile).(69)

The relationship between income and food insecurity undoubtedly exists but not all very low income households are food insecure; nor are all households further up the income gradient food secure.(39, 91, 92) Analysing the 2009 December Supplement of the US Current Population Survey (CPS) using all observations of incomes between 0 and 400% of the poverty line, Gunderson et al. (2011) found that poverty was not totally equated with food insecurity.(39) Sixty-five percent of households close to the poverty line were food secure. In addition, as the income to poverty ratio increased to two and three, food insecurity was still evident with

rates at 20% and 10% respectively. Data from other high income countries indicate that households beyond the most vulnerable are experiencing episodes of food insecurity.(11, 51-55, 93-95) Using data specific to Ontario, Canada, results of the CCHS on food security and household income adequacy variables were that 30% of households in the lower-middle category and 5% of households in the upper-middle category were food insecure.(52)

The categorisation of food insecurity according to annual income may, however, be problematic. For example, observations of food insecurity at higher income levels may be due to the fact that annual income is a static measure that is insensitive to sudden economic changes that can occur in the household.(91) Disruptions to income causing negative shocks to the normal household income, such as loss of employment or reduction in hours (change in employment conditions), may contribute to temporary episodes of food insecurity across all income groups, including those in middle-to-higher income groups. It has been suggested that when considering the relationship between household income and food insecurity, it may be more accurate to use average monthly income (96) or income averaged over a two-year period.(39)

2.4.2 Other factors related to income and food insecurity

Additional income-related factors impacting on food insecurity, such as income source and employment status will now be discussed.

Income, employment status and employment sector

Considering the current perception by the Government that food insecurity in Australia is situated predominantly amongst those experiencing socioeconomic disadvantage and those reliant on income from social support,(97) it is important that the source of income be considered. Further analysis of the CCHS indicated that Canadian households reliant on income from employment were more likely to be food insecure than those on pensions and dividends.(67, 98) This may relate to status of employment (multiple part-time jobs versus one fulltime job), which is supported by further analysis of US data in the 2003, 2004 and 2005 December CPS Food Security Supplement.(99) Controlling for income, regardless of household composition, heads of households who had multiple jobs, part time work

and varied hour jobs had higher levels of food insecurity than heads that had full-time employment. In female-headed households food insecurity prevalence was 22% for full time, versus 31% for part time employment. The authors hypothesise that this may be due to unstable employment and multiple demands of a number of jobs.(99)

This work is further supported by examination of the 'working poor'.(100) Using data from the CCHS (2007-2008) Canadian households receiving income from a salary for full time employment - often through multiple jobs - were unable to make ends meet with four percent reporting as food insecure.(100) Of interest was the authors' exploration of employment industry type, accounting for skill levels (education levels), employees in the accommodation and food service industry regardless of income held a greater risk of experiencing food insecurity. The authors indicate that this finding could be reflective of employment characteristics that may relate to seasonal work, irregular hours, shift work, lack of job security that may lead to variations in income or income volatility.(100) While this industry-based examination of food insecurity in Australia has not been explored, there are implications for workers in such industries where penalty loading rates are threatened.(101) This has the potential to impact not only overall income, but also on the need to source additional or other employment types to make ends meet.

Income volatility and income shocks

Income volatility, where there is a positive or negative variance from the mean income, can impact on money available for food. Modelling nationally representative data from the US Household Survey of Income and Program Participation (SIPP), where data are collected in nine waves at four month intervals (between 2001-2004), reported the impact of both mean income level and income volatility (reductions in income) on food insecurity across all households and relative to poverty level.(102) Liquidity constrained, non-elderly, lower income households were placed at greater risk of experiencing at least one month food insufficiency, where sometimes or often there was not enough to eat.(102) Households who are liquidity constrained may not have the resources to account for the negative change in income. The authors suggested that, controlling for mean income, the impact of economic, demographic or policy changes that affect the frequency and size of

negative income shocks, potentially impact on food insufficiency in liquidity constrained households.

The sudden and unpredicted negative shock to household income may manifest by a reduction on spending on food particularly in households where budgets are already restricted.(103) The impact of income volatility and shocks is supported by recent findings in the UK (104) where over one-third of households accessing food banks had unsteady incomes and received less income in the last month compared to three months prior. The reasons for income shocks may vary across households but may include one or more of the following: change in benefit payments, change in employment conditions such as loss of job or reduction in hours, and/or change in personal circumstances such as separation, maternity leave or illness.(104)

2.5 Overview of approaches to address food insecurity in Australia

Despite its health, social and welfare impacts, the Federal Government's view of household food insecurity in Australia is that it is an issue of minor significance due to the perceived low prevalence in the Australian population. Successive Federal Governments' perception is that food insecurity is an issue situated mainly with those individuals experiencing socioeconomic disadvantage.(97) Food insecurity being identified as a priority in the 1992 Australian Food and Nutrition Policy, there has been limited policy investment with no subsequent policy update (105) and corresponding negligible financial investment addressing its determinants.

The charitable food sector which consists of community organisations, voluntary, faith-based, not-for-profit and food rescue organisations is the dominant response to food insecurity in Australia.(97) Unlike in the US, there are no federally funded programs such as the Supplemental Nutrition Assistance Program (SNAP). Consequently this has seen a growth in demand for food based services including food relief, food vouchers, food banks, school breakfast programs, community kitchens and community meal programs.(106) Food charity, also called emergency food relief was designed to provide immediate food assistance to hungry people for 1-3 days. It was not designed to address long term chronic need however in the

absence of an adequate welfare safety net and combined with increasing costs of living people are reliant on long term food charity.(107) Some approaches may also include a component supporting participants with budgeting, food and cooking knowledge. The effectiveness of food based programs to address food insecurity in the long term has been questioned.(97, 108-110) Friel et al. (111) found limited high quality evidence of the effectiveness of targeted food relief interventions aimed at disadvantaged households accessing healthier diets.

A current assumption is that the Federal welfare system is adequate for basic living costs. Analyses of social payments suggest that government spending is reducing in areas such as the Family Tax Benefit and payments such as unemployment (Newstart Allowance) single person allowance at A\$267.80/week (at March 2017) is below the poverty line.(112) Furthermore this is in the order of A\$176/week less than a single person rate on a pension (Age, Disability Support and Career Payment). Australian Council of Social Service (ACOSS) have raised concern that payments such as Newstart are indexed to the consumer price index (CPI) alone, rather than pension payments that rise in line with wage growth if that exceeds CPI. Recent analysis has suggested that Newstart Allowance should be calculated based on the Minimum Income for Healthy Living (MIHL) standard, which is higher than the poverty line (50% of median income) and is designed to ensure that in addition to material consumption, it allows for a healthy level of social participation. ACOSS described this is in contrast to the current neoliberal government approach.(113)

The importance of a rights-based approach to food has been reported in Australia (107) and echoed in other countries including the UK, Canada and the US.(110, 114, 115) The Australian Right to Food Coalition (RTF) was launched in 2016. Its role is to advocate for the improvement in the health and well-being of all Australians by working to ensure equitable access to nutritious food. Membership consists of organisations, practitioners, researchers and community workers is an example of a new and united national approach to this public health issue.(116) The RTF in a position statement has called for action by the Australian Government to act on their obligation to human rights to adequate food responsibilities according to Article 11 of the *International Covenant on Economic, Social and Cultural Rights 1966 (ICESCR)*, ratified in 1975.(117) This outlines, first, that all state parties should take

immediate steps to guarantee the right to freedom from hunger for all persons in their jurisdiction and second, that all state parties take appropriate steps towards the 'progressive realisation' of the right to adequate food. In the absence of a rights-based national food strategy, the RTF have advocated for the development of a comprehensive rights-based National Food and Nutrition Strategy.(117) This is an example of one group who along with other peak body groups in Australia such as the Public Health Association of Australia in collaboration with the Dietitians Association of Australia, Nutrition Australia and the Heart Foundation have advocated for a National Nutrition Policy that could include addressing food insecurity.(118)

2.6 Evidence of food insecurity in low-to-middle income households

Much of the literature reported in this chapter has focussed on food insecurity experienced across entire populations or by those in very low income groups, with responses focussing on the later groups. A narrative review of the literature on the evidence on food insecurity in low-to-middle income groups internationally and then in Australia is described below.

2.6.1 International studies

Studies specifically focussing on exploring food insecurity in higher income groups are limited, with three studies using cross sectional population data from United States and Canada.(53-55)

In 2002, using data from the 1995-1997 US Current Population Survey (n=127,558), Nord and Brent identified that 'a substantial number of middle income households and a few higher income households' registered as food insecure.(55) In this study, 10.9% of all households were food insecure. Approximately 20% of those who were classified as food insecure households were from the middle income range (income 1.85 times greater than the poverty threshold). Furthermore, of all food insecure households that were experiencing hunger (very low food security) 17% were from middle income households. As income increased to above USD\$50,000 households in this income group accounted for three percent of those classified as food insecure. When examining food insecurity in middle to higher income households, potential causes were identified as: fluctuating income over the total year, change in household composition (increasing or decreasing the number of people in the household), and unequal distribution of resources in shared households consisting of a number of economic units or families.(55) Furthermore, it was proposed that an unexpected need or event impacting on household economics could facilitate food insecurity, such as illness, death, job loss, chronic health conditions and general housing costs. Despite a lower prevalence of food insecurity in higher income households, it was proposed that the determinants of and responses to (coping strategies), were similar to those households on very low incomes.(55)

Examining annual reports (2000-2007) from the USDA Economic Research Service, Nord et al. (53) reported a decline in inflation-adjusted food spending and an increase in food insecurity in middle-income and low-income households. Food spending by households in this income group grew at a slower rate than the cost of food. This analysis reported against households categorised as lowest, second and middle income quintile: the second income quintile food spending reduced by 15.3% and the middle income quintile reduced by 9% over 2000-2007. This decline in food spending was accompanied by increased housing spending in the two lowest income quintiles. Household spending was defined as shelter, utilities, housekeeping supplies, furnishings and equipment. Increased household spending in the second and middle quintile was associated with mortgage payment increases due to doubling of housing prices and increased utility costs. Very low food security for low income quintiles increased from 3.9% (2000) to 5.8% (2007) impacting upon their ability to access food. For the middle income quintile there was a limited increase in low food security status between 2000-2007, indicating that despite a reduction in spending these households may have been able to maintain food access. Nord(53) also reported that from 2000-2007 there was an associated decline in pre-tax income: 3.6% for the second income quintile and 1.5% for the middle income quintile. An important point for consideration is that households in the second quintile were above the poverty line and mostly employed on low incomes, with one or more adults employed per household. However, despite reduced food spending and increased food insecurity, these households were not eligible for US food and nutrition assistance programs due to level of income. Through examination of this data, Nord established the impact of cost of living and wage growth on low-to-middle income household spending on food and food security.

A recent exploration of factors associated specifically with food insecurity in Canadian higher income households supported and built upon Nord's 2002 findings.(54) This study found that the following characteristics were associated with increased risk of food insecurity in middle income households: renting, households with a number of members, lower income, education lower than university level, chronic health problems and smokers, problem gambling, sole parents (male or female head) and source of income being employment insurance.(54) These

appear to be the only studies to specifically and empirically explore food insecurity beyond very low incomes.

Additional evidence of the existence of food insecurity beyond those on very low incomes can, however, be found in some national reports as a secondary outcome. Examining CCHS data for Ontario, Canada, Tarasuk and Vogt (52) reported the inverse relationship between food insecurity and household income adequacy categories. Those in the middle income category had an increased odds ratio of 2.57 (95% CI 1.89-3.50) of being food insecure when compared to an upper-middle income category.(52)

Nord et al. (2008) compared national population data to examine the prevalence of household income-based food insecurity between Canadian and US households. Using income level adequacy categories, where income ranges were established based on household composition, 20% of middle and 10% of upper-middle US income categories were food insecure. Canadian households reported over 10% and over five% for the same household categories, respectively.(95) Using USDA data Coleman-Jensen et al. (2013) reported that 58.9% of households whose incomes were below the poverty line were food secure, but 7% of Americans above the poverty line were food insecure.(94) Similarly, in metropolitan Parisian households above very low income, where income was adjusted for household consumption units (number of people), and the prevalence of food insecurity was between 2.8–10.0 percent.(11)

2.6.2 National studies

Evidence of food insecurity in Australia across the income gradient is limited with studies focusing on population subgroups, particularly those on very low incomes where the prevalence is higher. What has been reported across income groups describes the inverse relationship between food insecurity and income.(49, 69, 119)

Research investigating food insecurity across all income groups responding to the South Australian Population Health Survey (2002-2007) found that households with incomes between A\$40,000-\$60,000 were 2.9 times more likely to experience food insecurity compared to the reference group >A\$100,000.(119) Households with children living in disadvantaged areas of Brisbane, Queensland on the middle tertile

of equalised disposable income (exact dollar figure unreported) were five time more likely to be food insecure than those in a higher income tertile.(73) Furthermore, in the same population households with adults only in the middle income tertile, were 2.8 times more likely to experience food insecurity compared to those in higher income groups.(49)

As described earlier in this chapter, the relationship with income is not clear cut and there are a number of other factors pertaining to income sources and food insecurity. These will now be presented for consideration in the discussion of low-to-middle income households and highlight where the evidence is limited across income groups.

2.7 Food insecurity and other household financial factors

A growing number of researchers have focussed on other indicators of household wealth beyond income, including assets and savings, to explore the relationship with food insecurity and why some households are food insecure and others are not.(92, 120-122) Chang, Chatterjee et al.(120) examined the relationship between food insecurity and financial management practices using the 2003 US Panel Study of Income Dynamics longitudinal survey of over 5,000 US households, which included the USDA core foods security module. Households that earned significantly more than the poverty threshold, but had low asset to income ratios, were at risk of food insecurity.(120) The negative relationship between food insecurity, income and assets such as home and car ownership and savings has been reported.(92, 96, 121, 122) US households, who did not have liquid assets totalling three months of income or non-pension financial assets of at least six months of income, were more likely to be food insecure.(120) Interestingly, in US households whose income was above 185% of poverty line, there were significant associations between food insecurity and a number of financial variables including insolvency ratio (debt-to-equity ratio).(120) While coping mechanisms were not reported, these higher income households who were financially struggling with their existing financial demands, or under strain because of their income level, were ineligible for support through US government food assistance programs such as the

Supplementary Nutrition Assistance Program (SNAP). This raises questions about how those in higher income households experiencing food insecurity may cope.

The evidence of savings as a protective factor against food insecurity is recognised both internationally (121) and nationally.(37, 119) Australian evidence on the association between the capacity to save and food insecurity is limited. One study reported that those who were unable to save were 6.5 times more likely to experience food insecurity in the last 12 months.(119) This is consistent with Sydney disadvantaged households being unable to save, which increased odds of food insecurity fivefold.(37)

2.8 Food insecurity across income groups: impact of financial stress and cost of living pressures

The ability to afford nutritious food is dependent on available economic resources.(123) Food in household budgets may be viewed by some households as the only discretionary aspect that can be manipulated and negotiated, competing with cost of living expense pressures, including housing and utility costs, transport and unexpected expenses. This in turn may impact on a household's food security status.

The proportion of household spending on goods and services is reported in the Australian Bureau of Statistics Household Expenditure Survey (HES), administered to a sub sample of those responding to the Survey of Income and Housing. In the 2009-10 HES(n=9,774), the greatest proportion of weekly household expenditure on goods and services (on average) across income groups was 18% on housing costs, such as rent and mortgage payments, 17% on food and non-alcoholic beverages, and 16% on transport.(124) These three categories accounted for half the average weekly household expenditure on goods and services. The HES (2009-10) reports expenditure across income quintile groups where mean gross weekly income is: lowest quintile A\$367, third quintile A\$1,327, highest quintile A\$3,937. Average weekly expenditure on food and beverages increased as household income rose across all selected food groups. The highest income quintile group

spent an average of 18% of their total household expenditure, or A\$389, on food and beverages. The third quintile spent 19% of their total expenditure or A\$227 on food and beverages. In comparison, the lowest income quintile spent 20% of their total expenditure or A\$113 on food and beverages.(124)

Upon more detailed examination, the HES data show clear trends in weekly expenditure in relation to income. First, weekly expenditure on meals out, fast foods and alcoholic beverages increased with household income with high income quintile households spending 31% and 16% respectively of their weekly food and beverage expenditure. In contrast, lowest income quintile households spent 18% and 9% on these categories respectively. Second, for food items such as meat, fruit and vegetables, there was an inverse relationship between household income and the proportion of household income spent on these foods. For example, low income quintile households spent 15% on vegetables and fruit, compared with 10% by high income quintile households. There are some limitations when using HES data which are based on a commonly purchased basket of foods to calculate the Consumer Price Index, and does not reflect foods that are healthy.(125) However, it provides a crude measure of the financial implications of healthy food across income groups.

Monitoring of the cost of a healthy basket of food, according to disposable income or Government welfare payments for various household types, provides insight into affordability of food and the potential risk of households to food insecurity.(125-130) Australian research indicates that households across various income groups may be spending between 18%-40% of income on a healthy basket of food.

As indicated in the HES, housing costs are a significant expense to the household budget. As relative spending increased in Canadian households there was a reduction in spending on food.(131) This finding was supported by analysis of low and middle income household spending in the US. A reduction in food spending by 15.3% and 9%, respectively, was noted. The corresponding increase in household spending was largely attributed to rental and mortgage payments.(53)

Financial stress data can provide insight into an individual's or a household's economic wellbeing and hence potential vulnerability to food insecurity. The HES measures a suite of financial stress indicators (132), such as: ability to raise money in an emergency, could not pay bills on time, could not heat the home, went without

a meal, and sought help from organisation, family or friends. The 2009-2010 HES data show that in the last 12 months between 11.2%-18.6% of households in the low-to-middle income quintiles have experienced at least four measures of financial stress. Between 12.7-16.7% of these households were unable to raise \$2000 in a week for something important and 10.3%-15.3% could not pay a utilities bill on time.(132) In Toronto, Canada, increasing severity of food insecurity, determined by the USDA HFSSM in low income households (n=501), has been associated with an increased experience of material hardship, such as delayed rent and bill payment, borrowed money for rent, house repairs, sold or pawned something and gave up phone/TV or internet service (66). These material hardships may be associated as manifestations of financial stress.

The National Centre for Social and Economic Modelling (NATSEM) found that low-to-middle income Australians are not experiencing similar gains in the financial standard of living, compared to those Australians in the highest income groups. Identified differences between income groups include housing costs, housing tenure and cost of living.(133, 134) Housing stress has increased in income groups beyond those on a very low income with reports of 18%-20% of households in the low-to-medium income range experiencing related financial stress.(135) More recent data suggest that more than 50% of Australians are spending over 30% of their disposable income on housing and are experiencing housing affordability stress as a result.(136) This is not surprising when reviewing the median house price in Melbourne October 2017 rose to A\$880,902, an increase of over A\$100,000 from the previous 12 months.(137)

Further evidence indicating that Australians in low-to-middle income group may be at increasing risk of food insecurity can be drawn from the 2014 Western Australia cost of living modelling. Based on the household income (A\$70,300 per annum) of a working family (2 adults, 1 full-time and 1 at 16 hours casual employment and 2 children) it was estimated that after basic living costs, there was a surplus of A\$9.63 per week.(138) The reported surplus may be quickly used to cover unexpected costs, from emergencies and repairs, to birthday presents or school excursions. The capacity to save was not included in the model.(138)

For an increasing number of households the cost of utilities contributes to financial stress with significant increases in gas, water and electricity retail prices of 14% over 2012-2013.(134) This is supported by retail price data for 2011-2012 from the Victorian Essential Services Commission that noted increases of 10-12% for electricity, 7% for gas and 6-19% for water.(139, 140)

These reports indicate that some Australian low-to-middle income households are experiencing periods of financial stress and may be potentially at greater risk to episodes of food insecurity during these times.

2.9 Beyond the existence: The experience of food insecurity in low-to-middle income households

The continuum of food insecurity is well documented, progressing from concern and worry about running out of food to changes in food selection and quantity. An increased number of other forms of material household hardship have been reported as the severity (marginal food security to very low food security) increased.(66) These additional hardships include, but are not limited to: giving up TV, phone or internet services, delayed bill and rent payment and borrowing money for rent.(66) Of note, those experiencing marginal food insecurity have experienced these forms of material hardship. Internationally, in Canada, the US and the UK, the experience of food insecurity among those on very low income has been explored qualitatively and has been reported in a number of studies detailing the continuum and depth of experience and coping mechanisms.(59, 110, 141-148)

There are limited Australian studies that have explored the experience of, and strategies used to deal with, food insecurity across all income groups. King (57) explored the food insecurity experiences of 590 purposively sampled people on very low-to-low income accessing Emergency Relief services or other forms of food support from 63 sites around Australia. More than one third of respondents indicated the presence of stress and anxiety and for some this was overwhelming, often with a sense of frustration. Additionally, anger was evident with references to fighting and arguments in the household as a result of being hungry. Stress manifested in a range of forms including: being low in energy, family conflict, the capacity to think and function, and feelings of inadequacy. Experiences of worrying about food and

how to access more were strongly articulated in connection with the impact on mental health, social isolation and self-worth, with one-third indicating compromises to physical health, isolation and disconnection. Whilst respondents were on very low incomes, this provides some evidence of the experience of food insecurity in an Australian context.

2.10 Summary supporting exploration of the EXISTENCE and EXPERIENCE of food insecurity in low-to middle income households.

This narrative review of the literature of the **EXISTENCE** and **EXPERIENCE** of food insecurity in low-to-middle income households found three international papers that specifically focused on this income group. Internationally, the evidence of food insecurity across income groups was reported at a national level through population monitoring of food security in both Canada and the US.(53-55) This suggests that there is evidence that not all very low income households are food insecure and that not all higher income households are food secure. In Australia, while there are limited number of studies reporting the prevalence of food insecurity across a range of income groups, the existence of food insecurity, specifically in higher income groups and associations, has not been explored.(37, 49, 69, 119). However these studies acknowledged that food insecurity beyond very low income groups existed in Australia.

Of the evidence that specifically related to food insecurity in higher income groups in the US and Canada, factors contributing to food insecurity included: fluctuating income, discretionary household spending; changes in household composition; a number of economic units in households; unexpected events such as job loss, illness and increased housing costs; housing tenure; and increased smoking and problem gambling.(53-55)

This narrative review has also explored potential financial indicators that may be more sensitive than the static measure of income, such as capacity to save, assets, assets to debt ratio and liquidity constraints. While some Australian studies reported on capacity to save and home ownership status, there has been limited analysis

using other economic analysis of food insecurity. Reports on financial stress, housing cost increases, cost of living–utilities costs and the cost of food and spending at a population and sub population level across very low and low-to-middle income group indicate that number of cumulative financial pressures may be placing low-to-middle income households at increased risk of food insecurity. Direct associations between food insecurity and some of these indicators have not been explored.

In Australia, there is limited evidence of the prevalence, experiences and impacts of food insecurity in low-to-middle income households. This may hinder the development of approaches to address the determinants of food insecurity more broadly across income groups. The experience of food insecurity cannot be adequately explored by the single item tool used at a population level in Australia. Australia's response to food insecurity has focused on supporting charitable food sector. Approaches to address food insecurity need to consider the complex range of determinants that trigger households into food insecurity; and consequently, measurement of food insecurity must capture these determinants. Furthermore the factors that protect people from food insecurity and coping strategies of households need to be explored.

This thesis provides some evidence to address these literature gaps that are clearly evident in the Australian context. Specifically, the next chapter provides evidence of the existence of food insecurity in low-to-middle income households.

Part 1

Exploring the EXISTENCE of Food Insecurity in Low-to- Middle Income Victorian households

Chapter 3:

Part 1A

Chapter 3: Exploring the EXISTENCE of food insecurity in low-to-middle income Victorian households using 2006-2009 Victorian Population Health Survey data

3.1 Introduction

This chapter details the first aspect of the research (Part 1) examining the **EXISTENCE** of food insecurity in low-to-middle income Melbourne households. It starts by briefly providing context to the use of the population data set, the Victorian Population Health Survey (VPHS), to explore the **EXISTENCE** of food insecurity's across income groups, but specifically within low-to-middle income (A\$40,000-\$80,000) households. Next it presents survey variables associated with food insecurity within this income group and discusses these findings in the context of what is known in the literature. This chapter is presented as a publication published in the *Australian Journal of Primary Health*. Finally, the chapter concludes with a summary and linkages to the subsequent chapter.

3.2 Context

The VPHS is an annual survey conducted by the Victorian Department of Health (VDoH) to provide information on the health and wellbeing of the population to inform policy and planning.(149) It is based on a core set of question modules collecting data on a range of demographic, physical, social and mental health variables.(149-152) The VPHS provides the only annual measure of population level food security in Victoria determined through the single question which is validated in the Australian context. The question asks respondents: '*In the last 12 months, were there any times that you ran out of food and couldn't afford to buy more?*'(153) This single item question is used to classify survey respondents as food secure (Yes) or food insecure (No). For those who respond affirmatively to this question there is a subsequent question that explores the frequency of the food insecurity experience. Additionally, the survey collects data on a number of variables that have been reported to be associated with food insecurity.

Reports developed by VDoH on the survey results typically provide an overview of selected findings. These may include physical and mental health conditions, health inequalities, lifestyle factors and social connections. In-depth analysis of food security indicators has not previously been undertaken.

Permission to access the 2006-2009 food insecurity data was sought from VDoH. Survey variables approved for use are described in Table 3-1. VDoH provided VPHS data for the survey years 2006-2009.

Table 3-1 Victorian Population Health Survey (VPHS) approved variables for 2006-2009 data

Demographic
<ul style="list-style-type: none"> • Total annual household (last 12 months) • Geographic location –metro/rural • Gender • Age • Household composition • Highest Education level attained • Employment status • Housing tenure
Food Security, Food Access
<ul style="list-style-type: none"> • In the last 12 months where there any times that you ran out of food, and couldn't afford to buy more? • Can't get food wanted due to expense • Can't get food wanted due to quality • Can't get food wanted due to variety • Can't get food wanted due to culturally appropriate foods not available – • Ability to get to the shops using usual mode of transport
Financial Stress Indicator
<ul style="list-style-type: none"> • Ability to raise A\$2000 in an emergency in 2 days
Social Support
<ul style="list-style-type: none"> • Help from friends • Help from family • Help from neighbour

3.3 Ethical approval

Exemption from ethical review was granted by the Monash University Human Research Ethics Committee CF13/933 – 2013000438 (Appendix 1).

3.4 Manuscript

Kleve S, Davidson Z, Gearon E, Booth S, Palermo C. Are low to medium income households experiencing food insecurity? An examination of the Victorian Population Health Survey 2006-2009. *Australian Journal of Primary Health*, 2017, 23(3): 249-256. doi: 10.1071/PY16082

Are low-to-middle-income households experiencing food insecurity in Victoria, Australia? An examination of the Victorian Population Health Survey, 2006–2009

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Abstract. Food insecurity affects health and wellbeing. Little is known about the relationship between food insecurity across income levels. This study aims to investigate the prevalence and frequency of food insecurity in low-to-middle-income Victorian households over time and identify factors associated with food insecurity in these households. Prevalence and frequency of food insecurity was analysed across household income levels using data from the cross-sectional 2006–09 Victorian Population Health Surveys (VPHS). Respondents were categorised as food insecure, if in the last 12 months they had run out of food and were unable to afford to buy more. Multivariable logistic regression was used to describe factors associated with food insecurity in low-to-middle-income households (A\$40 000–\$80 000 in 2008). Between 4.9 and 5.5% for total survey populations and 3.9–4.8% in low-to-middle-income respondents were food insecure. Food insecurity was associated with limited help from friends, home ownership status, inability to raise money in an emergency and cost of some foods. Food insecurity exists in households beyond those on a very low income. Understanding the extent and implications of household food insecurity across all income groups in Australia will inform effective and appropriate public health responses.

Additional keywords: determinants, methodology, monitoring, public health nutrition.

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Introduction

Food insecurity is the limited or uncertain availability of individuals' and households' physical, social and economic access to sufficient, safe, nutritious and culturally relevant food (Food and Agriculture Organisation 2012). Food insecurity exists across the lifespan and the associated consequences include poor physical, social and emotional health (Holben 2006; Laraia 2013). Measuring the prevalence of food insecurity is complex and varies across countries. Using a multi-item instrument, recent data indicate that the prevalence of food insecurity is 14.5 and 12% in the United States (Coleman-Jensen *et al.* 2013) and Canada (Tarasuk *et al.* 2016) respectively. In Australia, when a single item instrument was used, it was found that 4% of adults experienced food insecurity (Australian Bureau of Statistics 2015b). When compared to a validated multi-item instrument,

this single item may underreport food insecurity by as much as 5% (Nolan *et al.* 2006). Population subgroups, such as very low-income households, refugees, Indigenous and homeless people, may experience higher levels of food insecurity (Nolan *et al.* 2006; Gallegos *et al.* 2008; Australian Bureau of Statistics 2015a).

The prevalence and severity of food insecurity is influenced by multiple factors including: household composition (Bartfeld and Dunifon 2006), belonging to an ethnic minority (Willows *et al.* 2009), geographic location (Nolan *et al.* 2006), education level (Bartfeld and Dunifon 2006), income level and financial resources to purchase food (Bartfeld and Dunifon 2006; Kirkpatrick and Tarasuk 2010; Gunderson *et al.* 2011). Much of this evidence has focussed on food insecurity experienced by those in very low-income groups, where the prevalence is higher.

What is known about the topic?

- Low income and poverty are key predictors of food insecurity. Little is known in Australia about the prevalence and associated predictors of food insecurity in low-to-middle-income households.

What does this paper add?

- This research provides new and compelling evidence that food insecurity exists in low-to-middle income Victorian households and contributes to the understanding of factors associated with food insecurity in this income group.

Although very low income and poverty are key predictors of food insecurity, data indicate that households beyond those on very low incomes also experience episodes of food insecurity (Nord and Brent 2002; Gorton *et al.* 2010; Coleman-Jensen *et al.* 2013; Martin-Fernandez *et al.* 2013; Olabiyi and McIntyre 2014). International studies indicate contributors to the presence of food insecurity in low-to-middle-income households may include fluctuating household income, discretionary household spending, changes in household composition, unexpected costs, chronic health conditions and job loss (Nord and Brent 2002; Olabiyi and McIntyre 2014). To the authors' knowledge, no Australian evidence describes the prevalence and factors associated with food insecurity in low-to-middle-income households. An understanding of the determinants of food insecurity in this income group is important to inform potential strategies.

This paper aims to investigate the prevalence and frequency of food insecurity in low-to-middle-income Victorian households over time, and identify factors associated with food insecurity in these households.

Methods*Data source*

Data from the Victorian Population Health Survey (VPHS) from 2006 to 2009 were analysed to explore the prevalence and frequency of food insecurity (Victorian Department of Human Services 2007, 2008; Victorian Department of Health 2010, 2011). Additional analysis of 2008 survey data explored factors associated with food insecurity. The VPHS is an annual population cross-sectional survey conducted by the Victorian Department of Health (VDoH), collecting data on a range of demographic, physical, social and mental health variables to provide information on population health and wellbeing. The VPHS is the only annual measure of population-level food security in Victoria. Survey questions are consistent and also align with those in other Australian population surveys.

The VPHS is conducted by computer-assisted telephone interview (CATI) in a randomly selected representative sample of Victorian adults, residing in private dwellings; detailed methods are reported elsewhere (Victorian Department of Human Services 2007, 2008; Victorian Department of Health 2010, 2011). Response rates, defined as the proportion of households where contact was made and an interview completed,

ranged from 62% in 2006, 67% in 2007, 64.9% in 2008 and 73.3% in 2009. The total number of people across years was $n = 7543$ in 2006, $n = 7604$ in 2007, $n = 34\,169$ in 2008 and $n = 7740$ in 2009.

Interviews were conducted in English and eight major non-English languages in Victoria. All surveys were undertaken at a state-wide level, except for 2008, which was undertaken at a local government area level and had an increased survey size. Owing to the sample size, this research performed detailed analysis of this survey. Access to survey data for this analysis was authorised by the VDoH and with exemption from ethical review by Monash University Human Research Ethics Committee (CF14/1382 – 2014000647).

Covariates

Food-insecure households were those that responded 'yes' to the question 'In the last 12 months, were there any times that you ran out of food and couldn't afford to buy more?' Independent survey variables explored were selected from the food insecurity literature and included: age, gender, total annual household income, education level, employment status, home ownership, household composition, geographic location (rurality), support (inability to get help from family, neighbours and friends) and ability to raise money in an emergency (Bartfeld and Dunifon 2006; Nolan *et al.* 2006; Gorton *et al.* 2010; Kirkpatrick and Tarasuk 2010). Additional survey variables describing access to food (financial, quality, variety and culturally appropriate) and transport were included. Variables were categorical and analysed according to the VPHS categories. Total annual household income was before tax and included all income sources over the previous 12 months. Our analysis classified three income groups: very low household income (less than A\$40 000 per annum), low-to-middle household income (A\$40 000–\$80 000 per annum) and higher income (greater than A\$80 000 per annum). These were based on the reported VPHS survey income categorisation and the Australian Bureau of Statistics quintiles of gross Victorian household income (Australian Bureau of Statistics 2013).

Inclusion criteria

Missing and 'do not know' responses were included in the prevalence and frequency analysis for 2006–09, but were removed from the 2008 dataset before univariable and multivariable logistic regression analysis, making the final sample size 24 440 in 2008.

Statistical analysis

All analyses were conducted using Stata, ver. 14 (Stata Corp. LP, College Station, TX, USA), with statistical significance deemed at $P < 0.05$. To control for participation bias and ensure representativeness, survey data were weighted to reflect age, gender and geographic distribution of the estimated resident Victorian population and the probability of selection of the household and the respondent within the household. Prevalence and frequency of food insecurity across the population (2006–09) and income groups were analysed. To identify factors associated with food insecurity for the whole population and for the low-to-middle-income household group, descriptive statistics (means and frequency) and univariable logistic regression were

completed across all variables in 2008. Variables significantly associated with food insecurity in the low-to-middle household income group were further included in multivariable logistic regression to investigate the relationship between each of these variables and food insecurity in this income group.

Assumptions of multicollinearity were tested using collinearity diagnostics to ensure that predictor variables were not strongly related to each other. Goodness-of-fit of the model with predictors was verified using the Hosmer–Lemeshow goodness-of-fit test developed for complex survey data (Archer *et al.* 2007).

Results

Between 2006 and 2009, the prevalence of food insecurity ranged from 4.9 to 5.5% for total survey populations. Fig. 1 describes an inverse relationship between household income and food insecurity. A higher prevalence of food insecurity (8.9–11.1%) was reported by very low-income respondents, but 3.9–4.8% of low-to-middle-income respondents also experienced food insecurity. Frequency of food insecurity experienced according to annual household income varied; however, in some low-to-middle-income food insecure households, this was a weekly to fortnightly occurrence (Table 1).

All variables except geographic location showed associations with food insecurity (Table 2). Household composition, particularly single parents with dependent children (OR = 10.87; 95% CI 7.73–15.29) and an inability to get desired food due to expense (OR = 8.23; 6.41–10.56), was strongly associated with food insecurity. Households with higher incomes were less likely to experience food insecurity.

Variables with the strongest associations with food insecurity in low-to-middle-income households included: inability to obtain food due to expense (OR = 5.38; 3.53–8.21), single parents with dependent children (OR = 4.29; 1.78–10.33), inability to get help from friends (OR = 3.34; 1.90–5.87) and couples with dependent children (OR = 3.01; 1.65–5.51). Reduced risk of food insecurity was strongly associated with those aged over 65 years (OR = 0.06; 0.01–0.29), one's ability to raise A\$2000 in an emergency

(OR = 0.16; 0.1–0.23) and those aged between 55 and 64 years (OR = 0.16; 0.06–0.39) (Table 3).

Variables significantly associated with food insecurity included: respondents who, neither owned or rented a home, were unable to obtain food due to its expense and were unable to be get help from friends. Households who were able to raise money in an emergency, men and middle-to-older age groups were less likely to experience food insecurity (Table 4).

Discussion

This study provides new evidence that low-to-middle income households in Australia are experiencing food insecurity at a consistent prevalence level between 2006 and 2009, and for some, this is a weekly or fortnightly experience. Univariable analysis of factors associated with food insecurity across all respondents were consistent with that reported in the literature across demographic, income, home ownership, employment and social support factors (Gorton *et al.* 2010). In the low-to-middle-income group, univariable results indicated differences in food insecurity associations when compared to all respondents. Significance was not observed across support from family, education, employment, transport to the shops and inability to get food wanted due to variety and culturally appropriateness variables.

Significant predictors in the multivariable model in this population included gender, age, ability to raise money in an emergency, support from friends, inability to get food wanted due to cost and housing tenure other than owning or renting.

Table 1. Victorian Population Health Surveys 2006–2009: frequency of food insecurity by annual household income (A\$)

Total number food insecure: 2006, n = 366; 2007, n = 388; 2008, n = 1879; 2009, n = 412

Frequency of food insecurity	2006 (%)	2007 (%)	2008 (%)	2009 (%)
Weekly to fortnightly				
\$0-\$39 999	21	22.9	29.4	25
\$40 000-\$79 999	18.4	10	12.5	16.1
\$80 000 and over	9.9	16.1	10.4	14
Don't know or refused	16.8	28.9	28.3	28.6
Total	18.7	19.6	23.7	22.8
Once per month				
\$0-\$39 999	17.2	22.6	20	19.6
\$40 000-\$79 999	11.8	6	16.7	28.8
\$80 000 and over	3.1	16	10.1	9.6
Don't know or refused	18.5	13.2	18.3	20.5
Total	14.9	16.6	18	20.7
Less than once per month				
\$0-\$39 999	60.3	53.2	48.9	54.7
\$40 000-\$79 999	68.4	79.5	68.6	52.9
\$80 000 and over	87	67.9	79.4	76.3
Don't know or refused	60.4	36.2	46.2	47.7
Total	64.6	59.4	55.7	55.2
Don't know or refused				
\$0-\$39 999	1.5	1.3	1.7	0.7
\$40 000-\$79 999	1.4	4.5	2.2	2.2
\$80 000 and over	0	0	0	0
Don't know or refused	4.3	21.7	7.2	3.1
Total	1.8	4.4	2.5	1.3

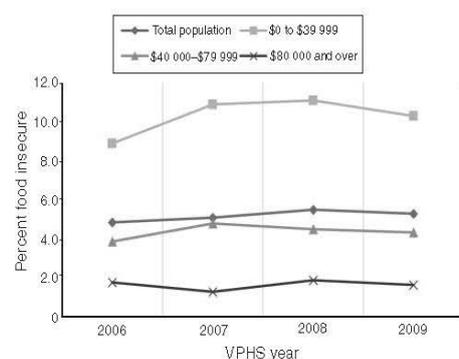


Fig. 1. Prevalence of food insecurity according to annual household income (A\$) in Victorian Population Health Survey respondents, 2006–09. Total observations: 2006, n = 7543; 2007, n = 7604; 2008, n = 34 169; 2009, n = 7740.

Table 2. Victorian Population Health Surveys (VPHS) 2008: prevalence of determinants by food security status (all respondents)
 Weighted total *n* observations = 24 440. 95% CI, 95% confidence interval; OR, odds ratio; TAFE, Technical and Further Education; UNI, university

VPHS variables	<i>n</i>	Food secure Weighted percentage (95% CI)	Food insecure Weighted percentage (95% CI)	Food insecure univariate analysis Crude OR (95% CI)	<i>P</i>
Location					
Rural ^A	15 010	96 (95–96)	4 (4–5)	1.00	
Urban	9430	95 (95–96)	5 (4–5)	1.07 (0.88–1.29)	0.52
Gender					
Female ^A	9832	96 (96–97)	4 (3–4)	1.00	
Male	14 608	95 (94–95)	5 (5–6)	0.67 (0.53–0.84)	<0.001
Age (years)					
18–24 ^A	879	93 (90–95)	7 (5–10)	1.00	
25–34	2399	93 (91–94)	7 (6–9)	1.01 (0.67–1.53)	0.94
35–44	4502	95 (94–95)	5 (5–6)	0.73 (0.50–1.06)	0.1
45–54	4988	96 (95–97)	4 (3–5)	0.55 (0.37–0.81)	<0.001
55–64	5201	98 (97–98)	2 (2–3)	0.30 (0.20–0.45)	<0.001
>65	6471	98 (98–99)	2 (1–2)	0.20 (0.13–0.31)	<0.001
Household composition					
Couple only ^A	7984	98 (98–99)	2 (1–2)	1.00	
Couple with dependent children	6925	96 (95–97)	4 (3–5)	2.60 (1.90–3.56)	<0.001
Couple with non-dependent children	1415	98 (97–99)	2 (1–3)	1.15 (0.60–2.19)	0.67
Single parent with dependent children	1290	85 (82–87)	15 (13–18)	10.87 (7.73–15.29)	<0.001
Single parent with non-dependent children	536	92 (88–95)	8 (5–12)	5.30 (3.03–9.27)	<0.001
Group household and other	1269	91 (88–93)	9 (7–12)	6.24 (4.11–9.48)	<0.001
One person	5021	93 (92–94)	7 (6–8)	4.32 (3.15–5.94)	<0.001
Highest education level					
<Primary ^A	573	93 (89–96)	7 (4–11)	1.00	
Some high school	7823	95 (94–95)	5 (5–6)	0.76 (0.45–1.29)	0.32
Completed high school	3659	93 (92–95)	7 (5–8)	0.94 (0.55–1.61)	0.82
TAFE	5401	95 (94–96)	5 (4–6)	0.72 (0.42–1.24)	0.24
UNI	6984	98 (97–98)	2 (2–3)	0.33 (0.19–0.56)	<0.001
Annual household income level					
<A\$40 000 ^A	10 584	91 (90–92)	9 (8–10)	1.00	
A\$40 000–\$80 000	7591	96 (95–97)	4 (3–5)	0.38 (0.30–0.49)	<0.001
>A\$80 000	6265	98 (98–99)	2 (1–2)	0.16 (0.12–0.24)	<0.001
Employment					
Employed ^A	13 727	96 (96–97)	4 (3–4)	1.00	
Unemployed	578	85 (78–89)	15 (11–22)	4.82 (3.13–7.42)	<0.001
Other	10 135	95 (94–95)	5 (5–6)	1.46 (1.18–1.80)	<0.001
Home ownership status					
Owned ^A	20 576	97 (97–98)	3 (2–3)	1.00	
Rent	3585	88 (86–90)	12 (11–14)	4.87 (3.92–6.04)	<0.001
Other	279	90 (80–95)	10 (5–20)	4.15 (1.87–9.23)	<0.001
Can't get food wanted due to expense					
No ^A	18 152	98 (98–99)	2 (1–2)	1.00	
Yes	6288	87 (86–88)	13 (12–14)	8.23 (6.41–10.56)	<0.001
Can't get food wanted of quality					
No ^A	18 654	97 (96–97)	3 (3–4)	1.00	
Yes	5786	92 (91–93)	8 (7–9)	2.41 (1.96–2.97)	<0.001
Can't get food wanted of variety					
No ^A	22 288	96 (96–97)	4 (3–4)	1.00	
Yes	2152	89 (86–91)	11 (9–14)	3.16 (2.45–4.07)	<0.001
Can't get food wanted that's culturally appropriate					
No ^A	23 358	96 (95–96)	4 (4–5)	1.00	
Yes	1082	91 (88–93)	9 (7–12)	2.25 (1.62–3.13)	<0.001
Easy or difficult to get to and from shops using usual transport					
Easy ^A	23 552	96 (95–96)	4 (4–5)	1.00	
Difficult	888	88 (84–91)	12 (9–16)	3.11 (2.20–4.40)	<0.001
Could raise A\$2000 in 2 days in an emergency					
No ^A	2438	78 (75–81)	22 (19–25)	1.00	

Table 2. (continued)

VPHS variables	<i>n</i>	Food secure Weighted percentage (95% CI)	Food insecure Weighted percentage (95% CI)	Food insecure univariate analysis Crude OR (95% CI)	<i>P</i>
Yes	22 002	97 (97–98)	3 (2–3)	0.10 (0.08–0.13)	<0.001
Help from friends					
Yes ^A	23 417	96 (95–96)	4 (4–5)	1.00	
No	1023	86 (82–89)	14 (11–18)	3.81 (2.87–5.07)	<0.001
Help from family					
Yes ^A	22 417	96 (95–96)	4 (4–5)	1.00	
No	2023	90 (87–91)	10 (9–13)	2.73 (2.12–3.52)	<0.001
Help from neighbours					
Yes ^A	19 858	96 (96–97)	4 (3–4)	1.00	
No	4582	92 (91–93)	8 (7–9)	2.28 (1.84–2.83)	<0.001

^AReference category in univariate regression.

Consistent with the literature, men and increasing age from 45 years, in particular >65 years, was associated with being food secure (Gorton *et al.* 2010; Russell *et al.* 2014). Possible explanations for the reduced associated risk for those >65 years in this income group may include outright home ownership, potential access to Government benefits and seniors financial discounts.

Although there was a significant association between ability to get help from friends when needed and food insecurity, the type of help received was not defined in the survey. Help could be considered in the context of social support and may be in the form of financial, physical and emotional help. Further exploration of the relationship between food insecurity and support in this income group is warranted to understand the type and extent of support to better inform responses.

Renting a home is a predictor of food insecurity (Gorton *et al.* 2010); however, this analysis found that people in 'other' forms of housing were at greater risk compared to those who owned their own home. In VPHS 2008, 'Other' was undefined but in VPHS 2009, responses included: rent-free arrangement (part of a job package), retirement village, nursing home, family members (children) property. In some cases, this type of housing may be insecure, particularly if linked to employment or family good will. For those in nursing homes or retirement villages, food insecurity may be a consequence of upfront and ongoing costs associated with living in such facilities. This finding is novel and warrants further investigation to inform policy.

The inability to get the food wanted due to its cost was positively associated with food insecurity in this income group. Other studies suggest that low-to-middle-income groups may be required to spend between 18 and 40% of income on food (Barosh *et al.* 2014; Palermo *et al.* 2016).

The interplay between household finances and expenses influences food security status, where increasing expenses may affect money for food, often the discretionary part of the household budget. Low-to-middle-income food-insecure respondents reported difficulty raising A\$2000 in 2 days in an emergency. This variable is one indicator of financial stress. As previously documented nationally and internationally, this suggests that food insecurity may be linked to fiscal instability (Nolan *et al.* 2006; Kirkpatrick and Tarasuk 2010). Households

across income groups without ready access to liquid assets or savings to buffer against financial stress are more likely to experience food insecurity (Gunderson *et al.* 2011).

Household composition, including those with children, was an important predictor of food insecurity at the univariate level; however, it did not reach significance when included in the multivariable model in this income group. There is evidence in the literature that very low-income households with children are more likely to experience food insecurity. However, there is limited evidence on how household composition affects food insecurity in higher income groups (Martin-Fernandez *et al.* 2013). Further exploration of the effect of household composition on food insecurity beyond very low-income groups is warranted.

This study is not without limitations. The VPHS survey was administered using CATI; with only people who could afford a landline telephone connection included in the sample. Second, only those residing in private residence were sampled. Subsequently, there was an under-representation of very low socioeconomic status adults, thus increasing the likelihood that the true prevalence of food insecurity may have been underestimated. However, such a methodological bias does not invalidate these findings, but it does suggest that the prevalence of food insecurity may be larger than reported in this analysis.

Although several factors associated with food insecurity were included in this study, analysis was limited by the variables that were available in the VPHS dataset. Additional variables described in the literature specific to financial stress, and money-saving capacity would further support this analysis within this income group (Nord and Brent 2002).

Population measures of food security vary from a single-item instrument in Australia to multi-item instruments in other countries. Our analysis is based on responses to the validated Australian single item instrument (Riley *et al.* 2001). Compared to multi-item measures, this instrument may be a gross underestimate of food insecurity as it fails to take into account temporality and severity (Nolan *et al.* 2006; Temple 2008). Consequently, food insecurity prevalence reported in this analysis across income groups is likely to be underestimated. A more sensitive and regular food security monitoring system is overdue in Australia. Calls for one that is able to accurately

Table 3. Victorian Population Health Survey (VPHS) 2008: prevalence of determinants by food security status in low-to-middle household annual income A\$40 000–\$80 000Weighted total *n* observations = 7591. 95% CI, 95% confidence interval; OR, odds ratio

VPHS variables	<i>n</i>	Food secure Weighted percentage (95% CI)	Food insecure Weighted percentage (95% CI)	Food insecure univariate analysis Crude OR (95% CI)	<i>P</i>
Location					
Rural ^A	4767	97 (96–98)	3 (2–4)	1.00	
Urban	2824	96 (95–97)	4 (3–5)	1.22 (0.83–1.79)	0.3
Gender					
Female ^A	3111	97 (96–98)	3 (2–4)	1.00	
Male	4480	95 (94–96)	5 (4–6)	0.57 (0.37–0.87)	0.01
Age (years)					
18–24 ^A	273	93 (88–96)	7 (4–12)	1.00	
25–34	994	94 (92–96)	6 (4–8)	0.87 (0.42–1.81)	0.72
35–44	1717	95 (94–97)	5 (3–6)	0.70 (0.35–1.41)	0.32
45–54	1840	97 (96–98)	3 (2–4)	0.41 (0.19–0.86)	0.02
55–64	1820	99 (98–99)	1 (1–2)	0.16 (0.06–0.39)	<0.001
>65	947	100 (98–100)	0 (0–2)	0.06 (0.01–0.29)	<0.001
Household composition					
Couple only ^A	2473	98 (97–99)	2 (1–3)	1.00	
Couple with dependent children	2766	96 (94–96)	4 (4–6)	3.01 (1.65–5.51)	<0.001
Couple with non-dependent children	470	98 (92–99)	2 (1–8)	1.64 (0.45–5.95)	0.45
Single parent with dependent children	336	94 (88–97)	6 (3–12)	4.29 (1.78–10.33)	<0.001
Single parent with non-dependent children	130	97 (93–99)	3 (1–7)	2.17 (0.81–5.84)	0.12
Group household and other	416	93 (89–96)	7 (4–11)	4.5 (2.03–10.00)	<0.001
One person	1000	97 (95–99)	3 (2–5)	1.99 (0.95–4.18)	0.07
Highest education level					
<Primary ^A	50	94 (77–98)	6 (2–23)	1.00	
Some high school	2082	97 (96–98)	3 (2–4)	0.42 (0.09–1.92)	0.26
Completed high school	1211	93 (91–95)	7 (5–9)	1.03 (0.23–4.63)	0.97
TAFE	1921	97 (95–98)	3 (2–5)	0.52 (0.11–2.37)	0.40
UNI	2327	97 (96–98)	3 (2–4)	0.43 (0.09–1.97)	0.28
Employment					
Employed ^A	5444	97 (96–97)	3 (3–4)	1.00	
Unemployed	137	93 (86–96)	7 (4–14)	2.17 (0.99–4.77)	0.05
Other	2010	96 (94–97)	4 (3–6)	1.25 (0.77–2.01)	0.37
Home ownership status					
Owned ^A	6502	97 (96–98)	3 (2–4)	1.00	
Rent	1013	93 (91–95)	7 (5–9)	2.57 (1.71–3.86)	<0.001
Other	76	90 (70–97)	10 (3–30)	3.72 (0.93–14.91)	0.06
Can't get food wanted due to expense					
No ^A	5746	98 (97–99)	2 (1–3)	1.00	
Yes	1845	91 (89–93)	8 (7–11)	5.38 (3.53–8.21)	<0.001
Can't get food wanted of quality					
No ^A	5690	97 (96–98)	3 (2–4)	1.00	
Yes	1901	94 (92–96)	6 (4–8)	1.95 (1.29–2.95)	0.002
Can't get food wanted of variety					
No ^A	6952	96 (96–97)	4 (3–4)	1.00	
Yes	629	94 (89–96)	6 (4–11)	1.84 (0.98–3.47)	0.06
Can't get food wanted that's culturally appropriate					
No ^A	7269	96 (96–97)	4 (3–4)	1.00	
Yes	322	96 (90–98)	4 (2–10)	1.18 (0.49–2.82)	0.71
Easy or difficult to get to and from shops using usual transport					
Easy ^A	7348	96 (96–97)	4 (3–4)	1.00	
Difficult	243	93 (87–97)	7 (3–13)	1.86 (0.86–3.98)	0.11
Could raise A\$2000 in 2 days in an emergency					
No ^A	463	85 (80–88)	15 (12–20)	1.00	
Yes	7128	97 (97–98)	3 (2–3)	0.16 (0.1–0.23)	<0.001
Help from friends					
Yes ^A	7345	97 (96–97)	3 (3–4)	1.00	

Table 3. (continued)

VPHS variables	<i>n</i>	Food secure Weighted percentage (95% CI)	Food insecure Weighted percentage (95% CI)	Food insecure univariate analysis Crude OR (95% CI)	<i>P</i>
No	246	89 (83–93)	11 (7–17)	3.34 (1.90–5.87)	<0.001
Help from family					
Yes ^A	7071	96 (96–97)	4 (3–4)	1.00	
No	520	95 (92–97)	5 (3–8)	1.45 (0.83–2.53)	0.19
Help from neighbours					
Yes ^A	6163	97 (96–98)	3 (2–4)	1.00	
No	1428	94 (92–96)	6 (4–8)	2.02 (1.34–3.03)	<0.001

^AReference category in univariate regression.

Table 4. Victorian Population Health Survey 2008: multivariable logistic regression relationship between food insecurity and adjusted factors in low-to-middle-income households' annual income (A\$40 000–\$80 000)

Weighted total *n* observations = 7591, 95% CI, 95% confidence interval; OR, odds ratio. Hosmer–Lemeshow goodness-of-fit test: $F_{9,7594} = 579.1$, Prob > *F* = 0.000

	Crude OR	95% CI	<i>P</i>
Gender			
Female ^A	1.00		
Male	0.58 (0.37–0.91)		0.02
Age (years)			
18–24 ^A	1.00		
25–34	0.80 (0.38–1.69)		0.56
35–44	0.67 (0.33–1.35)		0.27
45–54	0.45 (0.20–0.99)		0.05
55–64	0.28 (0.10–0.81)		0.02
>65	0.13 (0.02–0.68)		0.02
Household composition			
Couple only ^A	1.00		
Couple with dependent children	1.33 (0.66–2.69)		0.42
Couple with non-dependent children	1.42 (0.39–5.19)		0.59
Single parent with dependent children	1.36 (0.48–3.81)		0.56
Single parent with non-dependent children	1.47 (0.48–4.55)		0.50
Group household and other	2.00 (0.82–4.88)		0.13
One person	1.66 (0.74–3.70)		0.22
Home ownership status			
Owned ^A	1.00		
Rent	1.5 (0.90–2.48)		0.12
Other	4.54 (1.26–16.35)		0.02
Can't get food wanted due to expense			
No ^A	1.00		
Yes	3.51 (2.25–5.48)		<0.001
Can't get food wanted of quality			
No ^A	1.00		
Yes	0.97 (0.62–1.54)		0.91
Could raise A\$2000 in 2 days in an emergency			
No ^A	1.00		
Yes	0.27 (0.17–0.43)		<0.001
Help from friends			
Yes ^A	1.00		
No	2.26 (1.08–4.71)		0.03
Help from neighbours			
Yes ^A	1.00		
No	1.09 (0.68–1.73)		0.72

^AReference category in multivariable regression.

measure the complexity and depth of food insecurity experienced and to potentially mitigate the risk of food insecurity across population groups have gone unanswered (Webb *et al.* 2006).

In the absence of more sensitive measures, this analysis provides compelling evidence that low-to-middle-income Victorian households are experiencing food insecurity at a consistent prevalence over 4 years of population data. This finding is strengthened by the large sample size in this VPHS cohort. Key associations with food insecurity for this group may provide guidance to inform potential interventions to address food insecurity.

Until a more robust instrument is developed for monitoring food insecurity in Australia across the income gradient, exploration of the issue should include analysis of the current single-item instrument in conjunction with data on variables found to be associated with food insecurity in this study and the wider literature. For example, other reported variables such financial stress, income and cost of food could be used as 'markers' of increased food insecurity risk.

This research indicates that food insecurity exists in low-to-middle-income Victorian households and further investigation is required to examine the experience to better inform policy and practice. These findings reinforce the need for a more sophisticated and regular Australian food security monitoring system to accurately capture the magnitude of household food insecurity across income groups and inform salient public health responses that are available to all at-risk population groups.

Conflicts of interest

The authors declare that they have no competing interests. The opinions and analysis in this document are those of the authors and are not those of the Department of Health Victoria, the Victorian Government, The Secretary to the Department of Health Victoria or the Victorian Minister for Health.

References

- Archer K, Lemeshow S, Hosmer D (2007) Goodness-of-fit tests for logistic regression models when data are collected using a complex sampling design. *Computational Statistics & Data Analysis* 51, 4450–4464. doi:10.1016/j.csda.2006.07.006

- Australian Bureau of Statistics (2013) Household income and income distribution Australia detailed tables 2011–2012. Available at <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6523.02011-12> [Verified 6 December 2016]
- Australian Bureau of Statistics (2015a) Australian Aboriginal and Torres Strait Islander Health Survey: nutrition results – food and nutrients, 2012–13. Catalogue number 4727.0.55.005. Available at <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/4727.0.55.005-2012-13~Main%20Features-Food%20Security~36> [Verified 6 December 2016]
- Australian Bureau of Statistics (2015b) Australian Health Survey: nutrition – state and territory results, 2011–12. Catalogue number 4364.0.55.009. Available at <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4364.0.55.0092011-12?OpenDocument> [Verified 10 June 2016]
- Barosh L, Friel S, Engelhardt K, Chan L (2014) The cost of a healthy and sustainable diet – who can afford it? *Australian and New Zealand Journal of Public Health* **38**, 7–12. doi:10.1111/1753-6405.12158
- Bartfeld J, Dunifon R (2006) State-level predictors of food insecurity among households with children. *Journal of Policy Analysis and Management* **25**, 921–942. doi:10.1002/pam.20214
- Coleman-Jensen A, Nord M, Singh A (2013) Household food security in the United States in 2012: statistical supplement AP-061. Available at www.ers.usda.gov/publications/ap-administrative-publication/ap-061.aspx [Verified 20 March 2016]
- Food and Agriculture Organisation (2012) Coming to terms with terminology, Committee on World Food Security. Available at <http://www.fao.org/docrep/meeting/026/MD776E.pdf> [Verified 4 June 2016]
- Gallegos D, Ellies P, Wright J (2008) Still there's no food! Food insecurity in a refugee population in Perth, Western Australia. *Nutrition & Dietetics: the Journal of the Dietitians Association of Australia* **65**, 78–83. doi:10.1111/j.1747-0080.2007.00175.x
- Gorton D, Bullen CR, Mhurchu CN (2010) Environmental influences on food security in high-income countries. *Nutrition Reviews* **68**, 1–29. doi:10.1111/j.1753-4887.2009.00258.x
- Gunderson C, Kreider B, Pepper J (2011) The economics of food insecurity in the United States. *Applied Economic Perspectives and Policy* **33**, 281–303. doi:10.1093/aep/pper022
- Holben DH (2006) Position of the American Dietetic Association: food insecurity and hunger in the United States. *Journal of the American Dietetic Association* **106**, 446–458. doi:10.1016/j.jada.2006.01.016
- Kirkpatrick SL, Tarasuk V (2010) Assessing the relevance of neighbourhood characteristics to the household food security of low-income Toronto families. *Public Health Nutrition* **13**, 1139–1148. doi:10.1017/S1368980010000339
- Laraia BA (2013) Food insecurity and chronic disease. *Advances in Nutrition* **4**, 203–212. doi:10.3945/an.112.003277
- Martin-Fernandez J, Grillo F, Parizot I, Caillavet F, Chauvin P (2013) Prevalence and socioeconomic and geographical inequalities of household food insecurity in the Paris region, France, 2010. *BMC Public Health* **13**, 486. doi:10.1186/1471-2458-13-486
- Nolan M, Williams M, Rikard-Bell G, Mohsin M (2006) Food insecurity in three socially disadvantaged localities in Sydney, Australia. *Health Promotion Journal of Australia* **17**, 247–254.
- Nord M, Brent C (2002) Food insecurity in higher income households. Available at www.ers.usda.gov/media/887406/efan02016_002.pdf [Verified 22 April 2016]
- Olabiya OM, McIntyre L (2014) Determinants of food insecurity in higher-income households in Canada. *Journal of Hunger & Environmental Nutrition* **9**, 433–448. doi:10.1080/19320248.2014.908450
- Palermo C, McCartan J, Kleve S, Sinha K, Shiell A (2016) A longitudinal study of the cost of food in Victoria influenced by geography and nutritional quality. *Australian and New Zealand Journal of Public Health* **40**, 270–273. doi:10.1111/1753-6405.12506
- Riley M, Rutishauser I, Webb K (2001) Comparison of short questions with weighed dietary records. (Australian Food and Nutrition Monitoring Unit, Commonwealth Department of Health and Aged Care: Canberra, ACT, Australia) Available at <http://www.health.gov.au/internet/main/publishing.nsf/Content/health-pubhlth-strateg-food-pdf-comparison-ent.htm> [Verified 6 December 2016]
- Russell J, Flood V, Yeatman H, Mitchell P (2014) Prevalence and risk factors of food insecurity among a cohort of older Australians. *The Journal of Nutrition, Health & Aging* **18**, 3–8. doi:10.1007/s12603-013-0339-6
- Tarasuk V, Mitchell A, Dachner N (2016) Household food insecurity in Canada, 2014. (Research to identify policy options to reduce food insecurity (PROOF): Toronto, ON, Canada) Available at <http://proof.utoronto.ca/wp-content/uploads/2016/04/Household-Food-Insecurity-in-Canada-2014.pdf> [Verified 27 April 2016]
- Temple JBP (2008) Severe and moderate forms of food insecurity in Australia: are they distinguishable? *The Australian Journal of Social Issues* **43**, 649–668.
- Victorian Department of Health (2010) Victorian Population Health Survey 2008. (Victorian Government Department of Health: Melbourne, Vic., Australia) Available at <http://www2.health.vic.gov.au/public-health/population-health-systems/health-status-of-victorians/survey-data-and-reports/victorian-population-health-survey/victorian-population-health-survey-2008> [Verified 6 December 2016]
- Victorian Department of Health (2011) Victorian Population Health Survey 2009. (Victorian Government Department of Health: Melbourne, Vic., Australia) Available at www2.health.vic.gov.au/public-health/population-health-systems/health-status-of-victorians/survey-data-and-reports/victorian-population-health-survey/victorian-population-health-survey-2009 [Verified 6 December 2016]
- Victorian Department of Human Services (2007) Victorian Population Health Survey 2006. (Victorian Department of Human Services: Melbourne, Vic., Australia) Available at <http://www2.health.vic.gov.au/public-health/population-health-systems/health-status-of-victorians/survey-data-and-reports/victorian-population-health-survey/earlier-reports> [Verified 6 December 2016]
- Victorian Department of Human Services (2008) Victorian Population Health Survey 2007. (Victorian Department of Human Services: Melbourne, Vic., Australia) Available at <http://www2.health.vic.gov.au/public-health/population-health-systems/health-status-of-victorians/survey-data-and-reports/victorian-population-health-survey/earlier-reports> [Verified 6 December 2016]
- Webb KL, Rutishauser IH, Marks GC, Masters G, Leeder SR (2006) Nutrition surveys or surveillance: one-night stands or a long-term commitment? *The Medical Journal of Australia* **185**, 248–249.
- Willows ND, Veugelers P, Raine K, Kuhle S (2009) Prevalence and sociodemographic risk factors related to household food security in Aboriginal peoples in Canada. *Public Health Nutrition* **12**, 1150–1156. doi:10.1017/S1368980008004345

3.5 Conclusion

This study identified new evidence regarding the **EXISTENCE** of food insecurity in low to middle income households in Victoria. Consistent with current literature, the inverse relationship between income and food insecurity was reported with a prevalence of 3.9% to 4.8% of low-to-middle income respondents across 2006-2009 compared to 8.9% to 11.1% in very low income households, respectively. Of note, some survey respondents in low-to-middle income group reported experiencing food insecurity on a weekly or fortnightly basis. This warrants further exploration to explore the factors underpinning this frequency and the strategies employed to deal with food insecurity.

The univariable and multivariable logistic regression analysis identified factors associated with food insecurity that were unique, and also consistent with, the literature. These have informed planning of subsequent exploration of the existence and experience of food insecurity in this income group (PART 2).

The relationship of household finance to food insecurity was supported within this income group, with the ability to raise money in an emergency reported as a significant protective factor for this income group. Chapter 4 continues to explore the **EXISTENCE** of food insecurity by examining the association between the ability/inability to raise money in an emergency as a marker of financial stress and food insecurity within this income group.

Chapter 4

Part 1B

Chapter 4: Exploring the relationship between the ability to raise money in an emergency and the **EXISTENCE of food insecurity in low-to-middle income Victorian households. An examination of the 2008 Victorian Population Health Survey.**

4.1 Introduction

Chapter 3 examined the **EXISTENCE** of food insecurity in low-to-middle income Victorian households, using the 2006-2009 Victorian Population Health Survey (VPHS). A detailed analysis of the 2008 VPHS identified several factors associated with food insecurity. This chapter details further analysis of the VPHS 2008 data set, with a focus on the association between food insecurity and the *'ability to raise A\$2000 in an emergency in two days'* - a significant predictor in this income group. This variable has been described by the Australian Bureau of Statistics (ABS) as one indicator of financial stress.(132, 154, 155)

The chapter starts by introducing the concept of financial stress, indicators of financial stress and the relationship to food insecurity in this income group. The study methodology and findings will be discussed describing the exploration of the association between households who reported to be able to raise A\$2000 in an emergency in two days and those who could not and food insecurity. The chapter will conclude with a summary of the key findings of Part 1 exploring the **EXISTENCE** of food insecurity.

4.2 Context

As introduced in the previous chapter, the VPHS is an annual survey conducted by the Victorian Department of Health (VDoH) to provide information on the health and wellbeing of the population. These data are valuable to inform policy and guide planning responses.

The financial stress indicator used in the survey, the '*ability to raise A\$2000 in an emergency in two days*' will be referred to hereafter as the '*ability to raise money in an emergency.*'

4.3 Introduction

Food insecurity, namely, the inability to access (physical, social and economic) sufficient, safe, and nutritious food to maintain health and well-being (3, 156), places a significant burden on health and welfare sectors. The prevalence and severity of food insecurity is influenced by a range of characteristics and economic factors.(36-39, 88, 157, 158) While there is an inverse relationship with income as illustrated in the previous chapter, this economic determinant alone cannot explain why some households are food insecure and others are not.(94) Chapter 2 detailed other economic factors include: income level, expenses, financial stresses, housing, employment and wealth, as measured by capacity to save, and asset wealth.(39, 51, 92)

In fact, the existence of household food insecurity may result from the interaction between household resources, such as income, assets and access to credit and household expenditures including food, housing related costs, cost of living expenses and the debt of the household.(159) More specifically it has been suggested that the cause of household food insecurity relates to 'financial constraints other than low income or poverty.'⁽⁸⁾ It is important to consider which and how markers of financial stress, outside of income, interact with food insecurity.

Australian Bureau of Statistics (ABS) defined financial stress as '*the difficulty an individual or household may have in meeting basic financial commitments due to a shortage of money*' and it is a measure of economic wellbeing.(132) The ABS reports several financial stress indicators as a method of considering if households may be experiencing economic hardship over a 12 month period. These indicators include: cash flow and financial resources, cannot pay bills on time (utilities, insurance and car registration), cannot afford to heat the home, went without a meal, sought welfare assistance, sought financial help from family or friends and cannot raise A\$2,000 in a week for something important.(132, 154) Evidence suggests that middle income Australian households are experiencing financial stress.(133)

Recently, 1.3 million Australians across all income groups met at least one of the aforementioned financial stress indicators, with 44% of middle income households reporting at least one indicator.(154)

Financial stress may be a precursor to a range of household impacts including loan defaults and utility disconnections. Additionally, it has been reported as a precursor to episodes of food insecurity.(92, 120) Research exploring the association between financial stress and food insecurity in Australia is scarce and has focussed on money saving capacity of lower income households.(37, 119)

This study aims to explore the association between a specific financial stress indicator namely, the '*ability to raise money in an emergency*' and food insecurity in low-to-middle income Victorian households.

4.4 Methods

4.4.1 Data source

This analysis utilised data from the 2008 Victorian Population Health Survey (VPHS).(149) As described in Chapter 3, the VPHS provides a population level measure of food insecurity and survey questions aligned with those in other Australian population surveys.

The VPHS is conducted by computer assisted telephone interview (CATI) in a randomly selected representative sample of Victorian adults, who reside in private dwellings. Interviews were conducted in English and in the eight major non-English languages in Victoria. The 2008 survey was undertaken at a local government area level with an increased sample size. Response rate, defined by the proportion of households where contact was made and an interview completed, was 64.9% (n= 34169). Access to survey data for the purpose of this analysis was authorised by VDoH and analysis was approved by the relevant Human Research Ethics Committee (CF14/1382 – 2014000647) (Appendix 1).

4.4.2 Covariates

Food insecurity was categorised if households responded 'yes' to the question '*In the last 12 months, were there any times that you ran out of food and couldn't afford to buy more?*'. Additionally, the ability to raise money in an emergency was determined if households responded affirmatively to the question '*Could raise A\$2000 within two days in an emergency.*' The independent survey variables explored were selected from those reported in the food insecurity literature. These included: age, gender, total annual household income, education level attained, employment status, home ownership, household composition, geographic location (rurality), and social support (inability to get help from family, neighbours and friends).(36-39, 51) Additional survey variables describing aspects of food access such as quality, variety, transport and cultural appropriateness were included. Variables were categorical in nature and were analysed according to the VPHS categories.(149) Total annual household income encompassed pre-tax income and included all income sources (social security payments, child support and investment over the previous 12 months). Based on the reported VPHS survey income categorisation and the ABS quintiles of gross household income for Victoria, this analysis classified three income groups. These were: (1) very low household income group, less than A\$40,000 per annum; (2) low-to-middle household income groups, from A\$40,000-\$80,000 per annum; and (3) higher income groups greater than A\$80,000 per annum.(160)

4.4.3 Data inclusion criteria

Missing and 'do not know' responses were included in the prevalence and frequency analysis but removed from the dataset prior to univariable and multivariable logistic regression analysis. The final sample size was n=33,172.

4.4.4 Statistical analysis

All analyses were conducted using Stata version 14 (Stata Corp. LP., College Station, TX, USA), and statistical significance was determined at the $p \leq 0.05$ level. To control for participation bias and ensure that estimates were representative of the Victorian population, the survey data were weighted to reflect age, gender and geographic distribution. This weighting reflected the estimated resident population

of Victoria and the probability of selection of the household and the respondent within the household.

Descriptive statistics (means and frequency) and univariable logistic regression were completed across all variables, including income. This identified factors associated with the two dependent variables 1) ability/inability to raise money in an emergency and 2) food insecurity for the whole population and for the low-to-middle income group. Variables that were significantly associated in the low-to-middle income group were then included in a multivariable logistic regression, to investigate the relationship between each of these variables, '*ability to raise money in an emergency*' and food insecurity.

Assumptions of multi-collinearity were tested using collinearity diagnostics to ensure that predictor variables were not strongly related to each other. Goodness of fit of the model with predictors was verified using the Hosmer-Lemeshow goodness of fit test developed for complex survey data.(161)

4.5 Results

Results are presented first according to all respondents and then according to low-to-middle income respondents

All Respondents

4.5.1 Population characteristics of all variables according to '*ability to raise money in an emergency*' and food security status.

Table 4-1 shows the characteristics of respondents according to '*ability to raise money in an emergency*' and food security status. An inverse relationship exists between income, '*ability/inability to raise money in an emergency*' and food insecurity (Table 4-1) Twenty-nine percent of very low income respondents who were '*unable to raise money in an emergency*' were food insecure compared to six percent of those who were '*able to raise money in an emergency.*' Eighteen percent of low-to-middle income respondents who were '*unable to raise money in an emergency*' responded as being food insecure in the last 12 months compared to three percent who responded that they were '*able to raise money in an emergency.*'

Fourteen percent of higher income respondents who were '*unable to raise money in an emergency*' were food insecure compared to two percent of those who were '*able to raise money in an emergency.*' Across all other variables included, the proportion of food insecure in those who were '*unable to raise money in an emergency*' was consistently higher than the proportion of food insecurity in those who were '*able to raise money in an emergency*'.

Table 4-1 Victorian Population Health Survey (VPHS) 2008. All respondents† characteristics according to ‘ability to raise money in an emergency’ and food security status

2008 VPHS Variables	Unable to raise money in an emergency			Able to raise money in an emergency		
	n	Food secure weighted % (95% CI)	Food insecure weighted % (95% CI)	n	Food secure weighted % (95% CI)	Food insecure weighted % (95% CI)
Income (A\$)						
\$<40,000	2638	71(68-74)	29(26-32)	10447	94(93-95)	6(5-7)
\$40,000-80,000	586	82(77-86)	18(14-23)	7961	97(96-97)	3(3-4)
\$>80,000	148	86(73-93)	14(7-27)	6620	98(98-99)	2(1-2)
Income Missing	690	84(79-88)	16(12-21)	4082	97(69-98)	3(2-4)
Location						
Urban	1616	78 (75-81)	22(19-25)	11547	97(96-97)	3(3-4)
Rural	2446	74(71-77)	25(23-28)	17563	97(96-97)	3(3-4)
Gender						
Male	1194	79(74-82)	21(18-26)	11507	97(97-98)	3(2-3)
Women	2868	76(74-78)	24(21-26)	17603	96(96-97)	4(3-4)
Age						
18-24	278	86(79-91)	14(9-21)	1253	94(92-95)	6(5-8)
25-34	429	68(61-75)	32(25-39)	2716	95(94-96)	5(4-6)
35-44	746	70(65-75)	30(25-35)	4936	96(96-97)	4(3-4)
45-54	787	72(67-76)	28(23-32)	5743	97(97-98)	3(2-3)
55-64	792	83(79-87)	16(13-20)	6311	99(98-99)	1(1-2)
>65	1030	88(85-90)	12(9-15)	8151	99(99-99)	1(1-1)
Household Composition						
Couple only	831	86(82-89)	14(11-18)	9869	99(99-99)	1(1-1)
Couple with dependent children	831	80(76-83)	20(17-24)	8034	97(96-97)	3(3-4)

2008 VPHS Variables	Unable to raise money in an emergency			Able to raise money in an emergency		
	n	Food secure weighted % (95% CI)	Food insecure weighted % (95% CI)	n	Food secure weighted % (95% CI)	Food insecure weighted % (95% CI)
Couple with non-dependent children	187	92(86-96)	8(4-14)	1899	98(97-99)	2(1-3)
Single parent with dependent children	504	59(53-66)	41(34-66)	1228	91(88-93)	9(7-12)
Single parent with non-dependent children	185	76(63-86)	24(14-37)	609	93(89-96)	7(4-11)
Group & other household	368	72(64-78)	28(21-35)	1583	93(91-95)	7(5-9)
One person	1126	70(66-74)	30(26-34)	5805	96(96-97)	3(3-4)
Don't know/refused	30	65(36-86)	32(11-63)	83	97(91-99)	2(1-9)
Education level						
< Primary	265	77(69-83)	23(16-31)	704	94(90-96)	6(3-10)
Some high school	1827	75(71-79)	25(21-29)	9034	97(96-97)	3(3-4)
Completed high school	656	81(77-85)	19(15-23)	4452	98(94-96)	5(4-6)
TAFE*	800	75(69-79)	25(21-31)	6419	96(95-97)	4(3-4)
University	456	80(74-84)	20(15-26)	8362	93(86-9)	2(1-6)
Other missing	58	82(67-91)	17(8-33)	139	95(88-98)	4(1-9)
Can't get food wanted due to expense						
No	1531	90(86-93)	10(7-14)	22000	99(98-99)	1(1-2)
Yes	2515	68(64-70)	32(29-35)	7047	90(89-92)	9(8-11)
Missing	16	85(57-96)	7(2-24)	63	94(76-99)	6(1-24)
Can't get food wanted due to quality						
No	2392	82(79-85)	18(15-21)	22026	97(97-98)	2(2-3)
Yes	1648	70(66-73)	30(27-34)	7000	94(93-95)	6(5-7)
Missing	22	87(66-96)	11(3-31)	84	98(88-100)	2(0-12)
Can't get food due to variety						
No	3107	80(77-82)	20(18-23)	26393	97(97-98)	3(2-3)
Yes	930	68(63-73)	31(27-36)	2648	93(91-94)	7(6-9)
Missing	25	82(56-94)	16(5-43)	69	89(71-96)	9(2-28)

2008 VPHS Variables	Unable to raise money in an emergency			Able to raise money in an emergency		
	n	Food secure weighted % (95% CI)	Food insecure weighted % (95% CI)	n	Food secure weighted % (95% CI)	Food insecure weighted % (95% CI)
Can't get food due to culturally food not available						
No	3494	78(76-80)	22(19-24)	27750	97(97)	3(3)
Yes	508	71(64-76)	29(24-36)	1394	92(89-94)	8(6-11)
Missing	60	74(54-87)	26(13-46)	166	96(90-98)	4(2-10)
Ability to get to the shops using usual mode of transport						
Easy	2950	81(78-83)	19(17-21)	25091	97(97-98)	3(2-3)
Difficult	253	65(55-74)	35(26-44)	871	93(90-96)	6(4-10)
Missing	859	65(59-71)	35(29-41)	2338	91(88-93)	9(7-12)
Home ownership status						
Owned	2477	84(81-86)	16(14-18)	25079	98(97-98)	2(2-3)
Rent	1475	66(62-70)	34(30-38)	3521	92(91-94)	7(6-9)
Other	52	77(57-90)	23(10-43)	326	92(83-96)	8(4-17)
Missing	58	83(68-92)	16(7-32)	184	99(97-100)	1(0-3)
Employment status						
Employed	1393	79(75-83)	21(17-24)	16062	97(97-98)	3(2-3)
Unemployed	303	69(60-77)	31(23-40)	609	92(87-94)	8(5-13)
Other	2347	77(74-79)	23(20-25)	12403	96(96-97)	4(3-4)
Don't know/ refused	19	75(45-92)	25(8-55)	36	100 (97-100)	0(0-3)
Help from friends						
Yes	3480	78(76-81)	21(19-24)	2783	97(96-97)	3(3-4)
No	532	70(64-75)	30(24-35)	1117	92(89-94)	8(6-11)
Don't know	48	73(50-88)	23(4-91)	152	99(97-100)	0(0-1)
Refused	2	61(9-96)	39(4-91)	18	100	

2008 VPHS Variables	Unable to raise money in an emergency			Able to raise money in an emergency		
	n	Food secure weighted % (95% CI)	Food insecure weighted % (95% CI)	n	Food secure weighted % (95% CI)	Food insecure weighted % (95% CI)
Help from family						
Yes	3261	80(78-82)	20(17-22)	26771	97(97)	3(3)
No	776	60(54-66)	39(33-45)	2218	93(91-95)	6(5-9)
Don't know	228	81(54-94)	17(5-45)	112	86(68-94)	14(6-32)
Refused		0	0	9	93(71-99)	7(1-29)
Help from neighbours						
Yes	2557	82(79-84)	18(16-21)	23189	97(97-98)	3(2-3)
No	1337	71(67-74)	29(25-33)	5105	95(94-96)	5(4-6)
Don't know	165	79(69-87)	20(13-30)	797	95(92-97)	5(3-8)
Refused	3	94(52-100)	6(0-48)	19	96(74-99)	4(1-26)

Weighted total n observations = 33172, 95%CI, 95% confidence interval

† n = 997 Missing responses to the variable 'Ability to raise \$2000 in an emergency in 2 days', * TAFE = Technical and Further Education

4.5.2 Exploration of variables associated with ‘ability to raise money in an emergency’ and food security status in all respondents

Table 4-2 and Table 4-3 provide the univariable and multivariable analysis exploring the associations with ‘ability to raise money in an emergency’ and food security status in all respondents.

Respondents who were ‘UNABLE to raise money in an emergency’

Of those who were ‘*unable to raise money in an emergency*’, all variables were associated with food insecurity – with the exception of geographic location, gender and education level. Respondents with higher incomes had reduced risk of food insecurity. Household composition, particularly single parents with dependent children (OR =4.13; 95% CI 2.78-6.13) and ‘*inability to get the food wanted due to its expense*’ (OR 4.44; 95%CI 2.99-6.61) were strongly associated with food insecurity (Table 4-2).

Within the multivariable model, home ownership status as ‘other’ (OR 3.37; 95%CI 1.03-11.04) and ‘*inability to get food wanted due to its expense*’ (OR 2.86; 95%CI 1.88-4.36) remained strongly associated with food insecurity (Table 4.3)

Respondents who were ‘ABLE to raise money in an emergency’

For those ‘*able to raise money in an emergency*’, income was associated with reduced risk of food insecurity. All variables except for geographic location were associated with food insecurity. Household composition, particularly sole parents with dependent or non-dependent children (OR 9.85; 95%CI 6.61-14.67 and OR 6.69; 95% CI 3.56-12.60, respectively) and ‘*inability to get food wanted due to its expense*’, (OR 8.18; 95%CI 6.36-10.53), were strongly associated with food insecurity, as seen in Table 4-2 in those who were ‘*able to raise money in an emergency*’.

Within the multivariable model ‘*inability to get food wanted due to its expense*’ had the greatest association with food insecurity (OR 4.26;95% CI 3.06-5.93), as seen in Table 4-3.

Table 4-2 Victorian Population Health Survey (VPHS) 2008: Univariate logistic analysis for all respondents: 'ability to raise money in an emergency' and food security status.

VPHS 2008 Variable	Unable to raise Money in an emergency		Able to raise money in an emergency	
	Crude OR (95%CI)	p value	Crude OR (95%CI)	p value
Income(A\$)				
<\$40,000	1.00		1.00	
\$40,000-\$80,000	0.53(0.38-0.74)	<0.001	0.54 (0.39-0.68)	<0.001
>\$80,000	0.39 (0.17-0.89)	0.03	0.64 (0.17-0.35)	<0.001
don't know/refused	0.47(0.33-0.67)	<0.001	0.44 (0.30-0.63)	<0.001
Location				
Rural*	1.00		1.00	
Urban	0.81(0.65-1.01)	0.07	1.11(0.89-1.39)	0.36
Gender				
Women*	1.00		1.00	
Men	0.87(0.67-1.14)	0.32	0.67(0.53-0.86)	<0.001
Age				
18-24*	1.00		1.00	
25-34	2.78(1.59-4.86)	<0.001	0.74(0.51-1.09)	0.13
35-44	2.54(1.51-4.26)	<0.001	0.53(0.38-0.75)	<0.001
45-54	2.32(1.38-3.88)	<0.001	0.41(0.28-0.59)	<0.001
55-64	1.19(0.70-2.03)	0.52	0.21(0.14-0.31)	<0.001
>65	0.81(0.48-1.38)	0.45	0.11(0.07-0.18)	<0.001
Household Composition				
Couple Only*	1.00		1.00	
Couple with dependent children	1.55(1.07-2.23)	0.02	3.09(2.20-4.36)	<0.001
Couple with non-dependent children	0.49(0.24-1.01)	0.05	2.05(1.16-3.65)	0.01
Single parent with dependent children	4.13(2.78-6.13)	<0.001	9.85(6.61-14.67)	<0.001
Single parent with non-dependent children	1.87(0.92-3.81)	0.08	6.69(3.56-12.60)	<0.001
Group household & Other	2.33(1.46-3.70)	<0.001	7.26(4.78-11.02)	<0.001
One person	2.58(1.83-3.65)	<0.001	3.42(2.35-4.98)	<0.001
DK/refused	2.92(0.77-11.12)	0.12	2.32(0.53-10.13)	0.27
Highest Education Level				
< Primary*	1.00		1.00	
Some high school	1.12(0.71-1.78)	0.62	0.57(0.31-1.04)	0.07
Completed high school	0.78(0.47-1.28)	0.33	0.77(0.42-1.43)	0.41
TAFE*	1.16(0.71-1.91)	0.55	0.61(0.33-1.11)	0.11
University	0.87(0.51-1.49)	0.62	0.35(0.19-0.64)	<0.001
other /missing	0.70(0.27-1.84)	0.47	0.62(0.20-1.94)	0.41
Employment				
Employed*	1.00		1.00	
Unemployed	1.74(1.09-2.77)	0.02	3.05(1.85-5.03)	<0.001
Other	1.14(0.87-1.49)	0.33	1.25(0.98-1.59)	0.07

VPHS 2008 Variable	Unable to raise Money in an emergency		Able to raise money in an emergency	
	Crude OR (95%CI)	p value	Crude OR (95%CI)	p value
don't know /refused	1.30(0.35-4.80)	0.70	0.15(0.02-1.14)	0.07
Home ownership status				
Owned [‡]	1.00		1.00	
Rent	2.73(2.12-3.52)	<0.001	3.38(2.64-4.34)	<0.001
Other	1.53(0.57-4.13)	0.40	3.86(1.75-8.51)	<0.001
Don't know or refused	1.00(0.39-2.53)	1.00	0.21(0.04-1.23)	0.08
Can't get food wanted due to expense				
No [‡]	1.00		1.00	
Yes	4.44(2.99-6.61)	<0.001	8.18(6.36-10.53)	<0.001
Can't get food wanted of quality				
No [‡]	1.00		1.00	
Yes	2.00(1.55-2.57)	<0.001	2.41(1.91-3.05)	<0.001
Can't get food wanted of variety				
No [‡]	1.00		1.00	
Yes	1.84(1.41-2.40)	<0.001	2.69(2.00-3.60)	<0.001
Can't get food wanted that's culturally appropriate				
No [‡]	1.00		1.00	
Yes	1.51(1.10-2.07)	0.01	2.89(2.05-4.08)	<0.001
Easy or difficult to and from shops usual transport				
Easy [‡]	1.00		1.00	
Difficult	2.26(1.45-3.52)	<0.001	2.50(1.53-4.06)	<0.001
Help from friends				
Yes [‡]	1.00		1.00	
No	1.55(1.15-2.09)	<0.001	2.72(1.83-4.05)	<0.001
Don't know			0.06(0.01-0.41)	<0.001
Help from family				
Yes [‡]	1.00		1.00	
No	2.64(1.98-3.52)	<0.001	2.23(1.55-3.22)	<0.001
Don't know			5.43(1.91-15.40)	<0.001
Help from neighbours				
Yes [‡]	1.00		1.00	
No	1.87(1.45-2.40)	<0.001	1.78(1.37-2.30)	<0.001
Don't know			1.94(1.15-3.28)	0.01

Weighted total n observations = 33172, 95%CI, 95% confidence interval; OR = odds ratio

[‡] Reference category in univariate regression, [‡] TAFE = Technical and Further Education

Table 4-3 Victorian Population Health Survey (VPHS) 2008: Multivariable logistic analysis exploring the relationship between 'ability to raise money in an emergency,' food insecurity and adjusted factors in all respondents

VPHS 2008 Variables	Unable to raise money in an emergency		Able to raise money in an emergency	
	Crude OR (95%CI)	p value	Crude OR (95%CI)	p value
Income (A\$)				
<\$40,000 [‡]	1.00		1.00	
\$40,000-\$80,000	0.54 (0.34-0.87)	0.01	0.47(0.31-0.7)	<0.001
>\$80,000	0.64 (0.21-1.93)	0.43	0.33(0.20-0.55)	<0.001
Gender	§		1.00	
Women [‡]				
Men			0.66(0.48-0.92)	0.01
Age				
18-24 [‡]	1.00		1.00	
25-34	1.72 (0.84-3.54)	0.14	1.21 (0.69-2.11)	0.51
35-44	1.59 (0.85-2.98)	0.15	0.88 (0.52-1.48)	0.62
45-54	1.32 (0.71-2.46)	0.38	0.64 (0.36-1.13)	0.13
55-64	0.78 (0.40-1.53)	0.47	0.30 (0.16-0.59)	<0.001
>65	0.52 (0.25-1.05)	0.07	0.08 (0.04-0.18)	<0.001
Household Composition				
Couple Only [‡]	1.00		1.00	
Couple with dependent children	1.02 (0.58- 1.80)	0.94	1.63 (1.01-2.63)	0.05
Couple with non-dependent children	0.40 (0.13-1.22)	0.11	1.48 (0.68-3.19)	0.32
Single parent with dependent children	1.85 (1.04-3.31)	0.04	1.89 (1.04 -3.41)	0.04
Single parent with non-dependent children	1.49 (0.68 -3.29)	0.32	2.84 (1.27-6.37)	0.01
Group household & Other	1.99 (1.01-3.92)	0.05	2.64 (1.50-4.66)	<0.001
One person	2.17 (1.32-3.58)	<0.001	2.39 (1.47-3.86)	<0.001
Highest Education Level	§			
< Primary [‡]			1.00	
Some high school			0.52 (0.18-1.48)	0.22
Completed high school			0.67 (0.23-1.93)	0.46
TAFE ^β			0.56 (0.19 -1.63)	0.29
University			0.31 (0.10 -0.92)	0.04
Employment				
Employed [‡]	1.00		1.00	
Unemployed	1.28(0.62-2.62)	0.51	1.24(0.64-2.41)	0.52
Other	1.02(0.69-1.53)	0.91	1.22(0.84-1.77)	0.30

VPHS 2008 Variables	Unable to raise money in an emergency		Able to raise money in an emergency	
	Crude OR (95%CI)	p value	Crude OR (95%CI)	p value
Home ownership status				
Owned [‡]	1.00		1.00	
Rent	2.09(1.45-3.03)	<0.001	1.65(1.15-2.36)	0.01
Other	3.37(1.03 -11.04)	0.05	2.82(0.94-8.49)	0.07
Can't get food wanted due to expense				
No [‡]	1.00		1.00	
Yes	2.86(1.88-4.36)	<0.001	4.26 (3.06-5.93)	<0.001
Can't get food wanted of quality				
No [‡]	1.00		1.00	
Yes	1.14 (0.79-1.65)	0.49	0.96(0.69-1.34)	0.80
Can't get food wanted of variety				
No [‡]	1.00		1.00	
Yes	1.18(0.78-1.78)	0.44	1.39(0.87-2.21)	0.17
Can't get food wanted that's culturally appropriate				
No [‡]	1.00		1.00	
Yes	0.70(0.39-1.26)	0.24	0.78(0.45-1.37)	0.39
Easy or difficult to and from shops usual transport				
Easy [‡]	1.00		1.00	
Difficult	1.54 (0.89-2.65)	0.12	1.75(0.96-3.20)	0.07
Help from friends				
Yes [‡]	1.00		1.00	
No	1.26(0.81-1.97)	0.30	2.41(1.35-4.30)	<0.001
Don't know	1.35(0.15-12.38)	0.79	0.10(0.01-1.00)	0.05
Help from family				
Yes [‡]	1.00		1.00	
No	1.39(0.94-2.04)	0.10	1.04(0.63-1.71)	0.89
Don't know	0.45(0.05 -4.08)	0.48	0.15(0.02-0.94)	0.04
Help from neighbours				
Yes [‡]	1.00		1.00	
No	1.26(0.87-1.81)	0.22	1.07(0.75-1.55)	0.70
Don't know	0.52(0.20-1.33)	0.17	1.52(0.72-3.20)	0.27

Weighted total n observations=33141, 95%CI, 95% confidence interval; OR = odds ratio

[‡] Reference category in multivariable regression, [§] Variable excluded as not significant at univariable level

^β TAFE = Technical and Further Education

Low-to-middle income respondents

4.5.3 Population characteristics of all variables according to '*ability to raise money in an emergency*' and food security status in low to middle income respondents

Eighteen percent of low-to-middle income households were '*unable to raise money in an emergency*' compared to three percent of households that were '*able to raise money in an emergency*' Table 4-4. As observed in the total population, the proportion of respondents who were food insecure was consistently higher in those who were '*unable to raise money in an emergency*' compared to those who '*able to raise money in an emergency*'.

Table 4-4 Victorian Population Health Survey (VPHS) 2008: Characteristics of low-to-middle income households according to 'ability to raise money in an emergency' and food security status

2008 VPHS Variables	Unable to raise money in an emergency			Able to raise money in an emergency		
	n	Weighted % (95% CI)		n	Weighted % (95% CI)	
		Food Secure	Food insecure		Food secure	Food insecure
Income (A\$)						
\$40,000-80,000	586	82(77-86)	18(14-23)	7961	97(96-97)	3(3-4)
Location						
Urban	279	83(77-87)	17(12-22)	2925	97(95-97)	3(3-4)
Rural	307	78(69-85)	22(15-31)	5036	97(96-98)	3(2-4)
Gender						
Male	215	85(78-90)	15(10-22)	3295	98(96-98)	2(2-3)
Women	371	78(71-84)	22(16-28)	4666	96(95-97)	4(3-5)
Age						
18-24	47	82(60-93)	18(7-40)	287	94(90-97)	6(3-10)
25-34	107	80(70-88)	20(12-30)	1035	95(93-97)	5(3-7)
35-44	183	81(72-88)	19(12-27)	1750	95(94-97)	5(3-6)
45-54	154	79(69-86)	21(13-30)	1932	98(97-99)	2(1-3)
55-64	77	96(87-99)	4(1-13)	1928	99(98-99)	1(1-2)
>65	18	81(45-96)	19(4-55)	1029	100(98-100)	0(0-2)
Household Composition						
Couple only	89	93(86-97)	7(3-14)	2658	98(97-99)	2(1-3)
Couple with dependent children	281	80(73-86)	20(14-27)	2837	97(96-98)	3(2-4)
Couple with non-dependent children	39	93(68-99)	7(1-32)	503	98(93-99)	2(1-7)
Single parent with dependent children	45	84(68-93)	16(7-32)	320	93(86-97)	7(3-14)
Single parent with non-dependent children	19	84(58-95)	16(5-42)	130	98(94-99)	2(1-6)
Group & other household	59	77(61-87)	23(11-37)	436	93(88-96)	7(4-12)
One person	54	75(53-89)	25(11-47)	1070	98(96-99)	2(1-4)
Don't know/refused	0	0	0	9	88(45-99)	12(1-55)
Education level						
< Primary	8	1	0	45	84(59-95)	16(5-41)
Some high school	190	82(73-89)	18(11-27)	2152	98(96-99)	2(1-4)
Completed high school	121	80(69-87)	20(12-30)	1219	95(93-97)	5(3-7)
TAFE [‡]	155	82(71-90)	18(10-29)	2022	97(95-98)	3(2-5)
University	112	80(69-88)	19(11-30)	2509	97(96-98)	3(2-4)
Other missing	0	0	0	14	87(44-98)	13(2-56)
Can't get food wanted due to expense						
No	256	92(86-95)	8(5-14)	6032	98(98-99)	2(1-2)
Yes	328	74(67-80)	26(19-33)	1921	92(90-94)	8(6-10)
Missing	9	1	0	8	91(52-99)	9(1-48)
Can't get food wanted due to quality						

2008 VPHS Variables	Unable to raise money in an emergency			Able to raise money in an emergency		
	n	Weighted % (95% CI)	Food insecure	n	Weighted % (95% CI)	Food insecure
Can't get food due to variety						
No	343	86(81-90)	14(10-19)	5899	97(96-98)	3(2-4)
Yes	242	76(67-83)	24(17-32)	2044	96(94-97)	4(3-6)
Missing	1	1	0	18	1	0
Can't get food due to culturally food not available						
No	480	83(78-87)	17(13-22)	7246	97(96-97)	3(3-4)
Yes	104	75(62-84)	25(15-36)	701	96(92-98)	4(2-8)
Missing	2	1	0	14	1	0
Ability to get to the shops using usual mode of transport						
No	525	83(78-87)	17(13-22)	7547	97(96-97)	3(2-4)
Yes	58	74(55-86)	26(14-45)	383	95(90-98)	5(2-10)
Missing	3	1	0	31	95(80-99)	5(1-20)
Home ownership status						
Owned	405	85(79-89)	15(11-20)	6864	98(97-98)	2(2-3)
Rent	174	75(66-83)	25(17-34)	1010	94(91-96)	6(4-9)
Other	6	95(66-99)	5(1-34)	81	85(66-94)	15(6-34)
Missing	1	1	0	6	1	0
Employment status						
Employed	404	84(78-88)	16(11-21)	5688	97(96-98)	3(2-4)
Unemployed	23	68(38-88)	32(12-62)	145	92(80-97)	8(3-20)
Other	158	78(68-86)	22(14-32)	2127	97(95-98)	3(2-5)
Don't know/ refused	1	1	0	#	1	0
Help from friends						
Yes	520	82(77-86)	18(14-23)	7688	97(96-98)	3(2-4)
No	63	81(66-90)	19(9-33)	249	91(84-95)	9(5-16)
Don't know	3	84(31-98)	16(2-69)	20	1	0
Refused		No obs		#	1	0
Help from Family						
Yes	498	81(76-85)	19(15-24)	7393	97(96-98)	3(2-4)
No	87	85(75-92)	15(7-21)	547	93(87-96)	7(4-13)
Don't know	1	1	0	#	1	0
Refused		No obs		2	1	0
Help from neighbours						
Yes	349	85(78-90)	15(10-21)	6338	97(96-98)	3(2-4)
No	218	78(70-84)	22(15-29)	1409	96(94-97)	4(3-6)
Don't know	19	82(52-95)	18(5-48)	209	95(89-97)	5(2-10)
Refused		No obs		5	1	0

Weighted total n observations = 8547, 95% CI= 95% confidence interval, # not viable

4.5.4 Exploration of variables associated with ‘ability to raise money in an emergency’ and food security status in low-to-middle income respondents

Table 4-5 and Table 4-6 describes the univariate and multivariable analysis of variables of low-to-middle income respondents ‘ability to raise money in an emergency’ and food security status.

Respondents who were ‘UNABLE raise money in an emergency’

Within this income group factors associated with food insecurity included age, household composition, home ownership status and ‘inability to get food wanted due to its expense.’ The strongest associations observed included being aged between 55-64years (OR=0.19; 95%CI 0.04-0.97), living in a one person house (OR=4.51; 95% CI 1.27-15.97) and ‘inability to get food due to its expense’ (OR= 3.94; 95% CI 1.98-7.83) (Table 4-5).

At the multivariable level Table 4-6, associations were observed with household composition; a single parent with non-dependent children (OR=5.24; 95% CI 1.11-24.76) and living alone (OR= 3.86; 95% CI 1.00-14.85). Additionally, ‘inability to get the food wanted due to its expense’ was associated with food insecurity (OR=3.4 95%CI 1.88-4.36).

Respondents who were ‘ABLE to raise money in an emergency’

For those that were ‘able to raise money in an emergency’, factors associated with food insecurity included gender, age, household composition, education level, home ownership status, ‘inability to get the food wanted due to its expense’ and ability to get help from friends and family. The strongest associations were observed with home ownership classified as ‘other’ (OR=7.28 95%CI 1.75-8.51) ‘inability to get food due to its expense’ (OR=4.9; 95%CI 3.10-7.75) (Table 4-5)

At the multivariable level, model factors that were associated with food insecurity included home ownership defined as ‘other’, inability to get help from friends and ‘inability to get food due to its expense’ (Table 4-6)

Table 4-5 Victorian Population Health Survey (VPHS) 2008: Logistic regression low-to-middle income households 'ability to raise money in an emergency' and food security status

VPHS 2008 Variable	Unable to raise money in an emergency		Able to raise money in an emergency	
	Crude OR(95%CI)	p value	Crude OR(95%CI)	p value
Location				
Rural [‡]	1.00		1.00	
Urban	0.70(0.38-1.28)	0.25	1.32(0.85-2.03)	0.21
Gender				
Women [‡]	1.00		1.00	
Men	0.64(0.35-1.18)	0.15	0.54(0.33-0.87)	0.01
Age				
18-24 [‡]	1.00		1.00	
25-34	1.08(0.32-3.68)	0.90	0.87(0.40-1.88)	0.73
35-44	0.99(0.30-3.29)	0.99	0.75(0.36-1.58)	0.45
45-54	1.15(0.35-3.78)	0.82	0.29(0.13-0.66)	<0.001
55-64	0.19(0.04-0.97)	0.05	0.18(0.07-0.45)	<0.001
>65	1.04(0.14-7.43)	0.97	0.04(0.00-0.28)	<0.001
Household Composition				
Couple Only [‡]	1.00		1.00	
Couple with dependent Children	3.42(1.43-8.19)	0.01	2.01(1.12 - 3.62)	0.02
Couple with non-dependent children	0.96(0.12-7.38)	0.97	1.49(0.41-5.34)	0.54
Single parent with dependent children	2.63(0.81-8.54)	0.11	4.78(1.87-12.22)	<0.001
Single parent with non-dependent children	2.65(0.58-12.03)	0.21	1.52(0.51-4.52)	0.46
Group household & Other	3.89(1.31-11.61)	0.02	5.02(2.32-10.86)	<0.001
One person	4.51(1.27-15.97)	0.02	1.54(0.72-3.31)	0.27
Highest Education Level				
< Primary [‡]	1 empty		1.00	
Some high school	0.90(0.39-2.08)	0.81	0.12(0.03-0.49)	<0.001
Completed high school	1.05(0.46-2.43)	0.90	0.27(0.07-1.07)	0.06
TAFE†	0.90(0.37-2.19)	0.82	0.17(0.04-0.64)	0.01
University	1 omitted		0.14(0.04-0.57)	0.01
Employment				
Employed [‡]	1.00		1.00	
Unemployed	2.54(0.71-9.10)	0.15	2.68(0.86-8.36)	0.09
Other	1.48(0.78-2.83)	0.23	1.15(0.67-1.96)	0.62
Home ownership status				
Owned [‡]	1.00		1.00	
Rent	1.86(1.02-3.41)	0.04	2.63(2.64-4.34)	<0.001

VPHS 2008 Variable	Unable to raise money in an emergency		Able to raise money in an emergency	
	Crude OR(95%CI)	p value	Crude OR(95%CI)	p value
Other	0.32(0.03-3.04)	0.32	7.28(1.75-8.51)	<0.001
Can't get food wanted due to expense				
Yes	1.00		1.00	
No [‡]	3.94(1.98-7.83)	<0.001	4.90(3.10-7.75)	<0.001
Can't get food wanted of variety				
No [‡]	1.00		1.00	
Yes	1.57(0.78-3.13)	0.20	1.19(0.52-2.73)	0.68
Can't get food wanted that's culturally appropriate				
No [‡]	1.00		1.00	
Yes	1.76(0.73-4.27)	0.21	1.48(0.59-3.74)	0.40
Easy or difficult to and from shops usual transport				
Easy [‡]	1.00		1.00	
Difficult	1.70(0.49-5.90)	0.41	1.46(0.53-4.07)	0.47
Help from friends				
Yes [‡]	1.00		1.00	
No	1.04(0.44-2.47)	0.93	3.06(1.51-6.21)	<0.001
Don't know	0.89(0.08-10.22)	0.93	1 refused	
Help from family				
Yes [‡]	1.00		1.00	
No	0.60(0.29-1.27)	0.18	2.61(1.29-5.28)	0.01
Help from neighbours				
Yes [‡]	1.00		1.00	
No	1.59(0.87-2.91)	0.13	1.59(0.87-2.91)	0.13
Don't know	1.2(0.27-5.62)	0.79	1.24(0.27-5.62)	0.79

Weighted total n observations = 8547, 95%CI, 95% confidence interval; OR = odds ratio

[‡]Reference category in univariate regression †TAFE = Technical and Further Education

Table 4-6 Victorian Population Health Survey (VPHS) 2008: Multivariable logistic regression relationship between ability to raise money, food insecurity and adjusted factors in low-to- middle income households'

VPHS Variables	Unable to raise money in an emergency		Able to raise money in an emergency	
	Crude OR (95%CI)	p value	Crude OR (95%CI)	p value
Age	§			
18-24 [‡]			1.00	
25-34			0.76 (0.35-1.67)	0.49
35-44			0.64(0.31- 1.34)	0.23
45-54			0.36 (0.15 -0.85)	0.02
55-64			0.22 (0.07- 0.67)	0.01
>65			0.07 (0.01-0.73)	0.03
Household Composition	§			
Couple Only [‡]	1.00		1.00	
Couple with dependent children	2.73 (0.95-7.82)	0.06	1.06(0.47 - 2.38)	0.89
Couple with non-dependent children	0.12 (0.01 -1.12)	0.06	1.35 (0.35-5.13)	0.66
Single parent with dependent children	1.87 (0.50-7.04)	0.36	1.64(0.46- 5.84)	0.45
Single parent with non-dependent children	5.24 (1.11-24.79)	0.04	0.79(0.19- 3.34)	0.75
Group household & Other	1.73(0.45-6.68)	0.43	2.02(0.76- 5.37)	0.16
One person	3.86(1.00 -14.85)	0.05	1.07(0.43- 2.71)	0.88
Highest Education Level	§			
< Primary [‡]			1.00	
Some high school			0.13(0.03 - 0.55)	0.01
Completed high school			0.25(0.06-1.09)	0.07
TAFE [†]			0.18 (0.04-0.78)	0.02
University			0.13(0.03-0.59)	0.01
Employment	§			
Employed [‡]	1.00			
Unemployed	1.28(0.62-2.62)	0.51		
Other	1.02(0.69-1.53)	0.91		
Home ownership status	§			
Owned [‡]	1.00		1.00	
Rent	1.47 (0.75 - 2.87)	0.26	1.60(0.84-3.05)	0.15
Other	0.71 (0.07-7.37)	0.77	4.76(1.32-17.21)	0.02
Can't get food wanted due to expense	§			
No [‡]	1.00		1.00	
Yes	3.40(1.88 -4.36)	0.01	3.68(2.20- 6.13)	<0.001

VPHS Variables	Unable to raise money in an emergency		Able to raise money in an emergency	
	Crude OR (95%CI)	p value	Crude OR (95%CI)	p value
Can't get food wanted of quality			§	
No [‡]	1.00			
Yes	1.10 (0.79-1.65)	0.80		
Can't get food wanted of variety			§	
No [‡]	1.00			
Yes	1.18(0.78-1.78)	0.44		
Can't get food wanted that's culturally appropriate				
No [‡]	1.00		§	
Yes	0.70(0.39-1.26)	0.24		
Easy or difficult to and from shops usual transport			§	
Easy [‡]	1.00			
Difficult	1.54 (0.89-2.65)	0.12		
Help from friends				
Yes [‡]	1.00		1.00	
No	1.26(0.81-1.97)	0.30	4.17(2.04-8.52)	<0.001
Don't know	1.35(0.15-12.38)	0.79	0.10(0.01-1.00)	0.05
Help from family				
Yes [‡]	1.00		1.00	
No	1.39(0.94-2.04)	0.10	0.97(0.48-1.95)	0.94
Don't know	0.45(0.05 -4.08)	0.48	0.15(0.02-0.94)	0.04
Help from neighbours			§	
Yes [‡]	1.00			
No	1.26(0.87-1.81)	0.22		
Don't know	0.52(0.20-1.33)	0.17		

Weighted total n observations = 95%CI, 95% confidence interval; OR = odds ratio

[‡]Reference category in multivariable regression [§] Variable excluded as not significant at univariable level

[†]TAFE = Technical and Further Education

4.5.5 Summarising the findings for low-to-middle income households and ‘ability to raise money in an emergency’ and food security status

Significant factors that were associated with food security status and ‘*ability or inability to raise money in an emergency*’ in low-to-middle income households are summarised in Figure 4-1. In comparison differences in association for the total population in those who were ‘*unable to raise money in an emergency*’ included homeownership status. For those ‘*able to raise money in an emergency*’ differences in associations included household composition, education level and homeownership

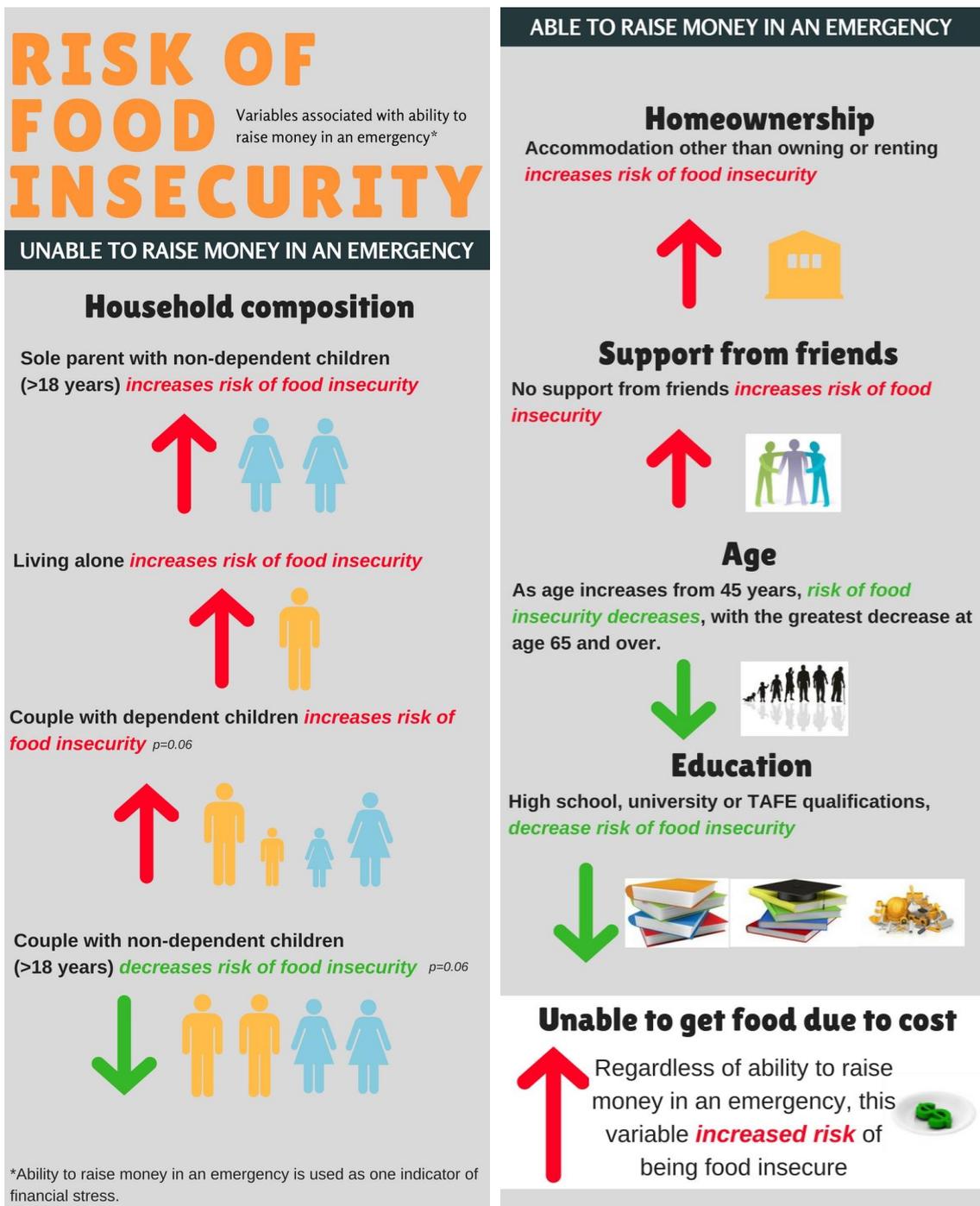


Figure 4 1 Variables associated food insecurity and ability to raise money in an emergency from analysis of Victorian Population Health Survey data

4.6 Discussion

This study provides new evidence regarding associated factors relevant to both “*the ability raise money in an emergency*” and food insecurity in low-to-middle income Victorian households. This is consistent with international research that has found an association between the experience of financial stress for individuals, households and food insecurity.(39, 92, 162) This provides evidence for Australian health and welfare sectors, specifically policy makers of the need to address the issue of financial stress as a determinant of food insecurity.

Across all analyses for all respondents, income was an important predictor of food security status. In the multivariable logistic analysis exploring the relationship between all respondents ‘*ability raise money in an emergency*’ and food insecurity, there were differences between those who were ‘*able to raise money in an emergency*’ and those who were ‘*unable to raise money in an emergency*’. Differences were found to be associated with gender, education level, transport mode to the shops and help from family and friends.

4.6.1 Exploring food insecurity and ‘INABILITY to raise money in an emergency’

Eighteen percent of low-to-middle income households who reported that they had difficulty raising money in an emergency were food insecure. Factors associated with food insecurity included ‘*inability to get the food wanted due to its expense*’; household composition, especially being a sole parent with independent children; and living alone.

Evidence is limited on the impact of household composition within higher income groups on food insecurity.(11) Household composition, including sole parents with independent children, over 18 years and those respondents living alone were strongly associated with ‘*inability to raise money in an emergency*’ and food insecurity. This finding may be considered in context that those living in these households may have inadequate financial resources to meet demands and/or they are unable to pool financial resources with others and share the financial burden.

Regardless of the *'ability to raise money in an emergency'*, there is a consistent relationship between food insecurity and *'inability to get the food wanted due to its expense'* within this income group. This is supported by previous Australian research that found low-to-middle income households may be required to spend between 18-40% of income on food.(125, 127, 130) The demands of other household expenses may impact on, and reduce, the money available to spend on food.(51, 125) Episodes of financial stress may place considerable tension for the household food budget to cover both unexpected and higher than anticipated costs.

Further examination of the financial causes of food insecurity beyond household annual income in Australia is needed. As discussed in Chapter 2, income has been described as a static, insensitive measure and may not reflect sudden household economic changes that can temporarily lead to bouts of food insecurity. (91, 120) Financial contributors to the presence of food insecurity in middle income households may be fluctuating household income, discretionary household spending, changes in household composition, unexpected housing expenses, chronic health conditions and job loss.(54)

This research highlights the association between one indicator of financial stress and food insecurity in low-to-middle income Australian households. However, it is important to reflect on the potential precursors to this financial stress indicator and also explore potential methods that households may employ to raise A\$2000 in two days. The variables within the VPHS data set provide limited opportunity for this reflection and subsequently this will be discussed in the context of the wider literature across income groups.

4.6.2 Exploring food insecurity and 'ABILITY to raise money in an emergency' in low-to-middle income

Three percent of respondents who reported that they were able to raise money in an emergency were experiencing food insecurity. Significant variables relating to food insecurity within low-to-middle income households included age, education level, help from family or friends, housing tenure other than renting or owning and *'inability to get food wanted due to its expense'* which are consistent with those reported in Chapter 3.(163) These findings are reflective of the range of determinants and characteristics, which may contribute to food insecurity beyond

an economic origin.(51, 81) Protective factors against food insecurity included increasing age, especially for those aged over 65 years. Data from the ABS 2009-2010 Household Expenditure Survey reported that 76% of older households did not report any experience of the financial stress indicators.(164) Potential explanations for this food security finding may include outright home ownership and regular and adequate superannuation pension or Government benefit income. In the case of an emergency, respondents aged 65 and over may have the capacity to raise money due to greater access to financial resources, such as savings and liquid assets. Potentially this money could be directed to the food budget at times when required.

Interestingly, those who were *'able to raise money in an emergency'* who had completed an education level higher than primary school were at reduced risk of the experience of food insecurity. This finding is interesting, considering no association between food insecurity and education level was reported in Chapter 3.(163) Gorton et al. (2010) (51) reported the unequivocal impact of education on food security status. Also, social support, specifically the inability to get help from friends, was associated with being food insecure. The form of help was not defined in the survey but may include financial, physical and emotional support and requires further exploration within this income group.

While food insecure respondents may not be experiencing financial stress, as defined by the one variable in this analysis the *'ability to raise A\$2000 in two days in an emergency'*, exploration of other financial stress indicators described in the ABS Household Income and Wealth and the Household Expenditure Survey may provide further evidence that economic hardship may be contributing to food insecurity.(132, 154, 155)

Additionally, it should be considered that the experience of food insecurity may itself act as a marker for financial stress and vice versa. This, in part, may be reflected by the inclusion of the variable, *'went without meals'*, one of the nine aforementioned financial stress indicators, which may also be a potential coping strategy for food insecurity.(132, 154, 155) Furthermore, internationally it has been suggested that household food insecurity is a measure of material deprivation and a form of economic hardship.(66, 87, 162)

4.6.3 Association between financial stress and food insecurity: Precursors and potential buffers of financial stress

Exploration of the underlying causes of financial stress amongst households of all income levels is warranted to provide a more comprehensive understanding in relation to food insecurity. Exposure to a period of financial stress and causal factors may vary amongst households. Irrespective of income level, a household's financial management skills, specifically capacity to save, is a crucial factor in minimising stress on households, particularly food insecurity in times of financial strain.(122, 165) Further evidence suggests that, for many households across income levels, the savings or assets people have in reserve may be the buffer required to ensure food security during periods of economic stress.(92, 120) In Australia, some disadvantaged Sydney households who were unable to save were five times more likely to be food insecure.(37) It is reported that while the saving behaviour of Australians varies across and within income groups, the average saving level is low, being 1.3% of disposable income.(166) Saving capacity may be a better reflection of food security risk than reliance on the relationship between food security and income level.(92)

Households experiencing periods of financial shock specific to income (negative shocks) where the household income level is reduced temporarily, had a greater likelihood of experiencing food insufficiency.(102) Food insufficiency is part of the food security experience and is defined as an inadequate amount of food intake due to lack of money and resources.(167) Negative income shocks may occur due to a range of factors internal or external to the household including sudden loss of employment, reduction in hours, change in family structure, death, divorce, the addition of household members and health issues. Chang et al.(120) (further explored this relationship between food insecurity and the trigger of negative shocks to income in households already liquidity constrained. Irrespective of income, food insecurity was associated with increased financial strain and liquidity constraints. Further to this it was suggested that households with liquid assets totalling less than 3 months' income had an increased likelihood of food insecurity. (120)

Additionally, asset ownership including home and vehicles may not provide a true depiction of household's financial situation, particularly if households have

significant liabilities/debts against these assets. Households in the United States with these liabilities across all income levels have been found to be at risk or are experiencing food insecurity.(120) Research exploring the role of financial stress beyond household income and asset ownership (home, car, savings) in describing food insecurity is scarce and requires attention.(120)

The relationship between home ownership status, financial stress and food insecurity across income groups has not been explored in Australia. However, mortgage stress, where greater than 30% of the pre-tax income goes towards servicing a home loan in Australia, is increasing. It is estimated that 18.4% of Australian households are experiencing mortgage stress and the risk of mortgage default for households earning less than A\$60,000 per year has increased to 83%.(168) When compared to home ownership this study found that those living in 'other' accommodation and '*were able to raise money in an emergency*' were food insecure. Compared to renting, home ownership provides a buffer against food insecurity for households under financial pressure. This buffering was reported due to increased capacity to access credit or borrow funds.(87)

Increased utility cost is a potential source of financial stress. Low income American households have experienced increased financial vulnerability due to energy price shocks which negatively impact on their food security status.(169) In Australia electricity prices have increased dramatically over recent years despite competition in the electricity market.(170) The Victorian Essential Services Commission reported an increase in household gas and electricity disconnection rates as households struggle with payments.(139) Lower income households are more vulnerable to unexpected increases in energy prices. Additionally, to pay utility bills, some Victorian and New South Wales households are making sacrifices with respect to food. These include 'cutting back on food', purchasing less food and/or 'going without a substantial meal', or consuming less.(171, 172) In some cases these sacrifices impacted on the amount of food available for children.(172) The relationship between rising household energy costs and food insecurity across income groups has not been explored in detail in Australia and warrants further investigation.

Other potential cost of living pressures contributing to financial stress may include debt repayments for cars or large household electrical appliances, housing costs (rent/mortgage, maintenance), unexpected medical expenses, child care, traffic infringements and food or education costs. Very low income Sydney households experienced food insecurity due to financial strain caused by unexpected expenses, large bills, medical expenses, or car repairs. These unexpected events are significant as many of the households in this study did not have resources or savings to draw upon resulting in the need to make hard decisions to 'balance the budget'.(78)

Preliminary findings of a Melbourne qualitative study exploring the experience of financial stress across households with high levels of financial stress identified they were going without food.(173) Consistent with international recommendations the authors propose the importance of addressing financial stress with policy issues such as adequate income and affordable housing rather than individual management skills and behaviours.(173)

4.6.4 Association of financial stress and food insecurity: How might households raise money in an emergency?

Methods of raising A\$2000 in an emergency were beyond the scope of this study. However, an exploration of this would be useful to indicate if household members are using personal savings, liquidating assets or borrowing from family members and or friends. Households may rely on family and friends for social support including money or other forms of support: for example, providing food or sharing meals. Alternatively or in addition, support may be sourced beyond friends and family, extending to welfare organisations for food and material aid. Similar to international trends the demand for emergency food relief in Australia has increased.(43, 77, 79, 106, 174)

Another means of managing financial stress and shocks is borrowing from 'fringe lenders'. 'Fringe lenders' consist of a range of agencies outside of the mainstream credit industry, which provide small personal loans usually up to A\$5000.(175) Although primarily aimed at those on a low income or the working poor, 'fringe lenders' rely on the desperation of borrowers. 'Fringe lenders' penalise those who do not meet repayments with high interest rates. This industry has grown in Australia

with over 1,100 loan providers and an estimated one million customers.(176) The role of Australian ‘fringe lenders’ has been explored by Marston and Shevellar (2011). They found that, in the absence of other options, ‘fringe lending’ is a viable financial management strategy for people, especially those on low incomes.(175)

Marston and Shevellar’s results align with those of Fitzpatrick and Coleman–Jensen (2014) who explored Canadian households sourcing payday loans, a form of ‘fringe lending’ to temporarily avoid financial hardship and subsequent food insecurity. The Canadian study findings acknowledge that these products can potentially support a cycle of financial instability and food insecurity.(177) Fitzpatrick and Coleman–Jensen call for alternative options to be available to households at risk of food insecurity.(177)

4.6.5 Strengths and limitations

This research provides new evidence on previously unknown aspects of Australian food security. The work documents the existence of food insecurity in low-to-middle income households in Victoria, which is novel. Furthermore, it highlights the co-existence of both food insecurity and financial stress in low-to-middle income VPHS survey respondents in Victoria and also across other income groups.

The study raises several key questions. Firstly, how widespread is the existence of food insecurity in middle income Australian households? Secondly, how might government policy makers and front-line practitioners respond in a sensitive way? And finally, how might front-line agencies react, given the stringent assessment criteria for those eligible for assistance?

A key limitation of this study was the focus on a single financial stress indicator that may be a blunt indicator of financial stress. Consideration is warranted for future analysis of the sensitivity and specificity of this variable in predicting food insecurity. A single financial stress indicator was analysed because additional variables were not available in the VPHS data. The National Centre for Social and Economic Modelling (NATSEM) suggests, some form of financial stress or deprivation may be common amongst households; hence the number and frequency of occurrences of financial stress of a household should be taken into consideration.(178) A more

comprehensive, sophisticated suite of financial indicators could provide deeper insight into the underlying reasons for financial stress and its association with food insecurity.

This analysis utilises a financial stress indicator similar to that included in the ABS Household Expenditure Survey and allows for some comparison with the findings of financial stress in these surveys.(132, 154) Further investigation into households across income groups with multiple experiences of household financial stress could provide valuable insight into this complex issue and its relationship with food insecurity. Additional factors for consideration include, but are not limited to capacity to save, utility pricing and disconnections, income shocks and frequency of financial stress periods for households. Additionally, this may better inform both program and policy approaches that focus on addressing income security and other broader financial factors for those households at risk of, or already experiencing, food insecurity.

4.7 Conclusion

Consistent with the international literature described in Chapter 2 the findings of this study highlight the association between food insecurity with an indicator of financial stress, causing food to become an increasingly discretionary item in household budgets. To the author's knowledge, this is the first time such evidence specific to low-to-middle income group has been reported in Australia.

There is need for further research in Australia to examine the associations between financial stress and food insecurity, particularly in low-to-middle income households where little is known.

4.8 Summary of key findings of Part 1 Exploring the EXISTENCE of food insecurity in low- to-middle income Victorian households

Part 1A aimed to explore the **EXISTENCE** of food insecurity in low-to middle income Households in Victoria, Australia. Part 1B aimed to explore the relationship between food insecurity and an indicator of financial stress, '*ability to raise \$2000 in an emergency in 2 days.*'

In summary the key findings include:

Prevalence and frequency of food insecurity

An inverse relationship between income and food insecurity was reported across VPHS survey respondents 2006-2009, with a prevalence of 3.9% to 4.8% of food insecurity in low-to-middle income respondents. The frequency of food insecurity experience for some respondents was on a weekly or fortnightly basis

Key variables associated with food insecurity in low to-middle income households

The multivariable logistic regression analysis identified variables associated with food insecurity in low-to-middle income households. These include gender, age, ability to raise A\$2000 in an emergency in 2 days, support from friends, '*inability to get the food wanted due to its expense*', housing ownership status.

The association between the 'ability to raise money in an emergency' and food insecurity

It was found that 18% of low-to-middle income respondents who were '*unable to raise money in an emergency*' were food insecure. Key associations between those who were '*unable to raise money in an emergency*' and food insecurity included '*inability to get the food wanted due to its expense*', household composition, living alone and sole parent with non-dependent children. In addition, home ownership status classified as 'other' forms of accommodation that may be other than renting and owning.

In contrast, three percent of those that were '*able to raise money in an emergency*' reported to be food insecure. Significant associations included age, home ownership status, '*inability to get the food wanted due to its expense*', help from family/friends and education level attained.

Part 1 has contributed to the scholarship on food insecurity in Australia by providing evidence of the **EXISTENCE** food insecurity beyond those on very low income. However, to provide further meaning to these findings, the **EXPERIENCES** of food insecurity must be explored within this income group. Drawing on findings from Part 1, the second part of this thesis explores the **EXPERIENCES** of food insecurity to understand the triggers for food insecurity and coping strategies. Part 2 is composed of Chapter 5, 6, and 7.

Part 2

Exploring the EXPERIENCE of Food Insecurity in low-to- middle income Melbourne households

Chapter 5

Methods

Part 2

Chapter 5: Using Mixed Methods Research Methodology to explore food security and food insecurity EXPERIENCES in low-to-middle income Melbourne households: Methods

5.1 Introduction

In Part 1 of this thesis, the **EXISTENCE** of food insecurity in low-to-middle income Victorian households was shown from the analysis of the 2006-2009 Victorian Population Health Survey. Three key findings emerged. Firstly, food insecurity exists in low-to-middle-income Victorian households. Secondly, key factors associated with increasing or reducing the risk of food insecurity were identified in this income group. Finally, a relationship was identified between food insecurity and ability to raise money (A\$2000) in an emergency – a marker of financial stress. In order to gain a deeper understanding of food insecurity and associated factors identified within this income group, the **EXPERIENCE** of food insecurity requires exploration.

This chapter signals Part 2 of the thesis, which aims to explore the **EXPERIENCE** of food insecurity in low-to-middle income Melbourne households. This chapter outlines the research design (mixed methods research) and methodological considerations. Chapters 6 and 7 will present findings (both quantitative and qualitative) of this mixed method study, and the integration of these results will be followed by a discussion in the context of the literature.

This chapter will outline a description of the methodological framework, a sequential explanatory mixed method, and the research positioning, sampling and methods used in both the quantitative and qualitative phases of research.

5.2 Research design framework

As discussed in the Chapter 2 research into the lived **EXPERIENCE** of food insecurity in low-to-middle income households in Australia is limited. The design and methods in this study allowed for exploration of:

- The lived experiences of food insecurity and food security,
- Factors that may impact on food security status and severity,
- Strategies implemented to prevent or address food insecurity.

A mixed methods research (MMR) methodology approach of collecting, analysing and interpreting both quantitative and qualitative data in the research process was selected.(179-181) Food insecurity is a complex public health issue and neither quantitative nor qualitative methods alone are sufficient to capture the **EXISTENCE** and **EXPERIENCE** related to this issue. In combination, these two methods complement each other, allowing a significantly more robust analysis and a richer and more complete perspective on the research questions to be uncovered.

A 'combination' mixed methods style of questioning has been described as the most complete, explicitly stating both the content and methods of the study and the mixing of data from both the quantitative and qualitative phases.(179) In this research mixed methods were applied to answer the question:

In what way does the interview data of the lived experiences of food security and food insecurity of purposively selected low-to-middle income (A\$40,000 - \$80,000 per annum) Melbourne households explain and provide more detail to the quantitative results about food insecurity and severity levels reported in the Food Security in Melbourne Households survey?

A sequential explanatory mixed methods design Figure 5-1 with two distinct interactive phases was selected to investigate the **EXPERIENCE** of food insecurity.(179)



Figure 5-1 Explanatory Sequential Mixed Methods Design

An explanatory sequential design commences with the collection and analysis of quantitative data which informs the design for the second qualitative phase. The quantitative results specifically guide purposive sampling, data collection and the qualitative phase line of enquiry.(182) The purpose of the qualitative phase is to explain and provide further information, thus adding to the quantitative results.(179) Creswell and Clark (179) specifically elaborate on the use of this design when groups are formed based on the quantitative results. In this study, the researcher was interested in the lived experience of food secure and food insecure groups and therefore used quantitative participant characteristics to guide purposeful sampling for the qualitative phase. Additionally, the results from the quantitative phase supported refinement of the questions and data collection protocol used in the qualitative phase. This emergent approach to the qualitative phase is considered a methodological strength.(179) The final integration of data occurred with the interpretation of the extent to which the qualitative results explain and provide further insight into the quantitative results and the key findings from the study.(179)

Typically, the emphasis in the sequential explanatory design is on the quantitative phase; however, in this study the research emphasis was on the qualitative phase. This variation, described as a participant selection variant, may be used when the research focus is to qualitatively examine a phenomenon (food insecurity), but where the initial quantitative results identify and purposefully select the best participants.(179, 183)

In summary, the quantitative results provided a general picture of the research problem but required much more detailed exploration that could only be achieved

through qualitative methods using in-depth interviews of food insecure and food secure participants.

5.3 Philosophical underpinnings

This research was positioned philosophically from a worldview or philosophy based in pragmatism. Defining pragmatism, Liamputtong (184) p313 states, *“reality exists beyond natural and physical realities but also includes psychological and social realities, that include subjective experience and thought, language and culture”*.

Pragmatism arises out of actions, situations and consequences focussing on the nature of the experience and the outcomes of the research.(185, 186)

Mixed methods research may be characterised by ‘paradigm pluralism’, where a ‘variety of paradigms may serve as the underlying philosophy for use in mixed methods’ p44.(181) A pragmatic viewpoint was selected for this research guided by Creswell and Piano Clarks’presentation of Tashakkori and Teddlie’s (2003) argument on its use in the context of MMR.(179) Tashakkori and Teddlie suggested that:

‘the research question should be of primary importance – more important than either the method or the philosophical worldview that underlies the method, the dichotomy decision between postpositivism and constructionism should be abandoned. Concepts of truth and reality should be abandoned and practical and applied research philosophy should guide methodological choices.’(179)

In this study while similarities may be drawn from the experiences of households it was hypothesised that there was not one single worldview of the experience of food insecure, but one where elements of each household experience may be unique.

Using the worldview of pragmatism, the philosophical assumptions of ontology (nature of reality), epistemology (the nature and scope of the knowledge of what is being researched by the researcher), axiology (role of values in research) and rhetoric (the language of the research) are described in Table 5-1. These assumptions have guided this research.

Table 5-1 Philosophical assumptions related to pragmatism and research implications.
Adapted from Creswell JW and Piano Clark VL 2011.

Assumptions	Characteristics related to pragmatism described by Creswell and Clark 2011	Implications for this research
Ontology	Singular and multiple realities	Direct quotes from in-depth interviews and responses to quantitative survey to explore singular and multiple food secure and food insecure experiences and perspectives.
Epistemology	Practicality: researchers collect data according to what works best to address the research question	In the quantitative phase the researcher spent time in the field (research promotion sites) with organisational contacts in the identified suburbs. In the qualitative phase the researcher spent time building rapport with study participants by contact via phone, email and face to face (at interview) – arranged in a location that was accessible to participants.
Axiology	Multiple stances – researchers include both biased and unbiased perspectives	Researcher’s reflective points kept in the development of codes and themes of qualitative data.
Methodology	Combined – quantitative and qualitative data and mixing of data for interpretation	MMR design – use of a validated survey to classify food security status and then open coding to allow for emergent themes
Rhetoric	Formal/informal styles of writing may be employed	Style may vary to reflect the participants’ experiences

5.4 Researcher Positioning - Reflexivity in the Research

The data collection instrument in the quantitative phase was a survey. Within the qualitative phase of the research, in-depth semi-structured interviews were used. As the researcher, I was the primary data collector; so it is important to reflect upon my skills, values and beliefs that I bring to this research. Reflexivity is an essential strategy bringing rigour to the research, explicitly stating the deep seated views, experiences and judgements that may affect the research process.(184, 187)

My interest and passion in food insecurity has progressively developed over the last 27 years working as a community and public health dietitian. My interest has grown from hearing community member's stories and observing people's struggles across a range of communities. Furthermore, colleagues in the community service sector reported an increasing number of people seeking services. Despite being employed and many having their own home, these people were struggling financially and experiencing food insecurity. Seeing these real-life experiences and evidence gaps has been the impetus for my PhD research on food insecurity in low-to-middle-income households.

As a practitioner I have developed an array of skills, such as privileging confidentiality, empathy, critical listening, and an awareness of my beliefs and the importance of not making assumptions about individuals. I am conscious of my middle-class upbringing and lifestyle that may at times be at odds with that of the experience of participants in my research. My strong sense of social justice instilled during my upbringing was shaped in part by my parents' experiences growing up in low income rural areas and subsequent life experiences. Drawing on these qualities, skills and experiences positioned me to build rapport and the ability to hear participant stories, reflections and experiences, both past and present, around food access. The complexities that envelop food insecurity may mean that participants have multiple and different food access viewpoints and it is my role as a researcher to capture these multiple perspectives. In capturing and honouring these views, sensitivity needs to be employed when interviewing to accurately reflect people's experiences.

Based on my experiences as a practitioner, researcher, and my understanding of food insecurity I hypothesise that:

- The importance that households place on food and nutrition is variable and shaped by household members' life course experiences and their level of food knowledge and skills.
- Households will have developed unique strategies to ensure food security; but similarities may exist across households.
- Households will employ a variety of protective mechanisms to lessen the impact of food insecurity.
- Food insecurity is a contextual problem that extends beyond households and is based in the inadequacies of the broader socio-ecological environment.

The use of mixed methods methodology has enabled data collection at two levels of participant interaction: first, at a distance through the survey data and second, direct face-to face contact with in-depth interviews. Irrespective of the data source, I am aware of the importance of being true to the data and allowing participants' interpretation of their experiences. Using a painter's canvas as an analogy, the interviews bring light and definition to a canvas where the outline on the canvas was formed by the survey responses. My role as an interviewer in this research is to facilitate the addition of colour and definition to each participant's canvas. In summary my role as the interviewer is to probe for detail and the clarity of participants experience, allowing for comparison and contrast across/between participants.(188)

After each interview reflective hand written notes were recorded. This reflexive practice recorded my thoughts on the interview, initial building of ideas of the phenomena, participant/researcher interaction in the interview, and factors that may have affected data collection. These jottings were written into field notes within 24hours of each interview, referred to when listening back to interview recording and throughout the analysis. Field notes provide a detailed yet concise description of the researcher's observations, experiences, perceptions and interpretation of the interview, including notes on emotions. These then become an additional form of data.(185, 187)

5.5 Ethical approval

Ethics approval was obtained from Monash University Human Research Ethics Committee (CF 14/1382 -2014000647) (Appendix 2).

5.6 Sequential explanatory mixed methods research – methodology

5.6.1 Sampling

A cross-sectional convenience sample of participants was recruited from 12 metropolitan Melbourne suburbs selected according to the 'Vulnerability Assessment for Mortgage, Petrol and Inflation Risks and Expenditure' 2008 Index, VAMPIRE Index.(189) The VAMPIRE index calculates suburb vulnerability based on the fiscal stresses of fuel and mortgage costs providing a ranking from low to very high vulnerability. Owning and running a car or motorbike has been shown to negatively impact a household's ability to have sufficient finances available for food.(190, 191) Additionally, income is a mediator of financial resources to purchase food and other household items.(51, 174) Mortgage tenure is another moderator of financial resources, and can affect the money available to access food.(192) A higher vulnerability VAMPIRE rating is likely to be related to a higher risk of food insecurity (193); thus all suburbs with very high to medium ratings in the Melbourne area were selected for inclusion.(189) These suburbs would provide a varied sample in which food insecurity is likely to occur in some households due to characteristic stressors.(193)

Table 5-2 indicates the suburbs with a medium, high and very high vulnerability VAMPIRE index rating included in this research, and key demographics for each. All suburbs had a moderate Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD).(194) The IRSAD summarises information about the economic and social conditions of people and households within an area, including both relative advantage and disadvantage measures. The IRSAD of VAMPIRE suburbs were referred to when including neighbouring suburbs in this research.

Table 5-2 Demographics of 'Vulnerability Assessment for Mortgage, Petrol and Inflation Risks and Expenditure' (VAMPIRE) Index suburbs

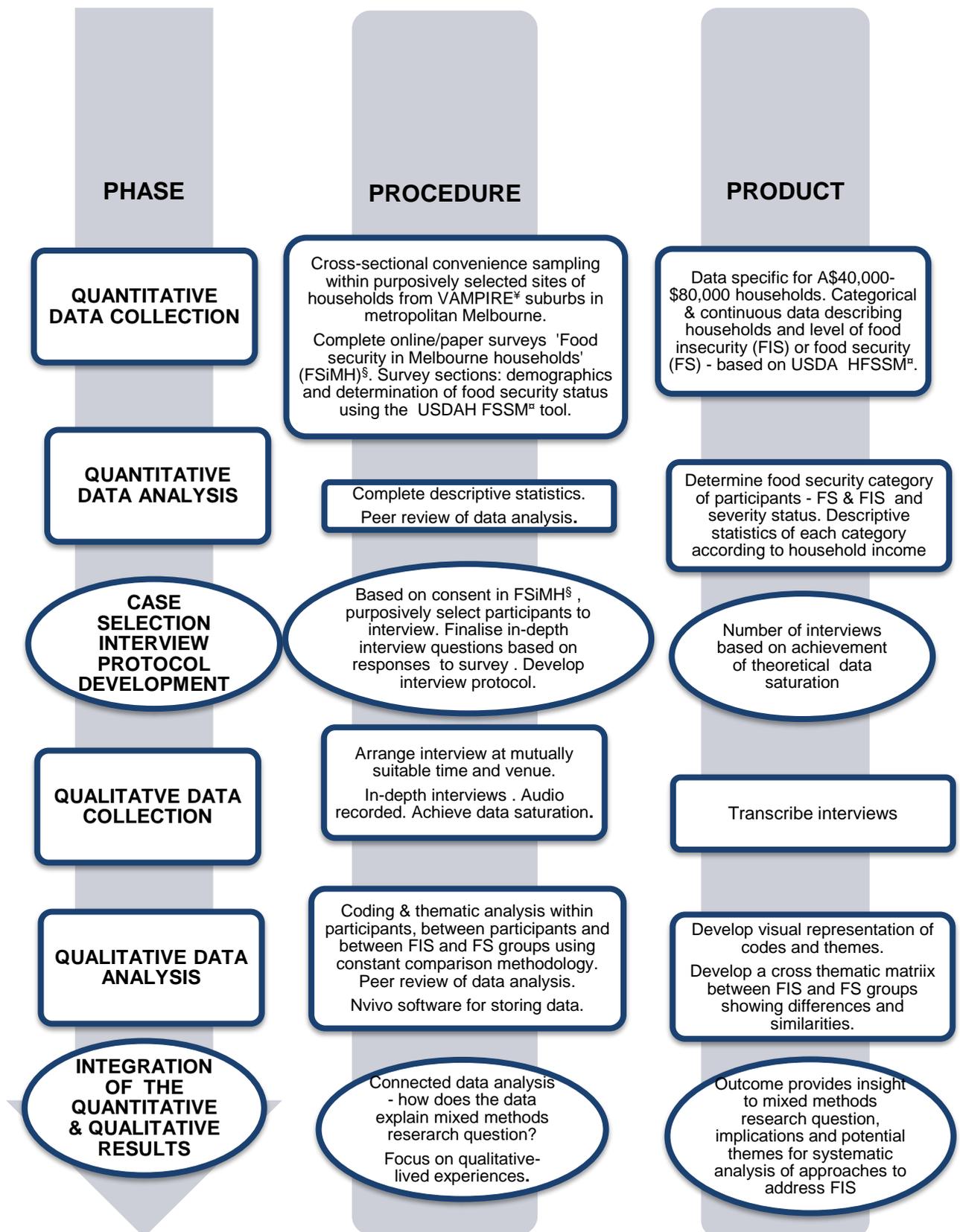
Suburbs	Local Government Area	Population*	IRSAD [‡]	VAMPIRE Index	Distance from CBDM [§] km
Deer Park	Brimbank	16,204.	919	Very high	17
Beaconsfield	Cardinia	6,412	1065	Very high	46
Roxburgh Park	Hume	19,235	934	Very high	20
Knoxfield	Knox	7,140	1031	Very high	26
Sunshine	Brimbank	8,838	916	High	11
Lilydale	Yarra Ranges	15,649	1022	High	34
Werribee	Wyndham	37,737	948	High	32
South Morang	Whittlesea	20,873	1037	High	23
Essendon	Moonee Valley	18,852	1073	Moderate	8
Glen Waverley	Monash	39,204	1070	Moderate	19
Oakleigh	Monash	7,535	1039	Moderate	15
Nunawading	Whitehorse	10,947	1035	Moderate	19

* (195)* IRSAD Index of Relative Socio-Economic Advantage and Disadvantage

§ CBD Central Business District of Melbourne

The convenience sample aimed to identify participants to interview as part of the qualitative phase, rather than be representative of the population. Stories of the experience of food security and food insecurity and the association between low-to-middle income households and food insecurity were the primary focus of the MMR.

Appendix 3 details the explanatory statement and Appendix 4 the promotional material provided to potential participants. Eligibility for study inclusion was conducted in two stages. In the quantitative phase, participants needed to be over 18 years and residing in metropolitan Melbourne, and living in or adjacent to VAMPIRE suburbs. In the qualitative phase, participants were included if they had a gross household income of A\$40,000-\$80,000AUD per annum. This allowed for consistency of income groups across Part 1 **EXISTENCE** and Part 2 **EXPERIENCE** and was derived from Australian Bureau of Statistics Survey of Income data.(160) Respondent anonymity was preserved by a unique code assigned for survey responses and all interview participants were provided with a pseudonym. The remainder of this chapter details the methodology employed in each phase of the study design as illustrated in Figure 5-2



[‡]VAMPIRE - Vulnerability Assessment for Mortgage, Petrol and Inflation Risks and Expenditure [§]USDA HFSSM – US Dept. of Agriculture Household Food Security Survey Module [¶]FSiMH – Food Security in Melbourne Households

Figure 5-2 Summary of Sequential Explanatory Mixed Methods methodology study design

5.7 Methods quantitative phase

The quantitative phase included two steps involving data collection and data analysis (Figure 5-2)

5.7.1 Quantitative Data Collection: Methodology

The quantitative phase used a cross sectional survey design. The survey instrument - '*Food Security in Melbourne Households Survey*' (FSiMHS) - consisted of three sections and is included in Appendix 5.

Section 1: Suburb I live in

Survey respondents indicated the suburb that they resided in from a list of the 12 VAMPIRE suburbs or, alternatively, named the suburb that they resided in. This allowed for inclusion of neighbouring suburbs to VAMPIRE suburbs which had a similar IRSAD index.

Section 2: About You and Your Household: demographic data,

The demographic questions were developed to gather information on factors associated with food insecurity in the literature and support categorisation based on income and household compositions. Factors included age, country of birth, gender, living arrangements, employment, education, income level, household composition and transport.(51) These factors were consistent with those examined in Part 1 to explore the **EXISTENCE** of food insecurity. Income level categories were also consistent with those used within Part 1.

Section 3: Food Security Status Determination using the United States Department of Agriculture Household Food Security Survey Module (USDA HFSSM)

The 18 item USDA HFSSM tool has undergone multiple, rigorous validation and is widely used as a food security monitoring tool.(14) The USDA HFSSM was selected for determination of food security status because of its reliability across populations and population subgroups and ability to capture the severity level of food insecurity.(14, 73, 196, 197) The USDA HFSSM has been implemented in the Australian context, including low-income populations.(37, 49, 73, 198). Households with children utilised all 18 items in the USDA HFSSM and adult only households utilised the adult only 10 items of the USDA HFSSM. This created two household

categories (those with children and adults only), each classified as either food secure or food insecure. Food security status of children within a household was documented and used to inform both participant interview profiles, and also considered within the integration of quantitative and qualitative data.

The USDA HFSSM describes both the classification and severity of food insecurity experienced. Participants with an affirmative score between 0-2 are classified as food secure. Participants with a score greater than two are classified as food insecure. Those with a score of one and two are classified with a severity level of marginal food security but are categorised as food secure.(14) Evidence from the United States and Canada highlights the emergence of marginally food secure people as an increasing group in the population.(15, 39, 41, 66) Gunderson (2011) reported marginally food secure households as having greater similarities to food insecure households with respect to health outcomes and characteristics, such as income in comparison with food secure households. Using the iterative or pragmatic approach guiding this research, the USDA HFSSM classification scores to categorise food insecurity were modified. People classified as experiencing marginal food security (with a score of one or two on the USDA HFSSM) were included in the food insecure category, because of their potential risk of experiencing food insecurity of greater severity. Marginally food secure households may be at greater risk of progressing to a more severe form of food insecurity and little is known about their experience.(39) The inclusion of this group as food insecure provided a unique opportunity to investigate this group's experience of food insecurity and the risk of progression to more severe forms. Furthermore, it allowed an exploration of potential prevention strategies in an Australian context. The severity categorisation groups and scores were consistent with USDA classifications across all household types.(14, 68) Table 5-3 summarises the food security and severity classification methodology used for participants.

Table 5-3 Summary of United States Department of Agriculture Households Food Security Survey Module classification and Food Security in Melbourne Households Survey modified classification

Households With Children-Adult and child items (Out of 18)	Children – Child only items (Out of 8)	Households Without Children- Adult only items (Out of 10)	USDA HFSSM* Food Security Classification and Severity Level	FSiMHS§ Modified Food Security Classification and Severity Level
Number of affirmative responses				
0	0	0	Food Secure	Food Secure
1 2	1	1 2	Marginal Food Security	Food Insecure and Marginal Food Security
3 or more	2 or more	3 or more	Food Insecure	
3 4 5 6 7	2 3 4	3 4 5	Low Food Security	Low Food Security
8 or more	5 6 7 8	6 or more	Very Low Food Security	Very Low Food Security

* USDA HFSSM - United States Department of Agriculture Household Food Security Survey Module(14)

§ FSiMHS – *Food Security in Melbourne Households Survey*

The FSiMHS was administered as an electronic and paper format with reply paid envelopes provided between September 2014 and February 2015. The electronic survey was uploaded to the Qualtrics, Provo UT, US platform and was accessed through a URL or unique bar code via smart phone. In July 2014 higher degree students from Monash University, Department of Nutrition, Dietetics and Food were invited to participate in a pilot testing of the electronic survey. The purpose of the pilot was to ensure that technical aspects, including layout; skip logics (allowing respondents to skip to a later page or question based on their response to a previous closed ended question); survey flow and survey completion time were appropriate prior to survey administration. Twelve responses were received, and the feedback incorporated. The paper and electronic surveys were consistent with each other, with paper surveys being used where participants had limited internet access or were not familiar with technology. Paper surveys were manually entered into Qualtrics.

To assist with recruitment, a comprehensive database of community organisations located in or near the 12 VAMPIRE suburbs was developed. The database included health, welfare, local government recreation, playgroups and faith-based organisations. A diversity of organisations were contacted to ensure the survey was promoted to a range of household composition types. Organisations were provided with study flyers and hard copies of surveys for distribution. Some promotion also occurred via organisation websites and social media accounts.

5.7.2 Quantitative Data Analysis: Methodology

FSiMHS data were downloaded from the online data collection software Qualtrics into a Microsoft Excel 2010 spreadsheet and was cleaned by checking for missing values and outliers. The data were then imported into IBM SPSS Statistics for Windows, Version 22.0 (IBM, New York NY, US). The purpose of the quantitative data was to identify participants in the low-to-middle income group and classify according to food security status. Additional analysis was completed to further inform the qualitative phase Table 5-4.

Table 5-4 Quantitative Data Analysis Plan

Purpose	Variables	Analysis
To describe the demographic characteristics of the total FSiMHS [¥] population.	Gender, age group, country of birth, living arrangements, household structure, education level, employment, household income, main transport, main food provider	Frequencies
To describe the demographic characteristics of the FSiMHS [¥] population according to food security status and household type (adult only or with children) and income categories: very low-to-low income, low-to-middle and high.	Gender, age group, country of birth, living arrangements, household structure, education level, employment, household income, main transport, main food provider	Frequencies within household type, income and food security classifications
To explore frequency of response to individual question items in the USDA HFSSM [§] in total population and low-to-middle income group.	All items in the USDA HFSSM [§]	Frequencies
To describe the frequency of final USDA HFSSM [§] scores (affirmative responses) according to both household types (with children, adults only) by total FSiMHS [¥] population.	Affirmative USDA HFSSM [§] responses	Frequencies
To describe the frequency of both households types (with children, adults only) by total FSiMHS [¥] population according to food security severity level (marginal, low and very low)	Affirmative USDA HFSSM [§] Food security severity classification	Frequencies

[¥] FSiMHS – *Food Security in Melbourne Households Survey*, [§] USDA HFSSM – United States Department of Agriculture Household Food Security Survey Module

5.8 Methods qualitative phase

The qualitative phase aimed to explore and describe how low-to-middle income participants experienced the phenomena of food insecurity and food security. The results from the quantitative phase supported the case selection and interview protocol development before the commencement of data collection and analysis (Figure 5-2).

5.8.1 Case Selection and Interview Protocol Development: Methodology

Case Selection

Participants from the quantitative phase residing within or adjacent to VAMPIRE suburbs were purposively selected from both food secure and food insecure low-to-middle household income survey participants. As a part of the quantitative survey participants were also invited to participate in a qualitative interview. Those who consented were then conveniently contacted by email, with a follow-up phone call.

A key concern of qualitative research is the focus on quality not quantity of interviews.(187) Sampling for the qualitative interviews in this study continued until theoretical data saturation was achieved. Theoretical data saturation in this study meant that the researcher was satisfied with the quality of the information obtained to be able to answer the research questions.(185-187)

Interview Protocol Development

The goal of the qualitative interviews was to explore in detail and gain greater understanding of the day to day lived experience of the phenomena of food insecurity and food security. The interview protocol, interview structure, location, recording, use of phone interviews and question style were informed by the literature.(185, 187) In addition, the logic underpinning the interview protocol and questions were informed by the existing literature (57, 143, 144, 199) and the quantitative analysis, in particular the responses to the USDA HFSSM across all income and low-to-middle income groups. Whilst the USDA HFSSM was used to

classify food security and severity status, the responses to individual questions provided insight into the experience and consequences of food insecurity for the household. The USDA HFSSM assesses food security status based on inability to access food due to lack of financial resources. However, there are additional factors that may impact upon food security status (2, 196); consequently, the interviews allowed for elaboration and exploration beyond economic factors. The interviews explored four key areas (Text Box 5-1) with an additional concluding question to allow participants to expand on previous responses or provide additional information.

Text Box 5-1 Areas explored in in-depth interviews

1. Accessing food and food choices for the household
2. Factors impacting on food for the household
3. Consequences for participants and household members when sufficient food quantity and preferred foods cannot be accessed.
4. Coping and protective strategies - asset exploration.

Table 5-5 describes the USDA HFSSM question item, the corresponding logic behind the qualitative questions that broadly guided the four areas identified for exploration. Additionally, individual responses to the USDA HFSSM questions were considered and where appropriate responses to specific items were elaborated.

Table 5-5 United States Department of Agriculture Food Security Survey Module and Qualitative Question Logic

USDA FSSM Question Item	Qualitative Question Logic	Question Area
Adult specific items		
We worried whether our food would run out before we got money to buy more.	Worry, stress – what was the level of concern? Consequences?	Areas 2, 3
The food that we bought just didn't last and we didn't have money to get more.	Consequences? Reason for inability to access food? How did households attempt to make food last? Skills and knowledge-assets?	Areas 2,3,4
We couldn't afford to eat balanced meals.	Consequence? Compromise of nutrition? Were there specific foods? Food knowledge?	Areas 1,2,3
In the last 12 months, did you or other adults in the household ever cut the size of your meals or skip meals because there wasn't enough money for food?	Consequences? To what degree did these happen? Impact for the household? Are there protective and coping strategies before it reaches this point?	Areas 1,2,3,4
Frequency response: In the last 12 months, did you or other adults in the household ever cut the size of your meals or skip meals because there wasn't enough money for food? Almost every month/some months/not every month		
In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?	Consequences? Specific foods? Frequency? Did this affect other members of the household? How are food decisions made?	Areas 1,2,3,4
In the last 12 months, were you ever hungry, but didn't eat, because there wasn't enough money for food?	Consequences? Frequency? What was the extent of financial triggers? What were the decisions at this point? Are there protective and coping strategies before it reaches this point?	Areas 1,2,3,4
In the last 12 months, did you lose weight because there wasn't enough money for food?		
In the last 12 months did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?		
Frequency response: In the last 12 months did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food? Almost every month/some months not every month		

USDA FSSM Question Item	Qualitative Question Logic	Question Area
Children specific items		
We relied on only a few kinds of low-cost food to feed our children because we were running out of money to buy food.	Consequences? Decisions? Factors impacting on food protective and coping strategies?	Areas 1,2,3,4
'We couldn't feed our children a balanced meal, because we couldn't afford that		
'The children were not eating enough because we just couldn't afford enough food.'		
In the last 12 months, did you ever cut the size of any of the children's meals because there wasn't enough money for food?		
In the last 12 months, did you ever cut the size of any of the children's meals because there wasn't enough money for food?		
In the last 12 months, were the children ever hungry but you just couldn't afford more food?		
In the last 12 months, did any of the children ever skip a meal because there wasn't enough money for food?		
Frequency response In the last 12 months, did any of the children ever skip a meal because there wasn't enough money for food?		
In the last 12 months did any of the children ever not eat for a whole day because there wasn't enough money for food?		

Two additional qualitative researchers (the candidate's supervisors) reviewed the interview questions for clarity, flow and to ensure they would elicit the required information. One formal pilot interview was conducted with a food insecure respondent and this interview was subsequently included in the analysis, due to the richness of the data. The purpose of the pilot was to test the draft interview protocol and qualitative line of enquiry, including question sequencing. Post-pilot interview, the researcher made detailed notes and the participant provided feedback on their interpretation of interview questions. One question (Q.7, Section 4) was re-worded for clarity in the interview schedule. (Appendix 6)

5.8.2 Qualitative Data Collection: Methodology

Face-to-face in-depth interviews of food secure and food insecure participants were conducted at a mutually suitable time for participants and interviewer. Interviews were conducted in local community meeting rooms in the participant's suburb or adjacent suburbs. For convenience, where individuals were unable to meet in person, a phone interview was conducted. A semi-structured interview schedule was used, ensuring a relatively uniform approach and flow to each interview, but allowing for particular responses to be explored (Appendix 6). Sixteen interviews were conducted between June-September 2015 and each was recorded with consent using a Sony IC recorder (model ICD PX312) digital recorder.

Jottings were taken during and after each interview (as reflections, and upon listening to digital recording of the interview) and these were summarised into field notes within twenty-four hours. These field notes provided two functions: first, they documented important points for future reference, subsequent interview questioning and reflection. Second, each interview summary was a means of documenting initial researcher impressions and interpretations of participant's stories. Field notes also recorded a sketch of the physical interview room, noted non-verbal responses such as body language, pauses, or lack of eye contact. Field notes were also invaluable in the analysis and interpretation of participant interviews and researcher reflexivity. An individual participant interview file was created and contained participant quantitative data (pseudo name, demographic and FSSM responses), researcher field notes and transcription of interview.

5.8.3 Qualitative Data Analysis: Methodology

Interviews were transcribed verbatim by a professional transcription service and the researcher then verified audio files and transcripts for accuracy. Member checking was not employed as the literature suggests that it provides little or no value to the experiences captured during the initial data collection.(187, 200) A constant comparison approach to analysis was performed to describe patterns in the data to inform the initial formation of categories.(184) Comparison of content within each category enabled the properties or description of these categories to evolve.(184, 201) The constant comparison approach was implemented at three levels: for individual participants regardless of food security status; within food secure and food insecure groups and between food secure and food insecure groups.(201) This analysis approach also allowed for exploration of similarities and differences across and between groups. NVivo qualitative software (QSR International, Version 10.3) was used to manage, store and support the data analysis.

Thematic data analysis was chosen as the researcher acknowledged first, the complexities of food security, and second, that more than one theoretical framework may explain the data and support the emergence of new concepts. Braun and Clarke (2006) describe the benefits of thematic analysis as 'providing a flexible and useful research tool, which can potentially provide a rich and detailed, yet complex account of data'(202) The qualitative analysis methodology involved a four-level process (Table 5-6).

Table 5-6 Qualitative analysis methodology (185, 187, 202)

<p>Level 1: Listening to audio files and reading the transcripts, and key content noted</p> <p>Level 2: To assist with data management, open coding of data in NVIVO and labelling text into coding nodes, comparing between and within food secure and food insecure groups. Coding book generated with code names and meaning. Code verification- inter-coder agreement with two of the PhD candidates' supervisors.</p> <p>Level 3: Codes were grouped into themes and subthemes. Verification of themes - inter-reliability agreement with all PhD candidates' supervisors. Visual representation (tables and illustrations) depicting theme connections within and between food secure and insecure groups.</p> <p>Level 4: Interpretation and comparing findings with the literature.</p>

5.8.4 Methods integration of the quantitative & qualitative phase results

The final stage included the integration of the quantitative and qualitative results (Figure 5-2)

While data are integrated throughout the MMR methodology process, the final phase of integration of quantitative and qualitative data is considered in relation to the MMR question. Furthermore as the focus of this research was on the qualitative phase the discussion will reflect if and how the qualitative data provide-enhanced understanding of food insecurity in low-to-middle income households beyond the quantitative results.(179) Food security individual and group level qualitative data are crosschecked against the corresponding individual and group quantitative data to explore response patterns (similarities, elaborations and contradictions). The findings will then be discussed in the context of the literature and then examined using the Sustainable Livelihood Framework as a lens for further reflection.

5.9 Strategies enhancing validity of data in sequential explanatory mixed methods design

The choice of mixed methods design as a methodology to explore this complex phenomenon provides rigour to this study due to the two interconnected quantitative and qualitative phases. A range of strategies implemented through the study phases were informed by Creswell and Clark (179) p.238-243. These are summarised in Table 5-7 and will be discussed in more detail in Chapter 7.

Tables 5-7 Strategies employed to support rigour in Mixed Methods Research

Phase	Strategies to support validity
Data Collection	
Engagement and fieldwork	Time spent in the study sites engaged and built rapport with workers from community organisations, survey and identified interview participants. Engagement strategies included both personalised and generic emails, phone contact and face-to-face meetings.
USDA HFSSM Survey Validity:	The validated (content, construct, criterion) USDA HFSSM used to assess food security status and severity level.(14)
Case selection for qualitative Phase	The quantitative and qualitative phase of the study drew from the same sample population, which allowed for exploration and comparison of data.
Interview protocol	This supported the reliability of the interviews by ensuring continuity between interview format and questions.
Data Analysis	
Reliability of data interpretation across quantitative & qualitative phases:	Supervisor A reviewed quantitative analysis and reporting. Additionally, USDA HFSSM results were reviewed and confirmed by Supervisor B and the candidate's honours student). Qualitatively, the strategy of inter-coder agreement was employed (Supervisors B and C). Furthermore, Supervisors A, B and C independently analysed a subset of four of the sixteen interviews each, including one common interview and themes verified, no points of disagreement.
Constant comparison approach	Across the analysis and interpretation phases, both within and between food secure and food insecure groups. Evidence that supported the analysis and interpretation in the qualitative phase was balanced with the use of quotes to represent the themes.
Data Interpretation	
Building of the data sets to construct the story	Rich description in the interpretation and reporting supported the construction of the stories of food security and food insecurity within and between groups, complemented by the use of both written and visual representation of the data.
Feedback to participants	The interview themes were shared with participants via email along with an invitation to provide feedback.

5.10 Summary

This Chapter has outlined the use of MMR sequential explanatory design methodology to explore the **EXISTENCE** and **EXPERIENCE** of food security and food insecurity in low-to-middle income Melbourne households. It outlines the considerations and methods across each phase and the interaction points. Chapter 6 will present the data findings from the quantitative and qualitative phase of the data.

Chapter 6

Results

Part 2

Chapter 6: Using Mixed Methods Research Methodology to explore food security and food insecurity EXPERIENCES in low to middle income Melbourne households. Quantitative and Qualitative Results

6.1 Introduction

This Chapter outlines the results of the quantitative and qualitative phases of the mixed methods sequential explanatory design used to explore the **EXPERIENCE** of food insecurity. The chapter will commence with the analysis of the quantitative phase, the *Food Security in Melbourne Households Survey (FSiMHS)*, specifically key demographic and food security status data will be presented. The synthesis of the qualitative phase will then be presented reporting the similarities and differences within and across food secure and food insecure households across themes and sub themes.

*Note: in this chapter the abbreviations FS–food secure and FIS-food insecure will be applied.

6.2 Results quantitative phase

6.2.1 Quantitative Data Collection and Analysis: Results

Demographics of Food Security in Melbourne Households Survey

Participants

One hundred and thirty-four participants completed the *Food Security in Melbourne Household's survey*. Eighty percent of surveys (n=107) were completed via the Qualtrics online platform. One hundred and fifty paper surveys were distributed across all sites and accounted for only 20% (n=27) of responses. The demographic characteristics of participants are summarised in Table 6-1. Participants were typically female (88%), aged 26–55 (71%), home owners (66%) and living with their spouse/partner and children (55%). Thirty one percent of participants were low-to-middle income households (A\$40,000-\$80,000), while almost half had household

earnings of more than A\$80,000 (45%). Thirteen participants declined to indicate income level reducing participant income data to n=121. Over half had completed some form of higher education (56%) and 48% had some form of paid work. The majority of participants had access to personal motor transport (86%).

Table 6-1 Demographics of participants in the Food Security in Melbourne Households Survey n=134

Variables	Frequency total sample n (%)
Gender*	
Male	15(11)
Female	117(88)
Prefer not to say	1(1)
Age Group (years)	
18 – 25	12(9)
26 – 35	44(33)
36 – 45	34(25)
46 – 55	17(13)
56 – 65	13(10)
Over 65	14(10)
Country of birth	
Australia	98(73)
Other*	36(27)
Living arrangements	
Home owner with a mortgage	65(48)
Home owner, no mortgage	24(18)
Renting, private	30(22)
Renting, public or social housing	5(4)
Other including boarding	10(8)
Household structure*	
Living alone	9(7)
Living with my parents/family	5(4)
Living with my spouse/partner, no children	36(27)
Living with my spouse/partner and children <18years	59(44)
Living with my spouse/partner and children >18years	7(5)
Living with my spouse/partner and children under & over 18years	7(5)
Single, living with my children < 18 years	3(2)
Single, living with my children >18 years	1(1)

Variables	Frequency total sample n (%)
Other (Living in a share house)	6(5)
Education level*	
Completed some school	16(12)
Completed secondary school	9(7)
TAFE, diploma or trade	33 (25)
Any completed tertiary study	75(56)
Employment	
Full time paid	31(23)
Part time paid	25(19)
Casual paid	8(6)
Self-employed	10(8)
Work without pay/volunteering/carer/home duties	31(23)
Unemployed	8(6)
Retired	14(10)
Studying	7(5)
Household income A\$	
Less than \$19,999	6(4)
\$20,000 – \$39,999	13(10)
\$40,000 - \$59,999	22(16)
\$60,000 - \$79,999	20(15)
Over \$80,000	60(45)
Prefer not to say/ Don't know	13(10)
Main transport	
Personal motor transport (car/motorbike)	115(86)
Active transport (walking/bike)	7(5)
Public transport (tram/bus/train)	12(9)
Food provider	
Self	112(84)
Other- Shared/Other household member	22(16)

*n=1 missing, †Other - all responses other than Australia were grouped into 'other'

Participants were from a range of localities across metropolitan Melbourne which were located in or neighbouring a VAMPIRE suburb Figure 6-1. The suburbs with the highest number of participants were located in the north west of Melbourne: South Morang (10%) and Essendon (10%). Forty-one percent of participants lived in a suburb in close geographic proximity to, and with a similar IRSAD to the neighbouring VAMPIRE suburb.

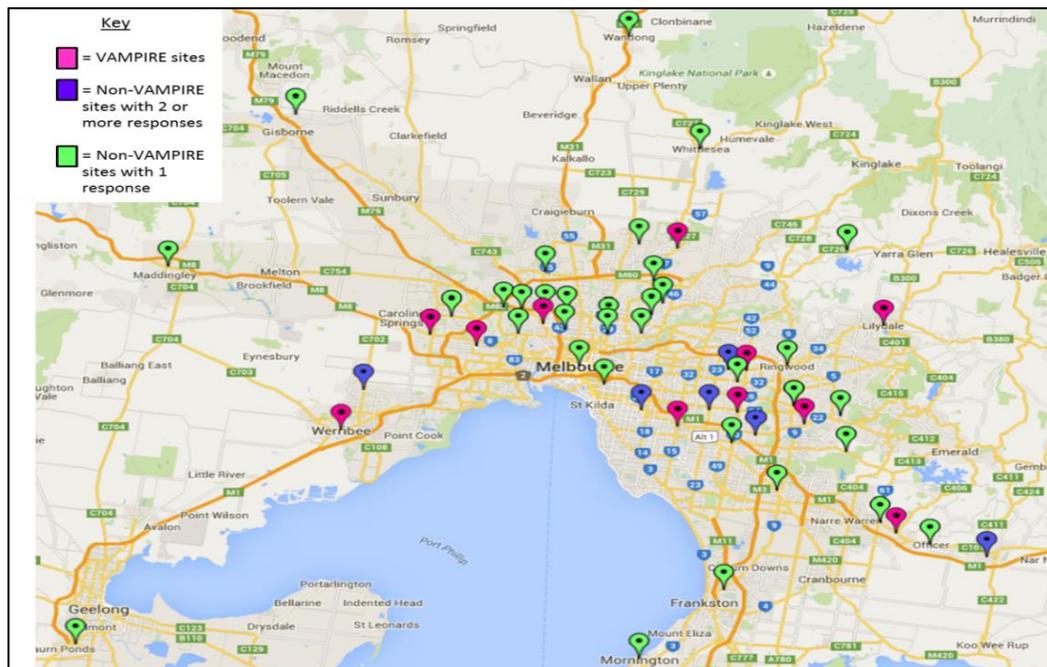


Figure 6-1 Geographic distribution of responses to Food Security in Melbourne Households Survey

Food security status

Consistent with the USDA HFSSM tool, survey participants were first classified according to household type (adult only or adult with children).(14) Food security status was then determined within household income categories (very low: less than A\$40,000, low-to-mid: A\$40,000-\$80,000, higher income: greater than A\$80,000). Characteristics of participants according to household income and food security status in each household type are summarised in Table 6-2 and Table 6-3. A brief overview of the characteristics, specifically related to low-to-middle income households, are summarised below.

In the low-to-middle income households with children,(n=24) one in two participants classified as food insecure (Table 6-2). Living with a spouse or partner and children under 18 years was the most common household composition across both food secure (n=10) and food insecure households (n=10). Eight food insecure participants had completed or were in the process of completing an education level higher than secondary school, compared seven of food secure participants. Employment status (full-time, part-time and casual) was higher in food insecure (n=7) than food secure (n=3) participants. Food insecure participants either owned

their home with a mortgage or were renting in the private rental market. Cars were the main form of transport, evident in both food secure and food insecure households. Survey participants were typically the main food provider responsible for the shopping and cooking.

Table 6-2 Demographics of households with children (n=70) across income groups according to food security status#

Variable	Very low income (n=3)		Low to mid income (n=24)		Higher income (n=43)	
	Food Insecure n=1	Food Secure n=2	Food Insecure n=12	Food secure n=12	Food Insecure n=13	Food secure n=30
Gender	*					
Male	0	0	1	0	0	1
Female	1	2	11	12	13	29
Age						
18 – 25	1	0	1	0	0	0
26 – 35	0	1	6	3	5	15
36 – 45	0	1	4	7	6	11
46 – 55	0	0	1	2	2	3
56 – 65	0	0	0	0	0	1
Over 65	0	0	0	0	0	0
Country of Birth						
Australia	1	2	8	6	10	24
Other	0	0	4	3	3	6
Aboriginal Torres Strait Islander						
No	1	2	12	12	12	0
Aboriginal	0	0	0	0	1	0
Torres Strait Islander	0	0	0	0	0	0
Living arrangements						
Home owner, mortgage	0	2	6	6	9	22
Home owner, no mortgage	0	0	0	2	0	1
Renting, privately	0	0	6	2	4	6
Renting, public/social housing	1	0	0	0	0	0
Boarding	0	0	0	0	0	0
Other	0	0	0	1	0	1
Household Structure/Composition						
With parents/family	0	0	0	1	0	1
With spouse/partner & children under 18 years	1	1	10	10	10	25
With spouse/partner & children under & over 18 yrs	0	0	0	0	3	4
With spouse/partner & children over 18 years	0	0	1	0	0	0
With my children under 18 years	0	1	1	1	0	0
Number of people in household						
2	0	0	1	1	1	0
3	0	1	2	1	2	7
4	0	1	8	5	7	16
5	0	0	1	4	2	5
6	1	0	0	0	1	1

Variable	Very low income (n=3)		Low to mid income (n=24)		Higher income (n=43)	
	Food Insecure n=1	Food Secure n=2	Food Insecure n=12	Food secure n=12	Food Insecure n=13	Food secure n=30
10 or more	0	0	0	1	0	1
Number of children in household						
1	0	0	3	3	3	9
2	1	2	8	4	7	16
3	0	0	1	5	3	3
4	0	0	0	0	0	2
Education Level Attained						
Completed some school	0	0	3	4	0	0
Completed school	0	0	1	1	1	1
TAFE [‡] , diploma or trade	1	1	6	3	5	9
Any completed tertiary study	0	1	2	4	7	20
Employment						
Full-time paid work	0	0	2	0	5	6
Part-time paid work	0	0	3	2	3	8
Casual paid work	0	0	2	1	2	1
Self-employed	0	0	0	0	0	3
Work without pay (family business)	0	0	1	1	0	0
Home duties	1	1	3	7	2	10
Unemployed	0	1	0	1	1	1
Studying	0	0	1	0	0	1
Main Transport						
Car	1	2	11	10	13	27
Walking/Bike	0	0	1	0	0	1
Motor Bike	0	0	0	0	0	0
Public Transport	0	0	0	2	0	3
Number of cars in household						
0	0	0	0	0	0	1
1	0	1	3	4	2	3
2	1	1	7	5	10	22
3	0	0	1	3	1	3
4 or more	0	0	1	0	0	1
Usual food provider						
Self	1	2	10	11	13	27
Parent	0	0	0	0	0	1
Spouse/partner	0	0	2	0	0	3
Shared	0	0	0	1	0	0

*n=1 missing, [‡]TAFE – Technical and Further Education, #available income data total n=121

In the low-to-middle income adult-only households, there were more food secure (n= 14) than food insecure (n=4) participants (Table 6-3). Participants classified as food insecure were either renting or owned their home with a mortgage. In comparison, half of the participants who were food secure were home owners without a mortgage. Three of the four food insecure participants' education was at tertiary level and-three were in full time, part time or casual employment. Five participants who were food secure were retired and six were employed in full time, part time or casual work. Household structure across both groups of participants was mainly either living alone or with spouse or partner.

Table 6-3 Demographics of adult only households (n= 51) across income groups according to food security status[#]

Variable	Very low income (n=16)		Low to mid income (n=18)		Higher income (n=17)	
	Food Insecure n=5	Food Secure n=11	Food Insecure n=4	Food secure n=14	Food Insecure n=0	Food secure n=17
Gender				*		
Male	1	5	0	4	0	2
Female	4	6	4	9	0	15
Prefer not to say	0	0	0	1	0	0
Age						
18 – 25	3	0	1	2	0	1
26 – 35	0	0	0	1	0	10
36 – 45	1	0	1	0	0	2
46 – 55	0	1	0	4	0	2
56 – 65	0	3	2	3	0	1
Over 65	1	7	0	4	0	1
Country of Birth						
Australia	5	7	3	7	0	13
Other	0	4	1	7	0	4
Living arrangements						
Home owner, mortgage	0	1	2	4	0	9
Home owner, no mortgage	0	6	0	7	0	5
Renting, privately	1	0	2	2	0	3
Renting, public/social housing	2	0	0	0	0	0
Boarding	1	0	0	0	0	0
Other	1	4	0	1	0	0
Household Structure/Composition						
Living alone	2	3	1	1	0	0
With parents/family	0	0	0	2	0	0
With spouse/partner	2	5	1	11	0	15
With spouse/partner & children over 18 years	0	2	0	0	0	2
With my children over 18 years	0	0	1	0	0	0
Living in a share house	1	1	1	0	0	0
Number of people in household						
1	2	3	1	1	0	0
2	3	6	3	12	0	14
3	0	2	0	1	0	0
4	0	0	0	0	0	3

Variable	Very low income (n=16)		Low to mid income (n=18)		Higher income (n=17)	
	Food Insecure n=5	Food Secure n=11	Food Insecure n=4	Food secure n=14	Food Insecure n=0	Food secure n=17
Education Level Attained						
Completed some school	0	2	1	3	0	1
Completed school	1	2	0	1	0	0
TAFE*, diploma or trade	2	2	0	2	0	2
Any completed tertiary study	2	5	3	8	0	14
Employment						
Full-time paid work	0	0	2	3	0	11
Part-time paid work	0	2	0	2	0	3
Casual paid work	0	0	1	1	0	0
Self-employed	0	2	0	0	0	2
Unemployed	2	0	0	1	0	0
Retired	0	6	0	5	0	1
Carer	0	0	0	1	0	0
Volunteering	1	1	0	0	0	0
Studying	2	0	1	1	0	0
Main Transport						
Car	3	10	3	13	0	14
Walking/Bike	1	0	1	0	0	0
Motor Bike	0	0	0	1	0	0
Public Transport	1	1	0	0	0	3
Number of cars in household						
0	1	1	1	0	0	0
1	2	3	1	7	0	4
2	2	7	2	6	0	10
3	0	0	0	0	0	3
4 or more	0	0	0	1	0	0
Usual food provider						
Self	4	7	4	9	0	16
Parent	0	0	0	3	0	0
Spouse/partner	1	1	0	2	0	1
Carer	0	2	0	0	0	0
Shared	0	1	0	0	0	0

*TAFE – Technical and Further Education, #available income data total n=121

Severity of Household Food Security

The food security severity level of all survey participants across all income groups was analysed and described as marginal, low and very low food security. In adult-only households across all income groups were classified as marginal (n=5), low (n=5) and very low food (n=2) food security, respectively. Households with children were classified as marginal (n=13), low (n=10) and very low food (n=4) foodsecurity, respectively.(Figure 6-2)

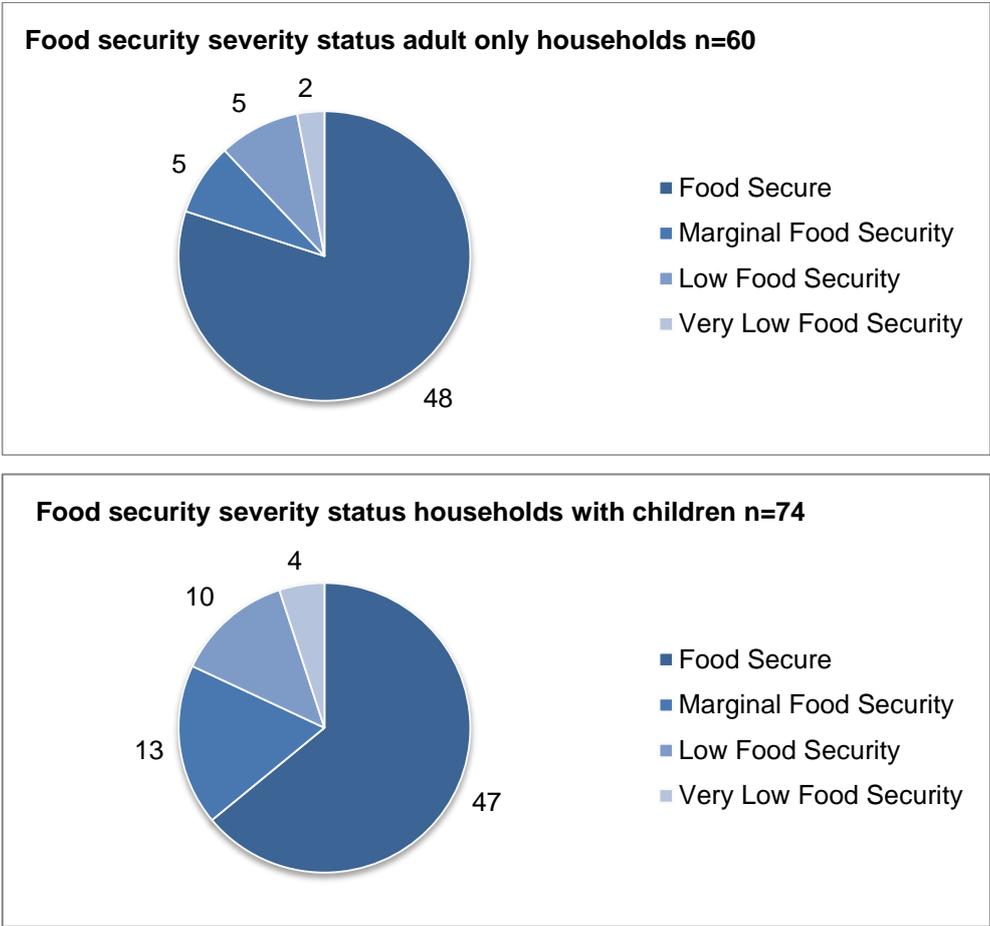


Figure 6-2 Food security severity status according to household type n=134

Responses to United States Department of Agriculture Household Food Security Survey Module

Table 6-4 describes the frequency of responses across all participants and those within the low-to-middle income group who responded affirmatively to the adult and child questions in the 18 item USDA HFSSM. The USDA HFSSM questions are structured in order of increasing severity of food insecurity experience.(14) Across all income groups and low-to-middle income participants the most frequent responses to the adult specific items pertained to worrying about running out of food and being unable to afford to eat balanced meals. Three participants in low-to-middle income group reported that in the last 12 months they or other adults in the household did not eat for a whole day because there was not enough money for food.

Within the child-specific questions, eight participants in the low-to-middle income group reported relying on different low-cost food to feed their children due to running out of money to buy food. Additionally, three participants indicated that they were unable to feed their children a balanced meal as they were unable to afford it.

Table 6-4 Food Security in Melbourne Households Survey number of affirmative responses to the United States Department of Agriculture Food Security Survey Module

United States Department of Agriculture Household Food Security Survey Module USDA HFSSM question item	All respondents n=134	Low-to-middle income n=42
Adult specific items		
We worried whether our food would run out before we got money to buy more.	25	9
The food that we bought just didn't last and we didn't have money to get more.	15	7
We couldn't afford to eat balanced meals.	21	10
In the last 12 months, did you or other adults in the household ever cut the size of your meals or skip meals because there wasn't enough money for food?	17	7
In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?	17	6
In the last 12 months, were you ever hungry, but didn't eat because there wasn't enough money for food?	7	3
In the last 12 months, did you lose weight because there wasn't enough money for food?	7	2
In the last 12 months did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?	5	3
Children specific items		
We relied on only a few kinds of low-cost food to feed our children because we were running out of money to buy food.	16	8
We couldn't feed our children a balanced meal, because we couldn't afford that	7	3
The children were not eating enough because we just couldn't afford enough food.'	3	0
In the last 12 months, did you ever cut the size of any of the children's meals because there wasn't enough money for food?	0	0
In the last 12 months, did you ever cut the size of any of the children's meals because there wasn't enough money for food?	0	0
In the last 12 months, were the children ever hungry but you just couldn't afford more food?	0	0
In the last 12 months, did any of the children ever skip a meal because there wasn't enough money for food?	0	0
In the last 12 months did any of the children ever not eat for a whole day because there wasn't enough money for food?	0	0

6.3 Case selection for qualitative phases: In-depth interview

The survey identified 42 low-to-middle income participants, 23 of whom consented to be contacted for participation in interviews. Six survey participants declined an interview due to illness, too busy with work commitments or no longer interested in further participation, Figure 6-3. Three interviews were conducted by phone due to participant transport difficulties and/or time constraints. Interview length ranged from 50-90 minutes.

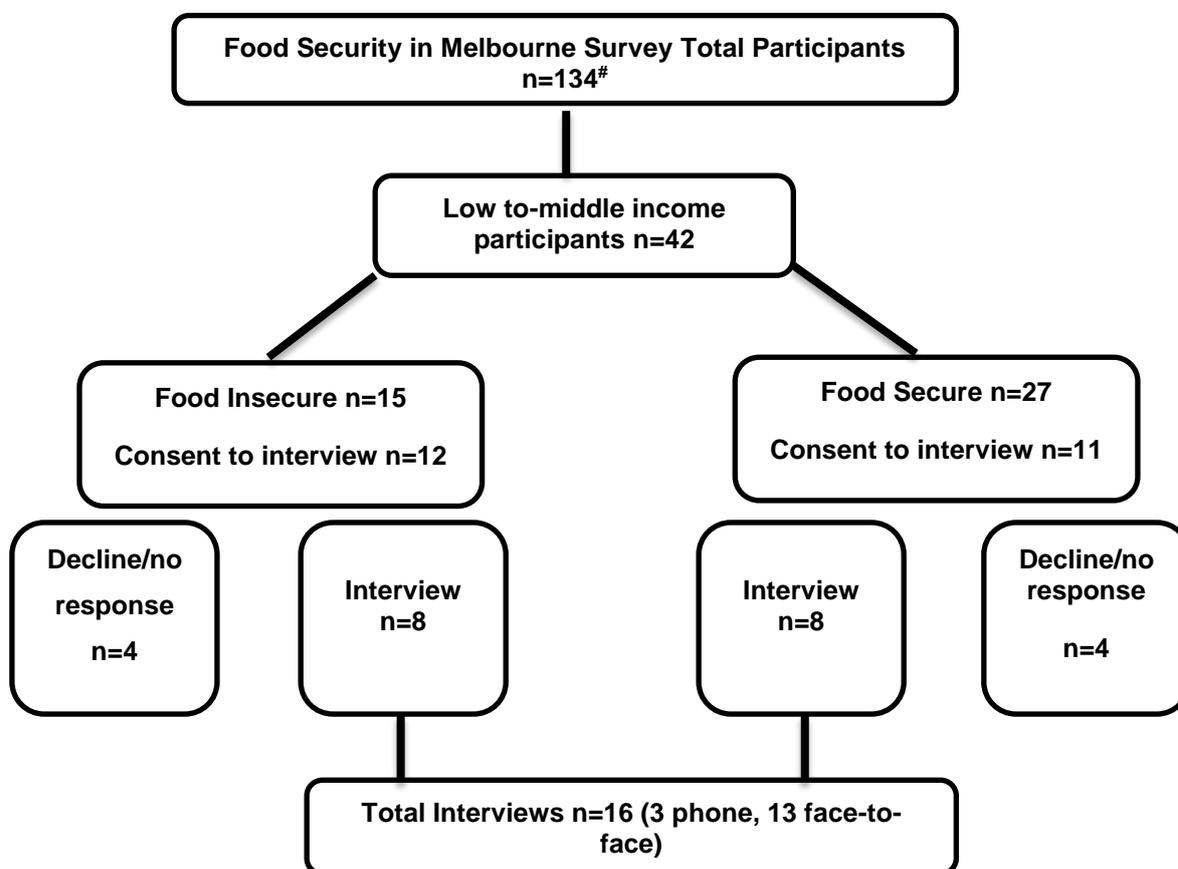


Figure 6-3 Summary of case selection for in-depth interviews

#available income data total n=121

Interview participants included one male, and the remainder were female (n=15), eleven participants owned a house with or without a mortgage and seven participants had children present in the household (Table 6-5). Table 6-6 details the food security

severity level of the eight interviewed participants who were food insecure. After 16 in-depth interviews across both food secure and food insecure participants were conducted and analysed the researcher believed there was adequate depth and breadth to the phenomenon under investigation that further interviews were not sought.

Table 6-5 Demographics of food secure and food insecure in-depth interview participants

	Total Participants n=16	Food Insecure n=8	Food Secure n=8
Gender			
Male	1	0	1
Female	15	8	7
Age Group			
18 - 25	2	1	1
26 - 35	4	2	2
36 - 45	4	3	1
46 - 55	3	0	3
56 - 65	2	2	0
Over 65	1	0	1
Country of birth			
Australia	9	5	4
Other	7	3	4
Living arrangements			
Home owner, mortgage	7	4	3
Home owner, no mortgage	4	1	3
Renting, private	4	3	1
Other	1	0	1
Household structure			
Living alone	2	2	0
Living with parents/family	2	1	1
Living with spouse/partner, no children	4	1	3
Living with my spouse/partner & children <18years	7	4	3
Single, living with my children < 18 years	1	0	1
Number of Children in household			
0	7	3	4
1	2	1	1
2	6	3	3
3	1	1	0
Education level			
Completed some school	4	2	2
Completed secondary school	3	2	1
TAFE ^s , diploma or trade	1	0	1
Any completed tertiary study	8	4	4
Employment			
Full time paid	4	2	2
Part time paid	1	0	1
Casual paid	1	1	0
Work without pay/ volunteering/ carer/ home duties	4	1	3
Retired	1	0	1

	Total Participants n=16	Food Insecure n=8	Food Secure n=8
Studying + casual/part time work	4	3	1
Studying + house duties	1	1	0
Household income			
\$40,000 - \$59,999	6	4	2
\$60,000 - \$79,999	10	4	6
Income source			
Salary	9	5	4
Salary & Government benefit	5	3	2
Savings & super	1	0	1
Savings & Government benefit	1	0	1
Main transport			
Car	14	6	8
Active transport (walking/bike) & car	1	1	0
Public transport (tram/bus/train)	1	1	0
Car Number			
1	7	4	3
2 +	9	4	5
Main food provider			
Self	11	7	4
Shared	5	1	4

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Table 6-6 Food Security Severity Level of Food Insecure Participants Selected for Qualitative Phase

Food Security Severity Level	All Food Insecure Households (n=8)	Households With Children (n=5)	Households Adults (n=3)
Marginal Food Security	4	2	2
Low Food Security	2	1	1
Very Low Food Security	2	2	0

6.4 Qualitative results

The focus of Part 2 of this thesis was to elicit the lived **EXPERIENCES** of the phenomenon of food insecurity/security. The FSiMHS data indicate that low-to-middle income householders are experiencing food insecurity. The remainder of this chapter presents the qualitative interview data illustrating participant's experiences of food insecurity/security. A biographical summary of each food secure (FS) and food insecure (FIS) participant are presented in Appendix 7 to highlight further information about each participant's experiences. Within these, significant life points or events described by each participant in the interview are summarised. These profiles were established by the participant's emphasis placed on these points and further probing in the interviews. Second, interview themes are presented in Table 6-7 summarising differences and similarities in experiences between and across FS and FIS participants. Finally, each theme and corresponding sub-theme is described, detailing the stories of participant's experiences.

6.5 Identified themes and their interaction

Thematic analysis of the interview data identified five themes and 10 subthemes that supported the lived experiences of food security and food insecurity for participants Figure 6-4.

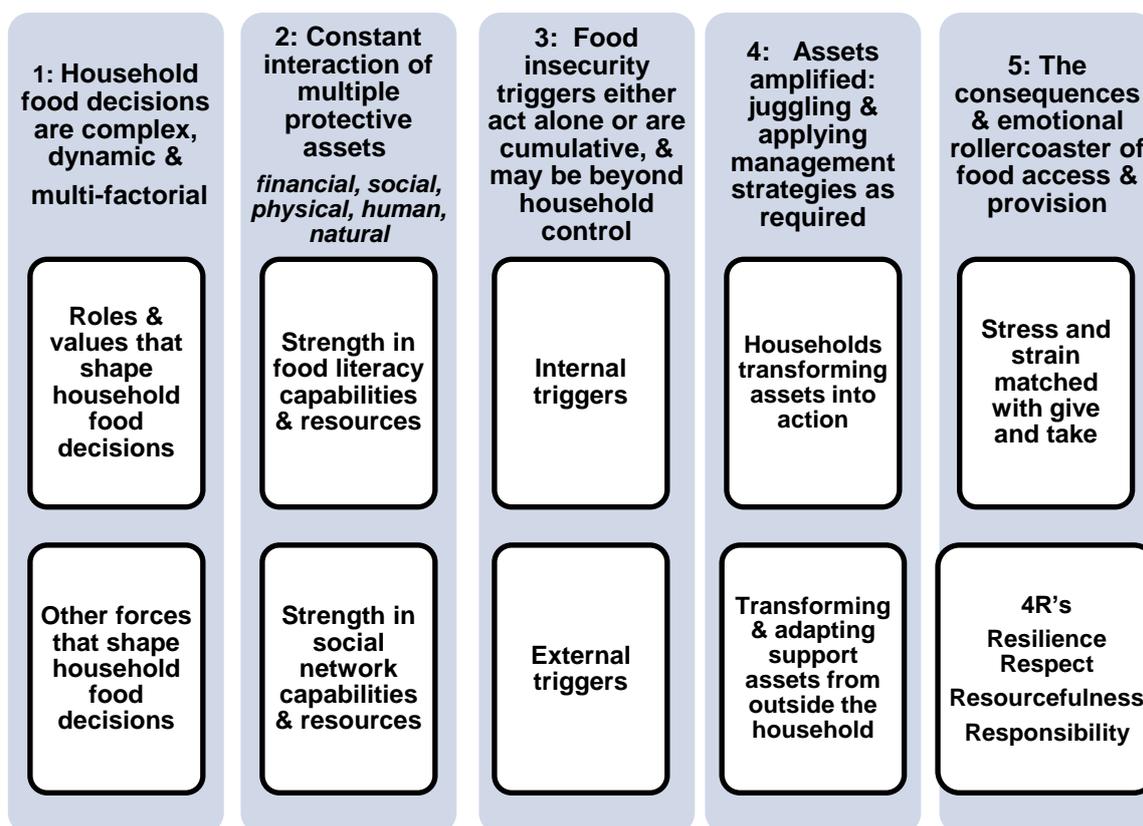


Figure 6-4 Themes and subthemes identified from in-depth interviews

These themes and corresponding subthemes are summarised in Table 6-7, outlining the key similarities (both FS and FIS participants) and differences between and across FS and FIS participants. These will be expanded upon, compared and contrasted in further detail with the use of participant quotes in this chapter.

Table 6-7 Theme and Subtheme Comparison between and across food secure and food insecure participants

Themes and sub themes	Both Food Secure & Food Insecure Participants	Food Secure Participants	Food Insecure Participants
Theme 1: Household food decisions are complex, dynamic and multi-factorial			
Subthemes:			
<i>Roles and values that shape food decisions</i>	<ul style="list-style-type: none"> • Food is a priority especially if children present - still the need to balance the budget. • Influenced by household food culture and previous experiences. • Food provides connection to community. Shopping at local, smaller shops. Formal and informal produce swaps. Leads to personal relationships. • Social eating important. • Food literacy skills/resourcefulness developed in war time passed on through family. Food role models are important for households • Importance of possessing food literacy skills – despite gender but still clear household roles. Women food gatekeeper • Households defined food gatekeeper. 	<ul style="list-style-type: none"> • Food metaphor for family, stability and enjoyment. • Greater sense of freedom for social eating. But less likely to eat out with children due to cost. • Food culture may be different (more positive) in these households embedded in previous experience - positive and negative 	<ul style="list-style-type: none"> • Difference in role of food gatekeeper who may also manage all bills etc. - stress/pressure unsurmountable burden. Job is to provide what you want for family versus what you can. • Food is the priority especially if children are present but this is a challenge when the budget is pressured • Stress related with social eating – budget manipulation required. Dilemmas created and potential ramifications for the week/month. Difference when things are better financially. • Cultural pressures of providing food for extended family – made difficult by budget. • Household food culture and roles -tensions and differences between partners may create stress.
<i>Other forces that shape household food decisions</i>	<ul style="list-style-type: none"> • Most food secure and all food insecure driven by budget (\$50-\$200 or more/week for food), cost of living, cost of food – key driver • Nutrition/health an important force – especially if special diet requirements • Time available to cook shop, think about food- impact on where and when • Local shopping where able • Quality and variety 	<ul style="list-style-type: none"> • Cognisant of food ethics – supermarket duopoly. Some households' greater capacity financial/ knowledge - able to respond • Frustrations on amount spent on food – questioning value for money 	<ul style="list-style-type: none"> • Budget tightrope – constant compromises to food choices • Vigilant shopping – constantly on the watch for specials, use catalogue watching • If things were different would shop differently – ethics/free range/ not home brand – entertain these ideals and may implement to a point that the budget allows • Difficult to maintain variety in food choice at times. • Try to minimise pandering to children's fussy eating as impact on budget

Themes and sub themes	Both Food Secure & Food Insecure Participants	Food Secure Participants	Food Insecure Participants
	<ul style="list-style-type: none"> Challenges of maintaining food cultural identity for some of households 		
Theme 2: Constant interaction of multiple protective assets –financial, social, physical, human, natural			
Subthemes:			
Strength in food literacy capabilities and resources	<ul style="list-style-type: none"> Budgeting skills and strategies are defined but differing intensity level across all households Highly refined planning, food preparation, shopping assets Food storage capacity supports planning assets Cooking role models to support the development of this life skill Food knowledge of food alternatives - supporting modifications to food for the households. Knowledge of growing food has social benefits and can be actioned as a strategy to manage periods of stress when food access is difficult. Resourcefulness present and developed based on life experiences. 	*	<ul style="list-style-type: none"> Budget assets are highly refined, creative, time consuming and may be unique to the household but are in a constant state of play at greater intensity. Food cost literacy – developed capabilities to monitor food costs; this is matched with product knowledge Amplification of resourcefulness skills
Strength in social capital capabilities and resources	<ul style="list-style-type: none"> Connection to community/ agencies required to know what broader financial resources are possible. Communities look out for each other Relationships to support food literacy skills within and external to households – role models Growing food facilitates relationships with neighbours/ community 	*	<ul style="list-style-type: none"> Connections to broader community and social support from family and friends these relationship assets support other assets or may facilitate them to action. Greater sense of resilience drawn from within, based on personal experiences and at times less reliance on social relationships

Themes and sub themes	Both Food Secure & Food Insecure Participants	Food Secure Participants	Food Insecure Participants
Theme 3: Food insecurity triggers act alone or are cumulative and may be beyond household control			
Subthemes:			
Internal triggers	<ul style="list-style-type: none"> • Time available to shop, cook can manifest in households in different ways 	<ul style="list-style-type: none"> • Moving to an area with limited public transport infrastructure/no car – have financial resources but little physical access. • Episodic nature of triggers. Households may have experienced budget triggers in past life stages that has increased risk of food insecure recalling stress anxiety 	<ul style="list-style-type: none"> • Triggers/trigger risks are constantly in the background. • Budget/financial/ income triggers- shocks • Bill shocks- utilities, seasonal fluctuations • Living expenses- especially petrol pricing • Changes to household composition - short or long term but the impacts are felt for length of time. This may include the addition of a child or family member (adult child/sibling) coming to stay for a period of time. • Change in relationship status - divorce • Budget stress of trying to shop in bulk, shop specials- trying to plan ahead. • Child care fees increasing and Government support not responsive.
External triggers	<ul style="list-style-type: none"> • Perceived fluctuations in cost of food • Physical access to food shops – availability beyond the Coles/Woolworths supermarkets – the preference for local shopping 	*	<ul style="list-style-type: none"> • Households may not have financial resources to weather food cost changes especially when this is added to other internal triggers. • Income /pay disparities even with qualifications- in a trade working for self-versus in a salaried position. • Perception by some of taxation system and policy level supports either the very low income or higher income but often the average income misses out. This then impacts on household resources available.
Theme 4: Assets amplified: juggling & applying management strategies as required			
Subthemes:			
Households transform assets into action	<ul style="list-style-type: none"> • Assets are enacted in both households but at different levels (amplification effect) 	<ul style="list-style-type: none"> • Budget/shopping management assets are present but are not or rarely amplified to the extent of food insecure households. 	<ul style="list-style-type: none"> • Asset pooling and juggling across the households. Often it is just the assets from household gatekeeper wearing the stress and strain. • Amplification of transformation of assets • Highly refined budget /shopping management strategies

Themes and sub themes	Both Food Secure & Food Insecure Participants	Food Secure Participants	Food Insecure Participants
			<ul style="list-style-type: none"> Number of food planning assets are used in combination with other assets around budgeting and shopping Assets used in all situations at home – day to day, entertaining at home and eating out/ purchase of takeaway food
Transform & adapt assets with external support	<ul style="list-style-type: none"> Both may receive financial support from Government benefits – Family Tax Benefit, Child Care Rebate, study assistance. Households attend community based activities- gardens, farmers markets – similar (food source, social) but with some difference in purpose. Is this a strategy of this income group? 	<ul style="list-style-type: none"> May have the social support assets but serve a different purpose than in FIS households. Not used as a food access means. 	<ul style="list-style-type: none"> Households may require the assets that are transformed through social / financial support – community, family or friends, not through welfare/food relief agencies. Issues of inability to access, pride; there are those who are in greater need. Households relied on grandparents to pay for activities or bring food or 'shout' lunch in food court
Theme 5: The consequences & emotional rollercoaster of food access and provision			
Subthemes:			
Stress and strain matched with give and take	<ul style="list-style-type: none"> Attempts to protect children if food is scarce Frustrations in both households: cost of foods, availability of food, marketing of food 	<ul style="list-style-type: none"> Some food secure households that have experienced food insecurity or have been at risk of in lifetime reflected on the level of impact of the experience and the strain, and how this has shaped their desire to not experience this again – stress, embarrassment. 	<ul style="list-style-type: none"> Key difference of compromise on food quality, quantity and nutrition – these are constantly amplified across households compared to FS. Compromises may be limited to one person in the household – food gatekeeper Guilt associated with compromises especially if other household members (children) are affected. The relentless, constant stresses of making ends meet – the load of this potential for allostatic load and impacts on physical, social and emotional wellbeing. This is amplified in these households. Social consequences – compromise that is made to these opportunities and potential repercussions to self and household budgets. Frustration at lack of support/policy for middle income - federal Government
4R's: Resilience,	<ul style="list-style-type: none"> Pride/respect in strategies and skills that a household may possess especially relating to food procurement, cooking and sharing 	<ul style="list-style-type: none"> Present and in action but the intensity may vary across and within households 	<ul style="list-style-type: none"> Present in FIS households but is greatest for the food/household gatekeeper – amplification effect

Themes and sub themes	Both Food Secure & Food Insecure Participants	Food Secure Participants	Food Insecure Participants
<i>Respect, Resourceful & Responsible</i>	<ul style="list-style-type: none"> Resilience/Respect/Resourcefulness Responsibility/ -present in all households, but greater in FIS households 		

* No additional difference noted.

Figure 6-5 presents a visual representation of the themes and their relationship and interaction. The findings suggest a complex interaction of themes and subthemes occurring at varying levels for both FS and FIS participants. Food access and provision was bound by consequence and emotional highs and lows across both FS and FIS households but the degree of emotional highs and lows were amplified in the stories from FIS participants. This is depicted in the illustration as an outer circle with high and low points. The low points relating to the consequences of difficulties were bound in stress, anxiety, concern that was present at most points for FIS participants. The triggers impacted at all levels of the themes. These themes and their interactions will now be examined in the detailed analysis of each theme according to participant food security status.

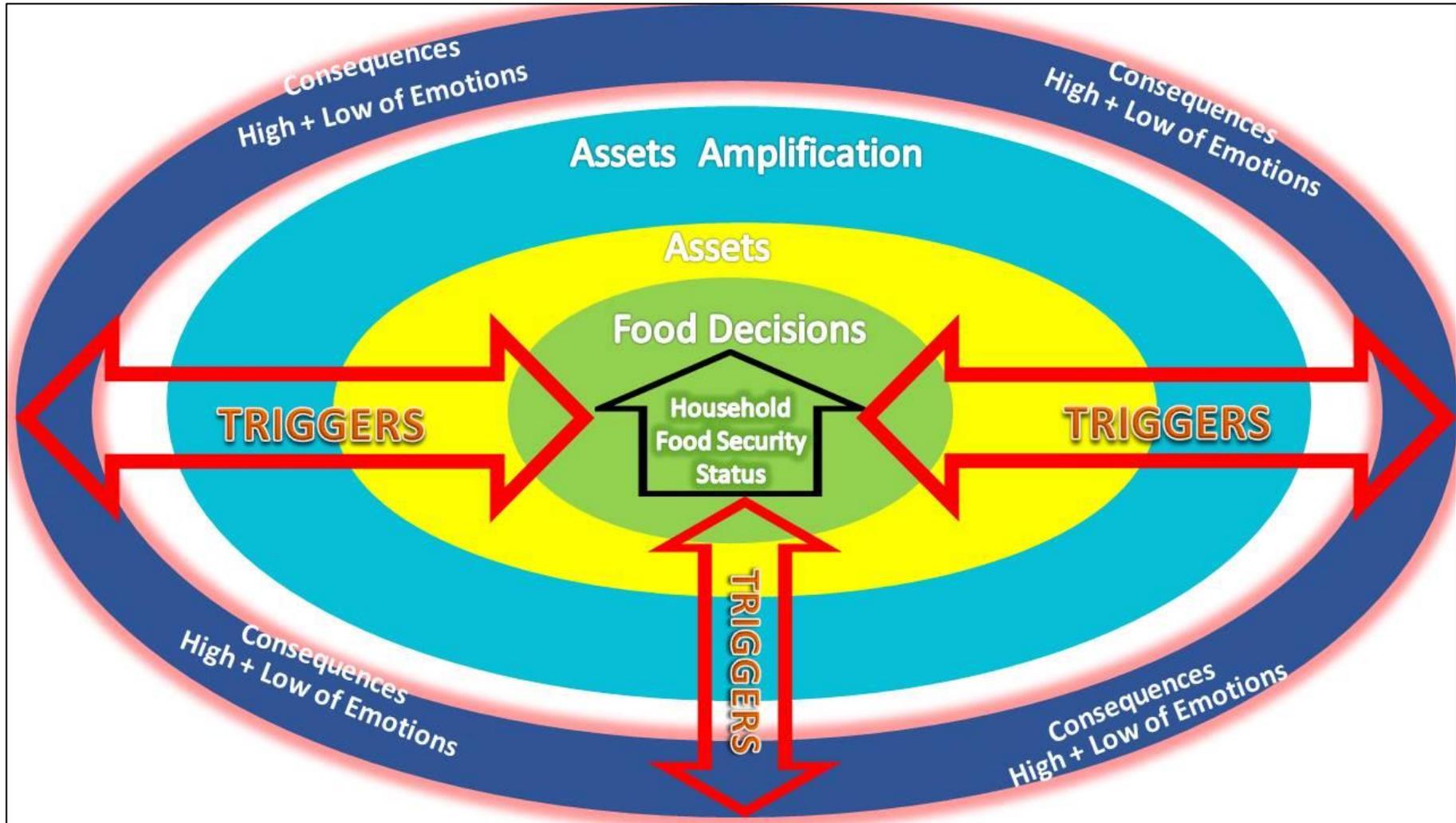


Figure 6-5 Visual representation of themes and their interaction

6.5.1 Theme 1: Household food decisions are complex, dynamic and multifactorial

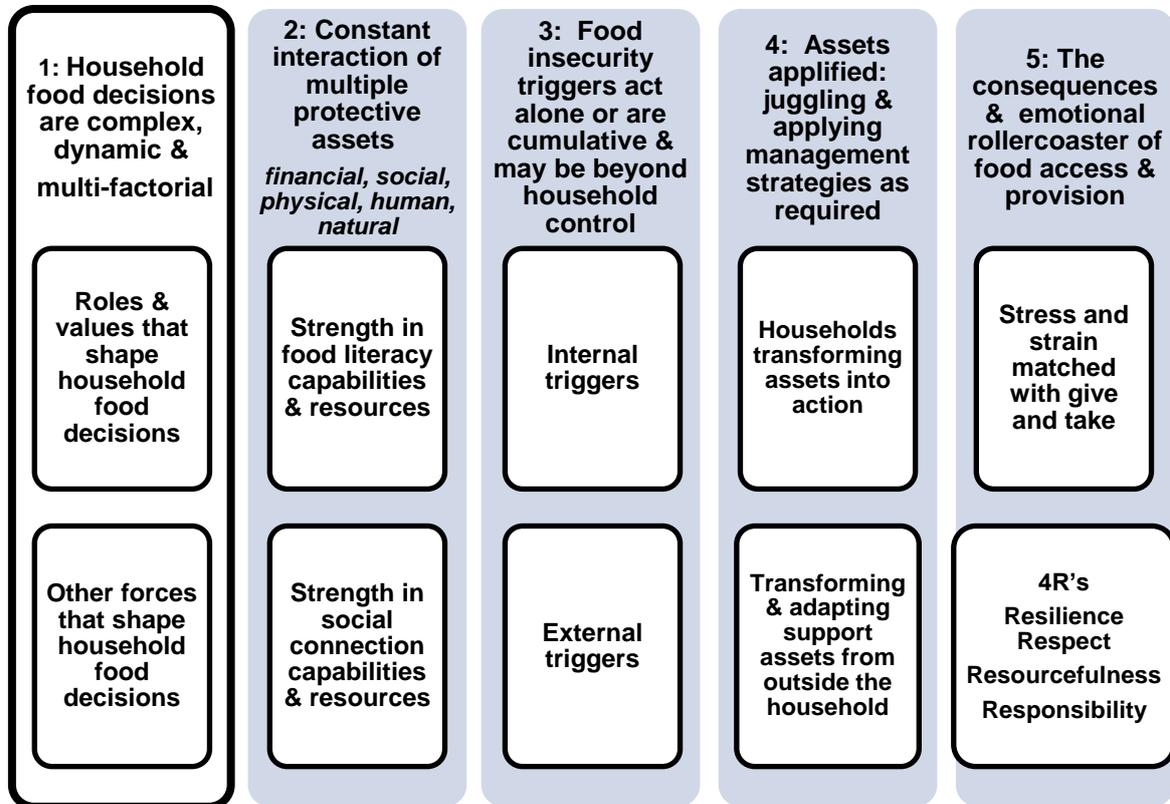


Figure 6-6 Themes and subthemes identified from in-depth interviews: Theme 1

Regardless of food security status, household food decisions were complex, dynamic and multifactorial in nature, with an array of influencing factors. Food decisions were complex because a number of decisions were interconnected. Dynamic in this context was characterised by constant change occurring in participants' households. Multifactorial meaning stemmed from a range of influences. Within a household, the role and values associated with food, and internal forces of food budgets, food preferences, and special dietary requirements were impacting factors. External factors to the household, such as food pricing and food availability also contributed to the dynamic nature of food decisions.

Irrespective of food security status, participants described the presence of children in their household, regardless of age, as a key influencing factor, both positive and negative on food decisions. These participants described how children placed extra

pressures on food decisions, resulting in the need to juggle the balance of budget, nutritional adequacy and quantity of food.

'It is primarily driven by money, and then health. What are healthy meals; what can the finances allow to have healthy meals?' Clara (FIS)

'Juggling the kid's commitments, my work and study, my special dietary needs and keeping the budget in mind but eating healthy is important'. Ava (FS)

Where participants were experiencing, or were at risk of, food insecurity, there were additional pressures on food decisions for the household, where the complexity and interaction of deciding factors was magnified.

Sub-theme 1.1: Roles and values that shape household food decisions

The role and value of food in a household was important in the decisions of both FS and FIS participants. These roles and values were complex and, for some, dynamic over time, based on life experiences and life stage. Participants' description of the role of food was diverse: providing connection to community, nutrition or, in a metaphorical sense, providing positive or negative meaning or context to situations.

'Food day to dayIt's like a key performance indicator that I need to meet.' Clara (FIS)

'Food to me is stability. Family, food around a table, is stability. .. now that I'm older, I do a lot of cooking for my family. Come over, and it's something that I guess . .food and family go together. So I couldn't imagine - I would never let my kids go without or even myself... - I guess food's what holds your family. Food is family – it means everything.' Amelia (FS)

Nutrition considerations were important in decision making for all participants, especially when children were present, however the meanings and values ascribed to food went beyond this. Participants valued food as being a priority, something to be enjoyed and providing social and community connection. The latter was achieved by growing food together, sharing produce with neighbours and shopping at local food outlets. Participants identified the influence of household roles and responsibilities in supporting the values and roles of food in day-to-day life. The

extent of this varied dependent on household composition, presence of children and food security status. Those who were FIS especially for financial reasons reported experiencing greater stress, time and energy around these decisions, due to the limited (or rationing of) resources required to occur across the household.

Roles and values of food were influenced by childhood experiences. These experiences had a profound effect translating and shaping into adulthood rituals, norms and priorities around food for both FS and FIS participants:

'I suppose, the way I've grown up, in a family that have always cooked food despite how busy the parents are..... every meal was cooked... Most of it was eaten together, as long as we were in the house. Dinner was always eaten together. So I suppose I've come from that tradition, and that's the norm for me.... it's very important for me to continue doing that... 'Eating is a very important fact of life! ... I think that sort of growing up that way makes food really important. I'll definitely put it above holidays. If food was for some reason to become really expensive, then I would choose to eat good food.' Sara (FS).

Regardless of food security status, if participants' childhood food experience was negative they then strove to make it different; by valuing learning how to cook and having a food routine. In such examples there were feelings of pride about making a difference to the value of food:

*'I don't want my kids to get the same things all the time like I did.... People talk about the kids' lunches I send.'*Fay (FIS)

Participants described the challenges of establishing the role and values of food within their current living situations, for some this required negotiation especially when there were contrasts in pre-existing values between partners:

'He has quite a culturally-different background ... his history of food consumption is very different to mine... [What] his family would normally eat is very different to the things that my family would, for example fruit and veg, versus cola and fried food.' Sophie (FIS)

Regardless of food security status food was a priority in its provision and nutrition context. This value of food as a priority was often challenged in FIS households where the budget was tight and there were often greater competing demands for the food dollar:

*'I would go without **anything** to make sure that food was on the table..... I would go without electricity,.. everything, to make sure that food was on the table.'* Amelia (FS)

Whilst food was associated with enjoyment and social contexts by participants there was greater evidence of this by FS participants:

'We say that we eat, but ...if you sat down and ate a meal by yourself, it would be completely different to sitting down and eating a meal with kids, or family or friends. You just enjoy it so much more when you've got someone to sit there with you and enjoy it.' Ava (FS)

The enjoyment of food was not limited to the act of eating food but also related to the procurement of food and wanting to shop and source local food. This was described by both FS and FIS participants. Growing food either in the backyard or a community garden was seen by all participants as a relaxing and enjoyable activity with a number of benefits. First, produce could supplement food for the household; second, as a learning activity for children; and finally fostering connections to community.

Associated social values of food were described by both FS and FIS participants in the context of food decisions. FIS participants detailed the conundrum in attempting to maintain these values when making food decisions. Reportedly this caused stress, and anxiety in maintaining or participating in these experiences, and it sometimes impacted on the enjoyment of eating situations. Stress levels were heightened in some households with greater levels of food insecurity. Participants described how a series of questions were constantly weighed up: Where was the outing? Could the family be fed for under \$20? Could the food be shared amongst the household? Was it socially acceptable to take your own snack when meeting peers for coffee in the university café?

'I try to avoid it .. most I'll have is a coffee a day from uni,....otherwise I'll just take nuts or whatever is in the cupboard with me, ...if they buy lunch ...I usually just take my tuna or biscuits and stuff. Of course you miss out, but - there are times when I was really hungry and I didn't have it, so I had to buy it. That would mean..., 'Okay, what am I going to do about that money when I shop on the weekend?' Ann (FIS)

The product of these decisions was reported to have a twofold impact: the amount of money available for food was reduced, and the participants were at risk of social isolation. Maureen's struggle in maintaining the balance of budget and the social aspect of food meant that she had not gone out to eat in a café or restaurant for ten years. Some FIS households described times when finances were more comfortable; there was a sense of relief and freedom to be able to decide to eat out and socialise. When experiencing food insecurity the decision to socialise at someone's house often had a hidden agenda: namely to buffer their food insecurity by being provided a meal or a snack.

In contrast, FS participant's described food as a medium to socialise over, with a greater sense of 'freedom' enabling social situations. This in part was reported to be influenced by a greater budget available providing flexibility, their life stage and the presence of children in the household. Eating out with children was reserved for special occasions because of the cost of eating out as a family. Often it was more economical and often less stressful to eat at home:

'We limit our eating out activities really just to birthdays for the 4 of us....we can't afford it.' Rowena (FS)

The development of the role and value of food to enable connection to community facilitated multiple benefits beyond food decisions. Some FS and FIS participants reported the role of food as a social conjugate, feeling part of a community, supporting decisions on where to shop for food:

'I think the old strip shopping .you've had interaction with the community, you've found out what's happening with people. That would be a great way of changing the way I do all my food shopping... because you have social interaction with the community.' Ava (FS)

Participants identified the role of a household food gatekeeper. This person often was the key decision maker and bore the load of thinking about and sourcing food and preparing it, even if some food roles were shared. While this role carried responsibility across all participants, for those FIS it was especially associated with stress and pressure pertaining to decisions. For two women experiencing low and very low food security, they carried an insurmountable burden of this for the household with no support from other household members:

'I used to be an independent girl .. her own money does what she wants to do ... Now my husband is paid fortnightly, so I try and juggle, knowing how much is leftover and trying to plan ahead, and what I can and can't get'
Clara (FIS)

Long term and well-established household roles could be differentiated amongst households impacting on the household food role and value:

'My husband is not one ... to take my stress levels on board, ... So, I do take it all on ... being the stay-at-home mum, that's almost my job. I'm not out making the money, so I need to make the best choices I can, being - not that it's his money, it's the family's money, but he's the one that's making it I do all the bills. I've been asking for 15 years for him to ask me at least once a fortnight where the bills are, and I'm still banging my head against that brick wall.... whether I put it on myself or whether it is just there because that's the situation. He's not inclined to, so I just do it. I think that's where I can say it's really, really shit, because I take it all on. Just me 'Clara (FIS)

Societal messages around gender and household food preparation roles were indirectly referred to by participants. All participants described the importance of the life skills of shopping, budgeting and food preparation regardless of gender; however, in reality, women were the main food gatekeeper, except for two FS participants.

Sub-theme 1.2: Other forces that shape household food decisions

Participants described a range of internal and external factors that shaped food decisions. These factors were often complex in nature, varied and perceived to be beyond their control. Additional internal household factors influenced food decisions for both FS and FIS participants. These included money available for food and family food preferences; specifically, special dietary needs, cultural or fussy eating. However, the crucial external factor impacting on food decisions beyond a household's control was the cost of food, which influenced shopping location, purchasing practices, food choices and brands. This presented challenges, especially for FIS participants attempting to maintain nutritional quality and general quality of food.

A hierarchy of key drivers influencing and impacting on food decisions was evident. This hierarchy was more pronounced for FIS participants. While these key drivers impacted food decisions they also often doubled as triggers for FIS participants and will be discussed in Theme 3. Money available for food was a key deciding factor that was often linked with other factors for households, including food cost, nutrition, and number of people in household.

Budget available, food costs and where to shop

The food budget, food costs and choice of shopping location were inextricably linked for all households

Household food budgets varied dependent on household composition and financial situation. Food budgets ranged from A\$50-\$200 or more per week. An exception was one FS respondent, a retired man who described that whilst he and his wife did not have a set weekly amount for food, they would not compromise on variety or quality. Some FS participants' budgets may have some flexibility with spending, however those households with children especially kept a close watch:

'You've got a budget that you can't overspend anyway. It's frustrating, because you do spend a lot of money on food. We look at our budget and go, 'Where is all that money going? It's all on food!' And it's all just gone, like, there's nothing there to show for it.But that's just because it is the cost of living 'Ava (FS)

For FIS participants money available created a tightrope that when coupled with food costs was a key force in food decisions impacting on food choices and brands:

‘Food cost is a big one, because we’re on a really low income. – we’ve only got a really limited budget. Our grocery budget, if I go over \$100 for a week I freak out. ...it’s hard to have a balance between your values about what you want to eat ... That (managing the budget) by necessity is the most important factor... Try to plan, because I know that if I do last minute I make bad choices. Costly choices. Both in terms of money and dietary.’ Fay (FIS)

Household bills were prioritised and this subsequently impacted on the available food budget. Food was a flexible item in the overall household budget and was often routinely restricted, even in times of food security:

‘Going back years, it was always, meet my expenses first, and then what money I have left over is what I would do the shopping with. I think I’ve just stayed that way.’ Maureen (FIS)

The relationship between budget and food costs impacted on the decision of where to shop: supermarkets, smaller speciality shops or warehouse type supermarkets. This decision was influenced by promotional shopping discount strategies by supermarket specials, ‘spend and save deals’, providing rewards if a certain amount was spent.

Nutrition, special diets, quality and quantity of food

Food quality was an important influence for participants regardless of food security status. The quality of food in smaller or independent food traders, such as butcher, greengrocer, fish shop was viewed more favourably than at a supermarket. Local greengrocers’ stores were described as more trustworthy:

‘...It’s not got all the bright lights on it, and been sprayed with water so it looks all pretty. Could’ve sat on the back of a truck for six months.’ Clara (FIS)

'You connect with your food, so something to help people make wiser decisions, because they're seeing the food for what it is as opposed to it's in the pretty polystyrene bag in the supermarket.' Fay (FIS)

Special dietary requirements weighed heavily on food decisions due to their additional cost, availability in shops, knowledge required and the time taken to consider all these factors. In such situations, households decided to buy food in bulk or eat out less, opting to cook at home instead. This point was discussed in more detail by FS participants.

The importance of considering nutrition in decision making was mentioned by FIS participants; however, if the food budget was limited, specific food groups were prioritised over others:

'We get lots of fruits and vegetables. ... is always where the money goes first ... I will go for the cheapest option, but I will always buy them. But I try to stick to seasonality, which increases the chances of it then being on special they are really important to me. I'll make the saving elsewhere like meat.' Sophie (FIS)

One FIS participant described balancing the trade-off between cost, quality and the potential waste of food if the quality was inferior:

'It's a dilemma and sacrifice in the budget I buy the certain apples that may be \$2/kg more expensive but if I buy the cheaper ones they may be bad through the centre... so they are wasted...' this was contrasted with '*.... Some veg (capsicum) is discounted at end of day even if it's lightly bruised I can use it that night ... that might save me...'* Ann (FIS)

Food insecure participants with children reported the importance but dilemma, in balancing nutrition, food variety when on a restricted food budget. There was a juggle to maintain interest, break away from the monotony of usual meals and introduce new foods, while at the same time not wasting food.

Time available

Time available was also considered important in food decisions for all participants, especially when the main food gatekeeper worked, studied and/or cared for children. Seven of the sixteen participants interviewed were studying part-time or full-time. Time required to shop and prepare food required high levels of organisation. This impacted on decisions associated with foods purchased for convenience (for example, use of pre-prepared vegetables) and where to shop (for example, supermarket versus a mix of shops):

'...working part-time, studying full-time as well, and I've got the two kids, and I'm out every single night, and Saturday and Sunday for sport. It's, How can I do the best with what I've got, but without trying to affect our dietBut that's one of the biggest things that I probably think a lot of people have trouble with; is that time factor. ... So it might be saving a little bit of money, but then it's costing time, and time is probably more expensive now than that..' Ava (FS)

Cultural food decisions

Decisions on access and availability of culturally appropriate food was identified as an issue especially for participants who were new to Australia. Despite having financial resources, participants reported difficulties with physical access to these foods. At times, efforts to accommodate this cultural aspect of food decision-making added financial pressure and stress to FIS participants because of their expectations. Nancy described the cultural expectations of family when hosting celebrations including large amounts of food and specific, expensive cultural delicacies:

'We provide all the food so we need to plan a month in advance to afford it'
Nancy (FIS)

Food preparation skills and distance to shops

Participants' food preparation skills influenced food planning decisions, including what and how to cook and where to shop. Geographic location of shops and available transport was also important. If participants did not have access to a car

and they walked to the shops this determined the amount and type of food purchased in terms of heavier food items and fresh food.

Ethical decisions

Participants described concern about farmers and the role of supermarkets in driving prices down for farmers. They reported recognising the ethics of their food choices. Some perceived that the prices of fruit and vegetables were too cheap in supermarkets. Concerns around fair pricing for food producers and the duopoly of Coles and Woolworths (supermarket chains) on pricing and products were reported to influence decisions and purchasing patterns. While both FIS and FS participants were cognisant of these issues, FS participants had greater capacity to respond. For some FIS participants it was often prefaced by 'if I had more money I would be purchasing differently'.

6.5.2 Theme 2: Constant interaction of multiple protective assets

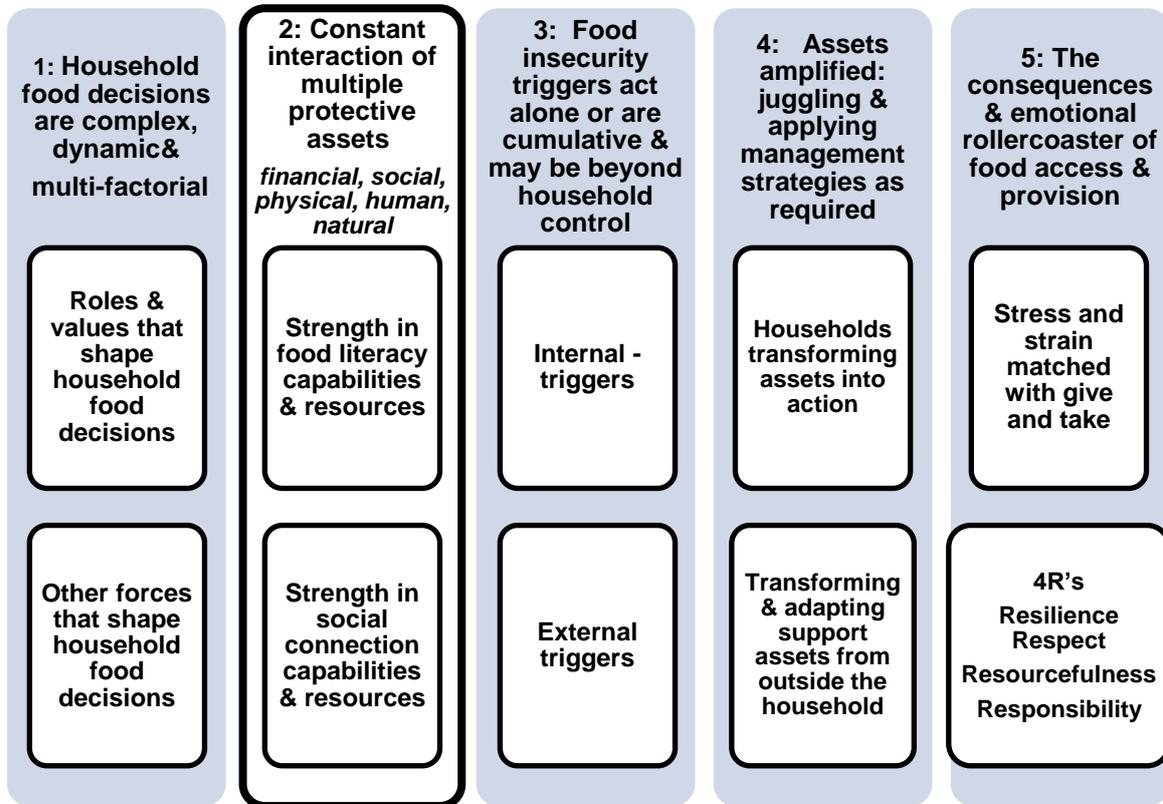


Figure 6-7 Themes and subthemes identified from in-depth interviews: Theme 2

Participants described an array of skills and strategies that were used to both protect and support food security. These skills and strategies - defined here as 'assets' - were a strength to participants and households; a resource that could be called upon at all times or at times of greater need. These assets could be categorised into financial, human, social, physical and natural. Assets were common across participants but often for FIS participants they were at a greater intensity, well-developed and varied. Two subthemes were evident incorporating these assets: 1) strength in food literacy capabilities and resources and 2) strength in social networks' capabilities and resources. These are defined and explored under each subtheme.

Sub theme 2.1: Strength in food literacy capabilities and resources

Food literacy was reported by households as a collection of capabilities and resources including: budgeting, food knowledge, growing food, food planning, and food preparation. All participants described these skills as invaluable to a household and often as a set of life skills. The development of these skills varied over the lifespan for both FS and FIS participants. For both participants who had family experience of World War 2, the food literacy capabilities and resources honed during wartime had a profound impact to this day. Participants described these capabilities and resources to broadly include fiscal measures, planning, rationing, growing food, and general resourcefulness with food:

'I think growing up with parents that experienced war and famine. My mum....owns a fridge and two freezers. My sister goes, ... all she ever does is just store food like there's going to be a famine.' Kate (FS)

'I was a kid in the war. You can imagine what it was like then. I have never gone hungry. My parents managed. Although they had no money they were very careful with food because that was the number one thing in the worldEven in the war. After the war when things were very ordinary in England, ...rationing was still there till 1953, ... I can never remember being hungry. So food is very important to me. We don't throw things away, that's what it amounts to. Unless it's actually gone off.' Eric (FS)

The food literacy strengths will now be discussed according to financial, human, natural and personal management assets.

Financial Management Assets

All participants described an array of financial management assets employed to manage food; however, the intensity or amplification of these skills was greater for FIS participants. FIS participants had a refined set of budgeting strategies that they had developed over time to protect and minimise financial strain, but these were often both laborious and time-consuming. Some FS participants reflected upon

periods in their life when their budgets were limited and their examples of greater intensity of their financial management strategies were consistent with those of FIS participants.

FS participants described the important resource of an overall budget for their household; but how it was used varied. This is in stark contrast to FIS participants where the budget was closely followed and monitored. All participants except for one described having a defined amount of money for grocery shopping. FIS participants also described the need to ensure that the bills were covered first, illustrating the flexibility or elasticity of the food budget:

'I meet all expenses first then what's leftover is for food.... Been doing it this way for years... I don't waste money when I shop.' Maureen (FIS)

'... depends on robbing Peter to pay Paul with the food budget..... it (the budget) literally does go to the last \$10 by end of the week... what level of food do we get for the week.' Clara (FIS)

One FS and one FIS participant specifically reported a crucial element of financial management capability as the capacity to save money in a specific bank account:

'We don't go over budget... most of the time we don't... so we are always trying to save.... We try... Everything has been about budget in our lives.' Amelia (FS)

Financial management skills were not fixed and continually evolved and adapted accordingly. One FIS participant described that despite having a range of strategies she required additional support to learn new skills from a financial management organisation as she continued to experience financial difficulty. These extra financial skills allowed her to save money however she acknowledged that saving is often still challenging:

‘With the new skills I can get a bit of savings so I can access that saving if I need toEaster or Christmas coming up I need extra money to make a big dinner for the family’...Kim (FIS)

Financial management assets extended to strategies that supported savings across the household such as cost of living savings. Some FIS participants described employing a range of practical measures to reduce utility bills, including using energy efficient light bulbs, turning the heater off an hour before bed, using heating and cooling only in certain rooms and energy saving applications on their phones. All agreed that they had not gone to the extent of not using heating and cooling at all, but rather would restrict its use.

Another financial management resource, used by both FS and FIS participants, was promotional shopping discounts such as loyalty schemes which earned points or ‘bonus’ money to spend. A crucial financial management strategy reported by FIS participants was the attention to the cost of food and what was deemed a food special. All FIS participants discussed strategies used when purchasing meat to reduce the impact on the food budget these included discount pricing stickers, dependent on the day and time of day and wholesale butchers’ specials.

Human - Personal Management Assets

Food preparation capabilities were seen as a life skill, strength and an invaluable asset regardless of food security status:

*‘Skill is a really important factor, and I think if it was lacking then the **struggle** would be exaggerated unnecessarily. There would still be really affordable, good food out there but I wouldn’t know what to do with it..... so skill is also important in the perception of affordability.’ Sara (FS)*

While three FS participants identified their need to develop these skills as an adult, all participants recognised that this was an important asset to develop through childhood and adolescence.

Both FS and FIS participants described a range of strategies including planning and organisation of food to support saving money and to have staples in the pantry if times got tough. This planning process had a number of steps: considering what food resources already existed in the household, including the garden, fridge and pantry, and it was overlaid by aspects of Theme 1 around food decisions. The personal skills and knowledge associated with food planning, shopping and cooking were recognised as a crucial, but time consuming, asset by FIS participants. FIS participants had a range of recipes on hand that could be used especially when the budget was tighter than normal. Sophie (FIS) and Kim (FIS) described these as a 'catalogue' or 'repertoire' of meals that could be prepared, especially with pasta and rice.

Food knowledge was reported in Theme 1 in the context of food decisions. Food knowledge was also described as an asset by all participants. It included food and product knowledge, recipe modification and knowledge of how food is grown. This resource was reported to help cutting costs on food spending and enabled recipe modification to support the budget or what was in the pantry at that time:

'Look if we can't afford meat then I add in things like beans/pulses seen as an alternative to meat.' Sophie (FIS)

FIS participants reported investing a large amount of time and energy into shopping routines visiting several food outlets from supermarkets, to bulk warehouse butchers, fruit and vegetable stores:

'I've done a lot of comparing, because having a child, it's notand studying full-time, it's not easy to be able to spend money on whatever you want kind of thing, so I had to look around and shop around.' Ann (FIS)

Both FS and FIS participants discussed the importance of having and/or being role models around food. These role models were often the household food gatekeeper. The ability to share food and cooking knowledge was important for all participants, especially where children were present:

'Setting them up for the future, teaching them to be resilient. Enabling to have a go and if they make a mistake that's ok.' Ava (FS)

If there was not a role model in the household, some participants were concerned that skills may be lost because skills were not passed on at home or learnt at school:

'People are not taught to cook these days....don't know if parents don't teach... if they don't know how... maybe they are not taught to shop properly.' Eric (FS)

A role model, family or friend, to share food knowledge on where to shop and source culturally appropriate food was described as an important asset by some participants when they were newly arrived in Australia.

All participants described the personal capability of resourcefulness with food literacy developed as a result of life experience. However, this level of resourcefulness seemed to have a different sense of urgency and purpose in FIS households. Additionally, personal life experiences were reported to support resilience, especially to deal with the relentless struggle of making ends meet:

'...My mum was a single mum at 17, brought me up by herself. So, I have my life lessons, having impacted ... I think the way I feel about certain things, as if someone who had a completely different upbringing would influence how they look and rationalise their finances, their food, their choices.' Clara (FIS)

Natural Management Assets

Access to resources that enabled the growing of food such as land, yard space, community garden or pots was reported as an asset for all participants. Regardless of the amount of produce grown, it supplemented food for the household. The knowledge and skill of growing food was reported as an asset for both the present and the future and potentially prevented food insecurity. Sara (FS) described

growing food as the missing link in food security. Additionally, growing allowed for an opportunity to access culturally appropriate vegetables and herbs.

Physical Management Asset

Additional assets reported by all participants to support food security included: resources required to physically access food, availability of food in outlets and the utilisation of food, storage and cooking facilities

Access to a car was reported by all participants as an asset to obtain food. Not having access to a car was reported to limit the amount and type of food purchased. Where the public transport system was infrequent (especially on weekends) and not reliable, having a car enabled access to foods to meet cultural or special diet needs from shops some distance away:

*'If I didn't have a car most of the places that I go to shop for food would be inaccessible completely.'*Sara (FS)

The food available in local shops was a protective factor but could also be an inhibitor if there was limited variety. Marcie described difficulty accessing foods locally for the celebration of certain Vietnamese festivals and this required a 45 minute drive one way to purchase food. Participants requiring foods for special diets described their difficulty in accessing a range of foods locally. Rowena (FS) described the difficulty of accessing gluten free foods for her husband when they lived in the country. It required detailed planning of meals and managing ingredients to ensure that there was enough until the next fortnightly shop in the closest regional town one and half hours away.

The capacity to store and cook food was an essential asset, especially for FIS and FS participants who were time poor. It allowed for stocking up on staples, bulk buying and freezing foods and provided options when things might be tight:

'If we are facing a shortage then I would turn to my apocalypse –ready stock cupboard ... I'll empty cupboards... use everything... then we don't need stuff... use tinned veggies... it just gives us a buffer... I call it my apocalypse cupboard.' Sophie (FIS)

Subtheme 2.2: Strength in Social Connections Capabilities and Resources

Aspects of social connection were an asset described by FS and FIS participants.

Social resources and capabilities

All participants described the valuable asset of connection to community and food by using local small shops, family, knowing neighbours, networks of friends, volunteering, connection to services and participating in community activities e.g., kindergarten, sporting club and local markets. They commented that growing food and sharing food with neighbours and other broader community, shopping locally and support provided by community organisations ensured consistent food access. While these connections varied, some participants reflected that, for many people, the idea of connection to community was diminishing. One FIS participant actively involved in a community garden described how the garden facilitated participation in community swap days which allowed for both sharing of excess produce and access to food:

*'....connections are made through food..... that's what used to happen.'*Fay (FIS)

Fay felt that these connections were important and perhaps reflective of how society used to be. This was supported by Eric's description of how he and a neighbour would regularly leave excess produce at each other's door.

Volunteering and or participating in community groups provided the opportunity to develop and strengthen connection to the community by building social networks. The majority of FS and FIS participants provided at least one example of these opportunities and described them as with reciprocal benefits.

The role of local shopping as an asset was an avenue for connection to community and allowed for development of relationships and local networks, something not achieved when shopping at larger supermarkets:

'You make connections with your butcher, I speak with him. But you miss that connection when you go to a supermarket. You could actually go through the whole supermarket shopping, go through the express aisle, scan it yourself, and not even speak to anybody. It's like, what are we creating in our society? There's no community there. You've just done the whole thing by yourself, and you could have been totally isolated. You go back to your house, unpack your shopping, and you've not spoken to anyone all day.' Ava (FS)

Maintaining the social aspect of food was reported to be important, even if it did add a degree of strain to a FIS household. The strength that comes from purchasing locally, participating in community initiatives, sharing food, eating with others, preparing food or even having a coffee with others was seen as an asset.

A point of difference between FS and FIS participants was the use of informal and formal social support structures. For FIS households, connection to local community agencies, such as Child and Maternal Health or local community centres, was reported as imperative in gaining social support to protect or reduce the impact of food insecurity. The informal support provided predominantly by family and/or friends was an invaluable asset providing food, social and/or financial support. Often grandparents were reported to take their grandchildren out for a meal that allowed for the further development of social interactions and reduced the strain of another meal provision.

The strategy of eating out in social situations or receiving food from family was not limited to FIS household. The key difference being that this was viewed as a protective asset by FIS households as it was one less meal to worry about having to prepare:

'It hasn't just been about the food. It's been about meeting other people ... ,so they've made connections through food, almost become a by-product of the social interaction..' Faye (FIS)

Furthermore, social networks through family and/or government welfare supported financial capabilities. Financial support from family members was reported as being legitimate or allowable if it was in context of paying for an activity for the children by a grandparent. This was reported to free up money for food:

'... I justify it better. To myself,. ...my primary job is providing them food and meals that are good. If you miss out on swimming, well, you're going to have to miss out on swimming. I see that as my primary goal and aim first, So if we have to ask Nanny to help for the secondary, well then, so be it. They have a spa and they do kayaking, so I sort of - I play it off and go, 'Well, if you want the boys for weekends and you're going to take them to the beach, you know what? They're going to have to swim, so you can help pay for the swimming fees.' It's - that's easier to justify rather than me paying the swimming and saying, 'Mum, can I have grocery money?' That's not her responsibility to pay the groceries, that's mine.' Clara (FIS)

Financial support from the Government - Child Care Rebates, Family Tax Benefits and Study Allowance - was reported by both FS and FIS participants as a resource that supported the household:

'I'm thankful he has a good job that pays all right, I get the Government children's benefits. Because of his pay structure, he doesn't pay tax on his whole income. So our taxable income is lower, and then we get the benefits. I'm thankful for that. I can understand that things might be a struggle for people who didn't have as much income. We tend to live on the government money that comes in. He pays for all of the other things.' Rowena (FS)

However, for some FIS participants this asset was associated with some conflict. For one FIS participant, the childcare fee rebate covered 50% of fees for her son's care but created difficulties if fees increased and the rebate level was not adjusted. This is further discussed further in Theme 5, The emotional rollercoaster of food access and provision.

6.5.3 Theme 3: Food security triggers act alone or are cumulative and may be beyond household control

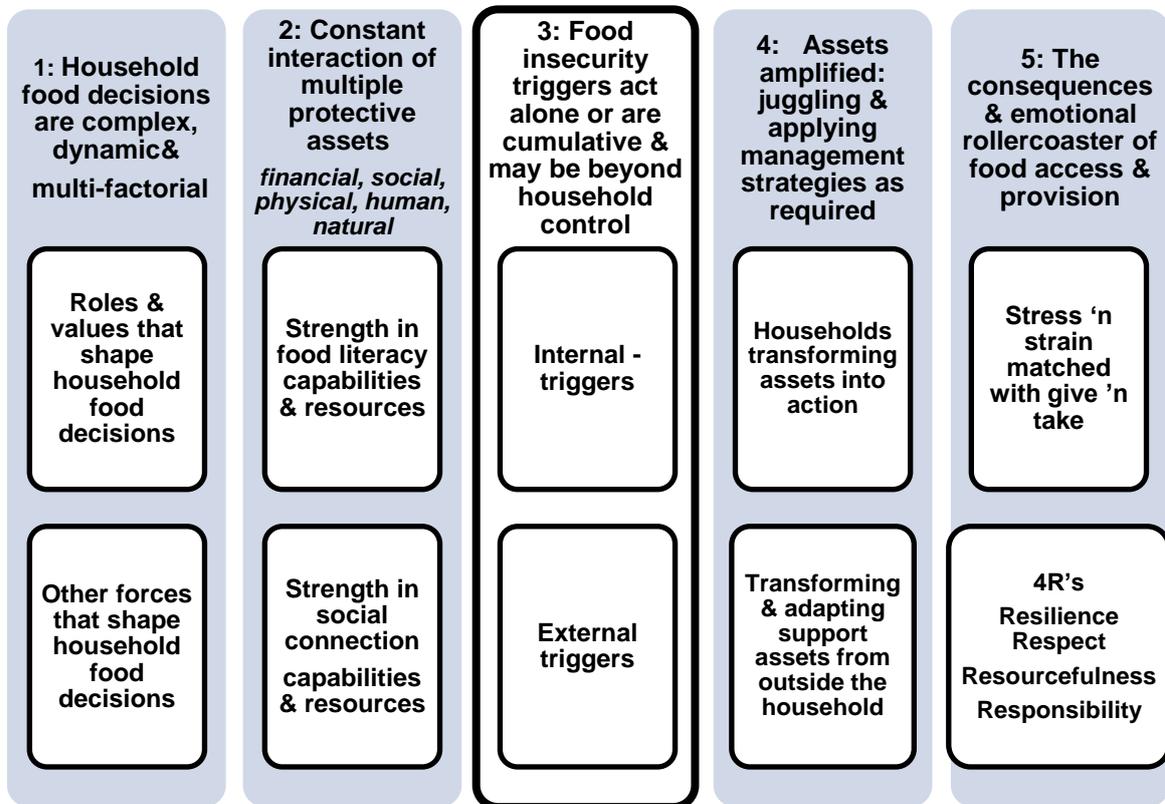


Figure 6-8 Themes and subthemes identified from in-depth interviews: Theme 3

Triggers for food insecurity occurred internal or external to the participant's household. Internal triggers included income changes, expected and unexpected expenses and household composition changes. External triggers often reflected the broader system, economic situation and the food supply. All participants reported that these triggers acted alone or in unison, magnifying their effect on each other. Triggers, real or potential, were perceived to hover in the background of day-to-day life for FIS participants. Triggers impacting on the day-to-day household budget and/or total household finances were the points of stress and heightened risk of/or food insecurity. Triggers of a financial origin were common to all FIS participants. However, participants from FS households, especially those with children, said that they were often still walking a budget tightrope.

Subtheme 3.1: Internal triggers

Financial triggers were reported to manifest in a number of forms from sudden and unexpected reduction in household income to unexpected household expenses, including cost of living and medical expenses. This impacted on the financial stability and wellbeing of households.

Sudden unemployment, especially for the main income earner, was reported to lead to significant strain for the household, especially if there was no savings. The uncertainties around how long this situation would last created strain on households and their resources, as described in Theme 2:

'My husband works ...he lost his job a few months ago. He's only just working but -- we've only got a really limited budget. Our grocery budget, if I go over \$100 for a week I freak out.' Fay (FIS)

The impact of household living expenses, petrol, utility expenses and other expenses (e.g., university, kindergarten) fees were expressed as a strain on a household budget, albeit variable. If households were already on a financial tightrope with limited flexibility, coupled with little or no capacity to save money this was reported to result in fiscal constraint. Clara described the stress of the cumulative impact of the fluctuation of bills and the dilemmas that this creates for her in the role as gatekeeper:

'Gas and electricity ... I need to be able to budget for it, we do usually go over the due date, because we just don't have \$800 spare. As much as I'd like to say that I ... do try and budget for it. But again, you'll have the incidentals - where kinder put on a sports program, so they wanted a \$10 input. So it's all the little incidentals that come along with children that you can't get around ... So it's what the juggle is, what the bill is, how much the bill is, and do I do a little part-payment here, because then I know I've got \$50 more this week for food, so it just takes that pressure off a little bit.'
Clara (FIS)

Further to the cost of living pressures were the unexpected appliance repairs that brought stress, particularly if there were not savings in reserve or means to pay. As a consequence, participants re-adjusted their household budget, which often

impacted on food. One FIS participant described these events being out of her personal control, something that cannot be planned for, but can be catered for to a degree, by assets such as planning, ensuring there was food in reserve:

'You've got me at a good week, last week our solar panels went, gas hot water service went, heater went, and our car. So, this week's a tight week. I feel like I don't have much control over but we have an emergency fund. Food is the one thing I can control. I can say we're eating veggies this week, and that's okay.' Fay (FIS)

Life events or change in circumstance was reported to act as a trigger, increasing the risk of food insecurity. These changes in circumstances often involved a change in household composition, birth of child or family staying for extended or short periods, directly resulting in financial implications. Some FIS and FS participants described that, having children and the associated temporary or ongoing reduction in employment and income, was a trigger to food insecurity. This reduction in income was coupled with increased expenses for a household with another to feed and clothe.

Income reductions, increasing expenses and the resulting impacts were reported to influence participant's decisions for the main caregiver to return to employment to relieve the financial load:

'No longer additional income, bills kept coming plus the mortgage things were very tight.' Ann (FIS)

'When my wife stopped working, we nearly went broke. We were down to our last dollar.' Eric (FS)

The return of adult children into the home, both for the short and long term, stressed the normal household budget and resources.

'It's the added cost of living expenses to food and utilities on top of my normal expenses.' Maureen (FIS)

One FIS participant described the impact of her adolescent brother staying for an extended period. Supporting him financially and the reliance on credit was the catalyst for financial difficulties:

'I'd come home ...we had bottles of Coke in the fridge, in one day, two litres would be gone.and then that all adds up. Then you think, 'Well, that's okay, I'll just pop the next lot of shopping on the credit card,' and the next lot of shopping on the credit card, and that has put us back, financially.' Clara (FIS)

Expenses associated with children including childcare required to enable study and participation in the workforce, was also reported as a financial trigger. Child care fees were seen as a necessity but a major expense to navigate:

'... if I could afford it I would have taken my son off one day. That would mean that I would have to miss Uni a day or miss work. Because of course \$15 (increase) a day. I'm talking about from \$80, - they increase it every five to six months. ..It's \$5, okay. Once that's all right, but then again another \$5, and now it's up to \$95. Of course you get about \$45 to \$50 back (rebate), but that's \$45 a day. Then I'm working too ... there's times I'm sure that parents - mums were working but would benefit from.' Ann (FIS)

Change of relationship status where financial resources were shared or where the partner may have generated the income for the household was also a trigger incurring both emotional and financial strain.

Subtheme 3.2: External triggers

External triggers were reported by all participants to include food supply in local shops and food cost. Participants specifically described the variability or unpredictability in the cost of fresh foods and this impacted on their ability to access food and preferred quality and variety. Some FIS and FS participants indicated being at the mercy of major supermarkets. They reported that supermarkets have a greater buying power, often resulting in cheaper food than independent or local smaller food suppliers, where the quality may have been greater:

'It's a double-edged sword the large supermarkets have greater bargaining power and the expense of the consumer may get a cheaper price but at the cost of the primary producer.' Clara (FIS)

Some FIS and FS households often felt that fresh food quality was substandard at the supermarket. To overcome this required sourcing foods from several different stores which often took time and extra expense, for example, petrol. These were luxuries that some participants did not have.

Regarding the cost and availability of food, five of the eight food secure participants interviewed had at least one member of the household who had special dietary requirements for diagnosed conditions. All of these participants specifically made comment on the cost of these special foods and their availability in stores as a potential trigger for food insecurity.

Some FIS participants, especially those with young children described policy or system inequities that impacted on their household financial situations. Disenchantment with Government policy responses for middle income earners was evident and this in itself was reported as a trigger:

'This is one of my grating points... last year \$64,000 was his taxable income. I get the Family Tax Benefit.if we separated, I would get more than I get on that, and his wage - I'd get a Health Care Card... because it's the lower income. - being his wage provides for two of us, if you split his wage in half we are low income earners. So the difference of him working a job for \$34,000, I'll go and get a job for \$34,000, I get a Health Care Card. He makes the money that supports me, yet I can't get a Health Care Card, I'd get - little bit off the electricity and gas bill, help with the kindergarten fees which are \$355 a term. Things like that would go a long way to be able to better provide for the boys.' Clara (FIS)

6.5.4 Theme 4: Asset amplification– juggling and applying management strategies as required

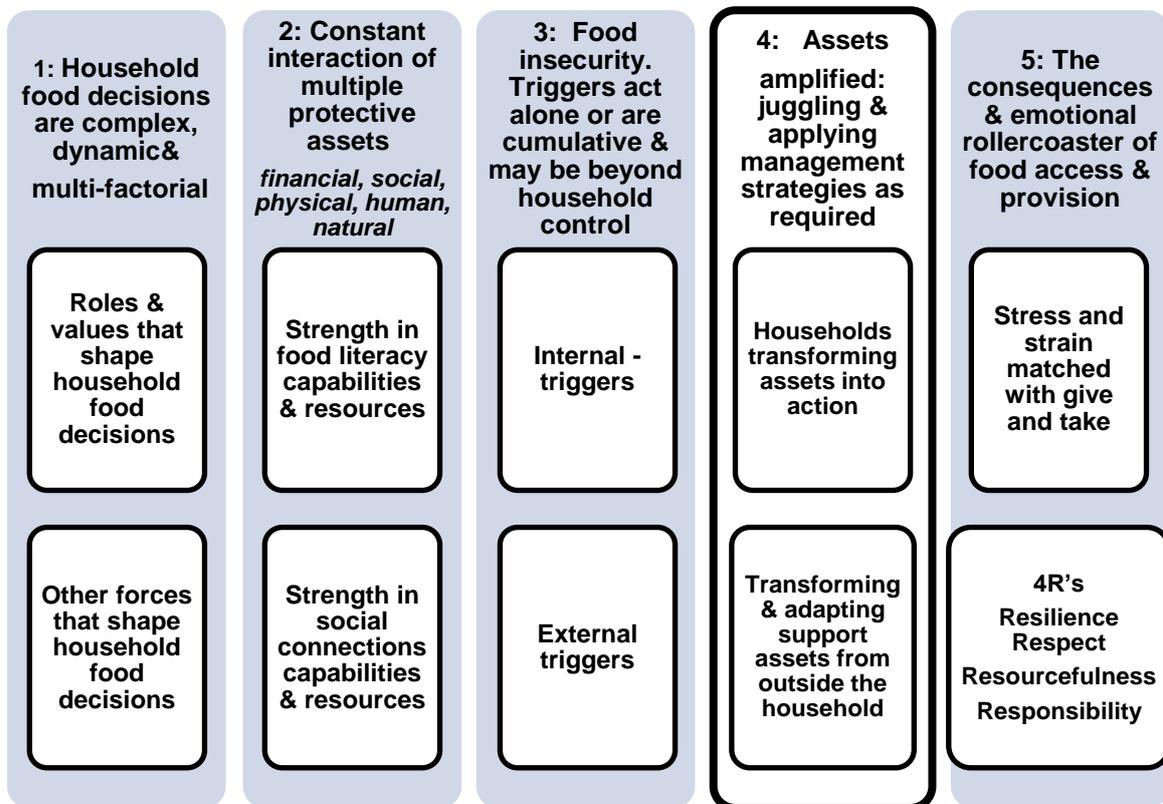


Figure 6-9 Themes and subthemes identified from in-depth interviews: Theme 4

Whilst the array of assets described in Theme two were ever-present for all participants it was not until one or more triggers, outlined in Theme three, occurred that the assets were transformed and amplified into strategies to cope when required. For FIS participants there was a distinct difference in the rate and urgency of transformation of these assets. Often these management strategies did not occur in isolation but in unison or in a staged format. This process of putting these assets into action could occur with or without support from the participant's immediate household. Subsequently two subthemes were evident: 1) Households transforming assets into action, and/or 2) Transforming and adapting assets with support from outside the household. These subthemes will be discussed in the context of the asset that is being transformed into a management strategy.

Subtheme 4.1: Households transforming assets into action

Budget management strategies – financial and human management skill assets

The pooling of financial and human assets across household members was reported to support budgeting. Some households shared the load of the household finance role amongst household members, often based on knowledge and expertise. Participants specifically described their use of different bank accounts for discrete purposes, where money could be shifted between accounts when extra money was required.

Saving money was recognised as an important strategy for at least three FIS participants. As money was so difficult to save, it meant that there was never a reserve or buffer to draw upon when needed. In contrast, most FS participants had at least one option as a backup plan if finances were limited, including savings, credit cards, and loan redraws when needed. This was a key point of difference when compared to FIS participants who did not have these options:

‘There are times when we have had to redraw on home loan to have more money to live off ... to buy food but sometimes the usual savings account may be down so we use Visa– that’s how we manage our money – then pay the card off at the end of the month so we never have to pay interest.’

Rowena (FS)

When things were tight some FIS participants described financial juggling as a budget management strategy to determine what money was available for food:

‘At the start of the week, think, ‘Okay, plan for the week is XYZ; right, we can get to here; we should have this amount of money left over,’ because it literally does go to the last \$10 by the end of the week. What can we do... and I plan, really, to allow a treat or no treat, what level of treat do we get, what level of food do we get for the week?’ Clara (FIS)

Whilst juggling bills, especially cost of living expenses some FIS participants described the engagement of their negotiating skills as a management strategy to use when dealing with external utilities companies such as energy providers. These negotiations included knowing when to be flexible and when to stand your ground in order to gain some breathing space for money for food:

'The juggle, what and how much the bill is, can I negotiate payment with the company, then I know I've got more for food.' Kay (FIS)

When finances were limited, alternative household funding sources for shopping were enacted including supermarket reward schemes, such as Fly-Buys that allow cash/credit for shopping, by both FS and FIS participants:

'We have Fly-Buys, quite often, it will be, 'Do I need to convert my Fly-Buys points to Fly-Buy dollars, and can we go to Coles and spend \$10 getting what we need?' I always leave that as my backup-backup - the backup of the backup.' Clara (FIS)

Both participants discussed how such strategies often meant spending more on food or other household items impacting on food budgets in the short term. However, the long-term benefit of credit towards future shopping outweighed this short term risk.

Food planning management strategies in action - human, physical, natural management assets

While food planning was reported as a key strategy for all participants, it was often more important for FIS participants. Highly developed planning skills were used to accommodate food preferences and other demands that weighed in on food decisions to also minimise food waste. One FIS participants described a pragmatic view that, while unforeseen financial demands could not be controlled, there was a sense of control over managing this by implementing planning assets.

When money was running very low for two FIS participants, this influenced meal planning decisions resorting to takeout noodles or pizza and meal deals as a 'cheaper option' to feed the family but it compromised nutrition values:

'It's bad (money) week and less to spend. 'I wouldn't buy certain things. that's when noodles or pizza ... takeout are a better option Sometimes KFC does dollar chips, pizza for five dollars. That's when the junk food becomes more convenient to spend money on than healthy option.' Ann (FIS)

Selecting 'filler food', such as bread, pasta and rice were reported as a strategy to feed the family. These foods were often cheaper and could extend a meal without creating an extra demand on meat or vegetables:

'When the kids visit it's....more about it's filling them without them making demands on the main meal. If they were still hungry they could have more bread or make toasties. Just means that the budget doesn't blow right out.'
Maureen (FIS)

Shopping management strategies - human, financial assets

Both FS and FIS participants, especially FIS discussed making trade-offs when shopping for food and other household items. Trade-offs, that may have been food centred and other household budget areas were described by both participants. This required acting upon key food knowledge assets:

'No expendable items things like biscuits, yoghurt, the core fruit and veg and bread and milk would be there though. Cheaper or supermarket brands but only things like rice and stuff.' Sophie (FIS)

Some participants described trialling a range of preferred shopping outlets, from regular supermarkets to large scale shopping warehouses with no consensus on what offered the best savings. Calculating product cost by weight was described as a strategy to determine if the product was value for money, especially if money for food was tighter than normal.

A number of FS and FIS households discussed shopping at Aldi, a large German based discount supermarket chain operating in Australia, as a way to save money especially for core items on the shopping list. This supermarket has a limited product brand range which was described by participants as useful to restrict temptations: *'It simplifies things'*. Marcie (FIS).

Food supermarket catalogue watching, knowing catalogue changeover day and driving to a number of places to gather the best deals were reported as strategies that were crucial day-to-day but especially when triggers hit. Whilst participants reported this as an advantageous strategy of using their assets, they did acknowledge the time, energy and petrol consequences.

Entertaining at home and eating out management strategies in action - Finance, human, physical, social assets

In order to maintain a social role and food values, FIS participants discussed entertaining at home especially if guests brought food to share. Participants needed not only to employ both their food knowledge, but additional budget management strategies in an attempt to minimise potential impact on the household

During trigger times FIS households reported eating out and relying on a range of assets from budgeting, planning and knowledge that a certain 'takeaway' meal could feed the family or fill them up and meet their economic needs. FS households also reported challenges to eating out, especially as a family. It was often planned in advance around a special occasion and in the context of a budgeted amount.

Subtheme 4.2: Transforming and adapting assets with support from outside the household

In response to triggers, some FIS households required additional resources and supports, other than those described in the previous subtheme. Social management assets from outside of the household were required, such as seeking increased support from family, friends and welfare in the form of financial support, food or other household products.

Physical Support management strategies - to or from others: social asset

Despite having an array of supportive social connections across the community, FIS participants did not seek formal food relief support from community welfare or charitable food sector agencies because they felt that they were not eligible or there was someone more deserving. The one FIS participant who had accessed welfare services described that this was facilitated through their community links.

'One year we got a Christmas support hamper with food and a small present for my son and other times occasional relief vouchers.' Ann (FIS)

For another FIS participant when things were really bad she would have liked to access charitable food assistance programs just for staples to 'tide the house over' but perceived that, because of their income, they were not eligible to access such support. Federal Government welfare policy responses, including the Family Tax

Benefit (FTB), Child Care Rebates and study allowance, were welcomed. Three FIS participants debated that, when financial triggers hit, they had mixed ability to buffer household financial demands. They felt these Government support mechanisms were out of touch with the realities of service costs and the experiences of middle-income earners doing it tough: *'I'm studying and my \$20 study support allowance doesn't cover occasional care for my son'* Clara (FIS)

Family, namely parents, provided extra support in the form of food and financial assistance to provide some relief from financial triggers. This support relied on amicable family relationships:

'Mum is an excellent backup. Now that we talk again and we're on a good relationship. ...- she's a grandma... So I ring her and say, 'Mum, we're really, really, really struggling,' but what I do then is actually ask her to pay something for the boys. If things aren't looking good, I leave that and then ring Mum.. then she may bring lunch over for the family too on the weekend.' Clara (FIS)

Sometimes this support came without request:

'When my marriage first split up, one of my girlfriends, whenever they'd come to visit, would always bring me toilet paper and teabags. Think about it, it's \$10 you didn't have to spend, so it was a great gesture. The same if they were coming for lunch, somebody would say, 'Oh, I'll bring the group a bun or I'll bring them some fresh bread or something.' Umm It did make a difference.' Maureen (FIS)

All FIS participants described reciprocating the support provided to others. This was reported as a means to maintaining connection with others or community. For FS participants, support from and to family, friends and neighbours was also reported but served a different purpose by providing social connections. For example, sharing produce or cooked food with neighbours was about being neighbourly rather than a management strategy to buffer against food insecurity.

Access to community strategies to support food access such as school breakfast clubs, community gardens, food swaps and farmers markets were discussed by all participants, but often with a different objective. FS participants explained that while

these activities supported access to food, their primary objective was viewed as an outing or enabled social connection. This contrasted FIS participants' perspective where these objectives were reversed.

6.5.5 Theme 5: The consequences & emotional rollercoaster of food access and provision

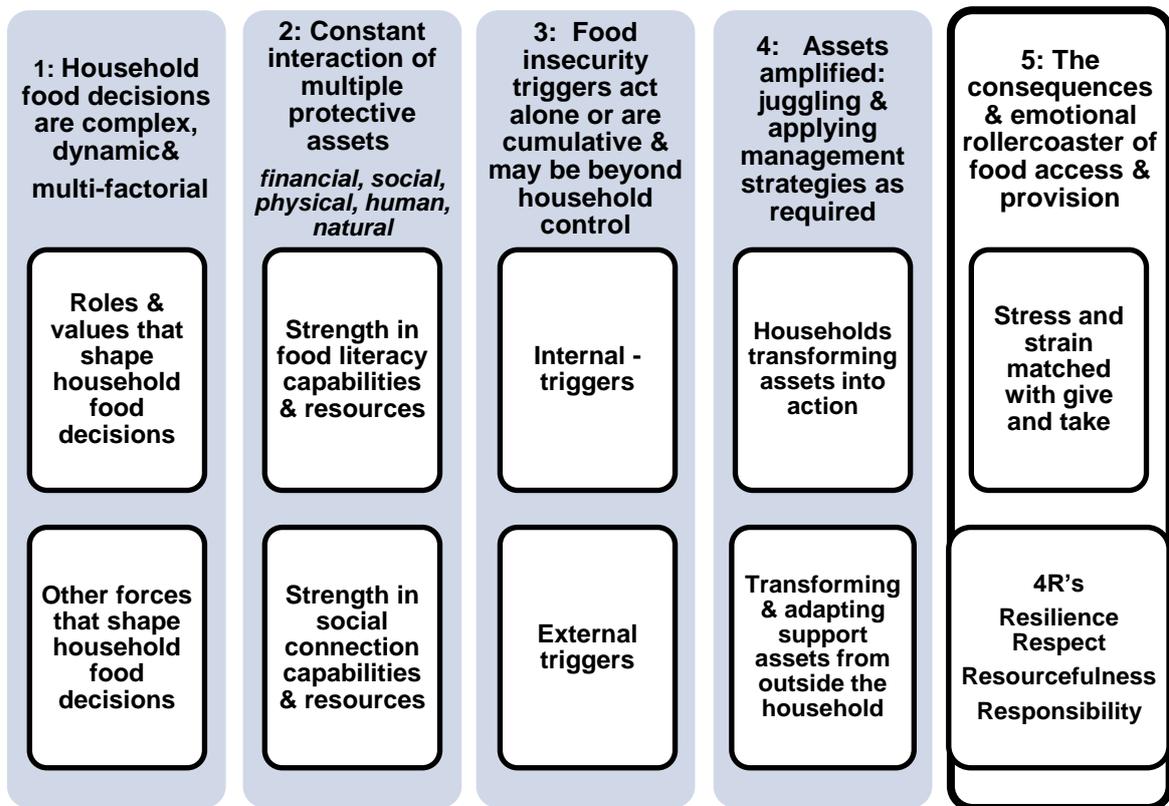


Figure 6-10 Themes and subthemes identified from in-depth interviews: Theme 4

The emotions, especially described by FIS participants, associated with food access and provision varied considerably with the highs and lows of food security. For FIS participants, the experience was often fraught with emotional lows, including stress, strain, frustration, guilt, and the burden of keeping up appearances. The consequences of not being able to access food ranged from worry or concern, extending to compromises around food choices and amounts of food with potential implications for nutritional status. Households with children attempted to protect their children from the reality of food insecurity. For participants with a greater severity of food insecurity, the consequences were far reaching and ranged from concern and stress and in some cases impacted on the amounts of food. In contrast, the highs were described as being bound by four key factors - resourcefulness, responsibility, resilience and respect for self and others.

Sub theme 5.1: Stress and strain matched with give and take

Stress, strain, frustration and the impact of decisions were often an overwhelming emotional kaleidoscope for participants. These emotions were often relentless and amplified at various times, especially for the household food gatekeeper when triggers were heightened. FS participants reflected on a significant experience in the past related to food access and provision that caused a range of emotions. All participants described frustrations at broader factors outside of the household's locus of control which impacted on local food availability. This included the availability of culturally appropriate and special dietary foods; as well as supermarket food quality and cost:

'It's constant... unless there is good planning around our food (where to get special product) it may mean compromises on nutritional quality if I need to make quick easy options for the meal.' Ava (FS)

Frustration - food availability, marketing & cost

Participants in both household types voiced frustration at often not being able to access the food they wanted, either due its cost and/or availability. These conversations reflected frustration on food quality, especially fruits and vegetables in supermarkets and imported fresh produce:

'Frustrating ...the closest fruit and veg shop is a good distance away so I feel like I have no choice but to use the supermarket and buy the produce... I'm just not happy with the quality - it doesn't seem fresh.' Erica (FS)

Weekly food price variations were a source of frustration, especially for fresh produce. This caused FS and FIS participants to plan ahead and be price vigilant as well as watching for special offers.

Stress or anxiety associated with money making ends meet

The relentless stress and anxiety of making ends meet was described by FIS participants. This related to the constant juggling of budgets and resources. This stress was constant but amplified in periods of greater pressure on households. The

level of stress and coping mechanisms varied but the effects and burden were often worn by one household member, often the gatekeeper. Coping mechanisms were often drawn from the assets unique to the household and its members but often were centred on resilience and life experience garnered over the years. Being hypervigilant with respect to making ends meet was exhausting. Some FIS participants suggested this hypervigilance had consequences for physical, social and emotional health:

'We can get by, I'll just wear the stress of it. I think that plays a huge part of me physically and emotionally.' Ann (FIS)

Food insecure participants described their efforts to protect their children from the impacts of the triggers for food insecurity:

'The stakes are higher now because of my boys. It feels really, really shit ... arguments in my head as juggling bills I don't share stress with husband ... It's a stress and a strain, but it is manageable. But look, if there was something to happen financially, I think that's when the pot would overflow, and I'd throw my hands up and say, 'I can't do this anymore, I don't know what to do anymore'. Especially with the boys now. If it's just me - and I think I learned that. If it was just me or just him, it's irrelevant. I've got through it before. Leaving home at 17 - I can get myself out of it again. But it's their welfare that is of the greatest concern to me. ... They are my job. I know that sounds really horrid, but that's my job.' Clara (FIS)

While stress was evident for some FS participants, it was not as overwhelming or constant as it was for FIS participants. Food secure participants reflected on a previous experience associated with the anxiety of financially making ends meet and/or running out of food. The impact of these experiences was significant enough for the participants to reflect and articulate what it meant for them in today's world and justified why they often felt that they wanted things to look and be different.

'The juggle and stress to make ends meet was too much I deferred for a year, worked fulltime earned money then went back the following year and completed my degree. I don't want to go back to that.' Lucy (FS)

Consequences of not being able to access food wanted – compromise, guilt and social implications

FIS participants described a range of significant consequences in not being able to get the food they wanted.

- Compromise - quality, quantity and nutrition

The experience of food decisions and provision was bound by a series of compromises that were constantly considered. The consequence of these impacted on all or one member of the household which invariably included the food gatekeeper. This level of compromise was significantly greater or amplified for FIS participants.

FIS participants reported that the quality, including nutritional quality of food was often accommodated, and that this challenged their ideals held around food and what should be provided for members of the household, especially children. Whilst there often was a level of compromise described by FIS households, this was heightened at times when there were greater demands on the household and food budget. Ann described how, in a financially tough week, she would feed the family of three a \$5 pizza. While this challenged her nutrition goals for the household she described that, practically, she could not feed the family a healthy meal for \$5.

'I'd buy frozen chips for dinner – take jam and peanut butter sandwiches for lunch.' Maureen (FIS)

One participant described that, because of the constant nutritional compromise and inability to afford supplements, her iron deficiency was not improving and this impacted on her wellbeing.

The quantity of food provided was often compromised but where possible children were protected:

'Sausages, the big pack that you get at Coles [supermarket], think there's 22 sausages, so I do two packs of seven and one pack of eight. The boy's one will have two. The other might have one, maybe two. Daddy will have three, so there's one left ... So I have the one left.My mashed potato, there's three potatoes for mash. That provides Daddy with enough he- loves mashed potato. Enough for the boys, and if they happen to be smaller (potatoes) than they normally - usually are, then I get a reduced amount. When I do - I make sure they get everything first and whatever is left over, then I get it. If one pack of pasta does - I split it in half, and that's the meals. But then that's enough sauce that will do my husband for a lunch, so then there's not enough pasta to do his dinner, his lunch, two boys' pastas and my pasta, so I'll have less..... if there's one bit of bread left then I just have one bit of bread for breakfast. ...you have your two pieces of toast, I'll have my one.I won't short change them.' Clara (FIS)

The consequences of not being able to access food required for special diets included both the physical side effects, but also frustration with respect to the time taken to source and cook food, especially if already time poor:

'It's a big impact. If I don't buy the right foods and don't eat properly, I can have pains and not be well at all.. I find that given what the supermarket offers, I have to make everything, costs me a lot of timeI'm buying more things to make more things. I suppose it's probably a little bit more cost-effective, but my time is probably more important, because I don't have enough time.' Ava (FS)

- Guilt

Guilt was an emotion used to describe the inability to provide or meet expectations of provision, especially if children were present in the house. All FIS participants discussed the importance of protecting children against factors impacting food access. A guilty conscience was associated with not being able to meet individual expectations of both a mother and food provider role with the resources available:

'It is horrible, the guilt knowing that you have your kids, and that is the priority. Knowing that you want to provide for them, but to a certain level, and know that you're only getting 80 per cent of the level I want.' Clara (FIS)

- Social implications

FIS participants described the pressures, dilemmas, consequences and compromise of providing food or bringing food to share with family and friends. Participants with children reported the challenge providing food for an activity at kindergarten or school was seen as positive, this did create some unease around the pressure that this placed on the household to provide extra food, when things were already tight. Furthermore, the importance of maintaining the facade that everything was ok and that a child will not miss out on food or activities was yet another pressure.

- Frustration at the lack of support for middle income

'The Government – not labour or liberal has screwed over the middle income earner.' Clara (FIS)

Some participants described their frustration at the current government welfare support systems. They reported feeling unsupported at a number of levels. These included: not being aware of changes to childcare fees, benefit system frauds and errors and the perceived impact of a potential increase to the Goods and Services Tax. However some FIS participants recognised that while they feel they are doing things tough there were others in greater need of benefits.

One participant expressed her anxiety at not being able to afford the costs of visiting her general practitioner (GP). Children's health was described as the priority and participants explained that they would find money for children's GP visits and medication, but only if they were desperately sick. FS participants reported similar concerns, but not at the same intensity as FIS participants.

Subtheme 5.2: 4R's - Resilience, Respect, Resourcefulness, Responsibility

Whilst the experience of the intense pressure of food provision (Sub-theme1) often dominated participants' stories, there were also elements of triumph centred on

respect and resilience. These positive elements included respect, reassurance, resilience, responsibility and resourcefulness.

- Respect

Pride or respect was described by all participants by having capabilities to provide food through shopping skills, gardening, food knowledge, cooking food. Stories of the nurturing relationship through food, and the subsequent respect that followed, was more evident for FS participants: *'I'm the rock for the family now... having them over for a meal helps this...'* Amelia (FS)

- Reassurance

Most FIS participants described the level of reassurance and relief that they felt was a consequence of their assets, described in Theme 2. This was despite the fact that some FIS participants reported limited fall-back positions. At times this reassurance was marred by stress, worry, physical and emotional energy that went into putting the trigger buffers into action, despite not knowing how long this tough time may continue:

'Knowing that things are ok – from a financial and food access point of view provides comfort and there is room to move and is an enabler to enjoy the social aspects of food. It's a treat for me now.' Maureen (FIS)

- Resilience/ responsibility/ resourcefulness

Resilience, responsibility and resourcefulness supported households, in particular gatekeepers, to maintain face and pride to the outside world despite the challenges:

'Why should my child miss out ... so that there are no external or visible signs that we juggle... I don't want my son to miss out, or have someone take pity for him, thinking that he does miss out... he doesn't. It's just rationed.' Clara (FIS)

Resilience, resourcefulness and respect were evident at being able to survive the tough times. However, with this there was mixed emotions of never wanting to go back to times when facing precarious situations such as retrenchment:

'There is a sense of pride ... I did survive you know paying the mortgage and living on \$20,000. But there's also mixed feelings. You are proud of what you've done, but (pause) you're glad you're not back there. I can't explain it. ... you don't want to ever have to go back into that situation. Do you know what I mean? Sometimes at work, when they start retrenching people, and you think, 'I need my wage. I'm the only income earner. I need my wage.' So you're really mindful of the importance that you don't want to go back to where you were.' Maureen (FIS)

For FIS and FS participants' resilience grew from tough experiences in childhood and adolescence, and these often shaped their current life skills:

'I'm a... stronger person because of my childhood – a person with a different upbringing may look at things differently. I almost feel that - is it my shortcomings that have made this happen? As in the ability to juggle well. So therefore it's my responsibility for - therefore I should be the one that takes - ... gets less.' Clara (FIS)

This was supported by some FS participants especially those that were impacted by war. Further study was described by both groups of participants as a catalyst for a better future for the household financially, enabling a wider range of food for the family and helping the family get back on track.

6.6 Summary

This chapter has detailed the findings from the quantitative and qualitative phases. The quantitative phase identified both food secure and food insecure low to middle income participants for interviews to explore the food security/insecurity experiences. Participants' experiences from the in-depth interviews provided a rich and detailed insight into the past and current experiences of food security/ food insecurity.

Chapter 7 will detail the integration of findings from both phases to synthesise key findings for this study in the context of the wider literature.

Chapter 7

Part 2

Discussion

Chapter 7: Exploring food security and food insecurity EXPERIENCES in low to middle income Melbourne households. Part 2: Discussion

7.1 Introduction

This chapter will integrate and discuss key findings from the mixed methods research study in context of relevant literature and using the lens of a supporting framework the Sustainable Livelihood Framework.(203) Finally, the chapter will conclude with a summary of the key implications of Part 2 of this thesis.

7.2 Summary of the quantitative and qualitative results

The purpose of the mixed methods sequential explanatory study was to explore the food security/insecurity **EXPERIENCES** in low-to-middle income Melbourne households. The emphasis of the research was on the qualitative phase to explore and contrast the experience of participants who were food secure and insecure. While each phase of the research had a distinct purpose, the mixing of the results from each phase provided greater insight into the research question.

For the quantitative phase, *'The Food Security in Melbourne Households Survey'* first explored the demographics of and identified participants' food security status using the USDA HFSSM. This phase allowed purposive selection of participants for the second, qualitative, phase, and survey responses informed the qualitative line of inquiry. Results of the USDA HFSSM identified 36% of all low-to-middle income participants (n=42) were experiencing food insecurity. The quantitative data in both household types show that food insecurity occurs above very low income, in educated people with full time jobs that own homes, challenging the "typical" face of food insecurity. The continuum of experience of food insecurity was reflected by the responses the USDA HFSSM ranging from worry to alterations in the type and amount of food. (Table 6.4). Seven participants who were food insecure reported that they cut the size of their meal or skipped a meal. Eight participants who had

children reported using a few low cost foods to feed their children if they were running out of money to buy food. While the USDA HFSSM survey provided a description of the breadth of the issue, the qualitative exploration provided an opportunity to hear the voices of both food insecure and food secure participants. This allowed for comparison and contrast of the variety of experiences of food security in this income group (Table 6.8).

The analysis of the in-depth interviews identified the following five themes across participants who were both food secure and food insecure: 1) Household food decisions are complex, dynamic and multi-factorial; 2) There is constant interaction of multiple protective assets; 3) Food insecurity triggers act alone or are cumulative and may be beyond household control; 4) Asset amplification–Juggling and applying management strategies occur as required; 5) There are consequences and an emotional rollercoaster of food access and provision. These themes described the experience of food security/insecurity, factors impacting on and strategies to support access to food.

While the findings from each phase served a unique purpose in answering the research question, it is the integration of these findings that is crucial to their understanding. Importantly the combination of the quantitative and qualitative findings highlighted the complexities associated with achieving food security and the consequences of food insecurity for low-to-middle income participants (Appendix 8). More specifically it highlighted the resourcefulness, resilience, stress and the array of assets or strengths that participants used when facing triggers that threatened food security.

7.3 Integrated mixed methods key findings for low-to-middle income Melbourne households

Integration of the findings of this study provided five important findings with regard to the **EXPERIENCE** of food insecurity in low-to-middle income households:

1. The experience of food insecurity varied from episodic to chronic, was covert in nature, and was graded in severity.
2. The complexities of triggers for food insecurity were inclusive of, yet beyond, economic origin.
3. Assets that protect against and/or act as a buffer during periods of food insecurity were valuable/appreciated, even if the impact of the assets was limited.
4. The consequences of food insecurity are extensive, and there is constant stress related to the threat of food insecurity.
5. When measuring food insecurity it is important to identify marginal food security and the four dimensions of food security. The value of mixed methods research in this area cannot be underestimated.

These findings will be discussed within and across food insecure and food secure groups and in the context of the literature. This study identified and explored both the **EXISTENCE and EXPERIENCE** of food insecurity in low-to-middle income households highlighting an underbelly of experiences that are often hidden yet there are consistencies in the experience to what is known of those in lower income groups. Furthermore, it highlights that even those participants classified as food secure may be at risk of the experience of food insecurity, identifying its precarious nature and also that triggers may be beyond a financial origin.

1. The experience of food insecurity varied from episodic to chronic, was covert in nature, and was graded in severity.

Participants' food insecurity experience varied in both severity and frequency. Some participants described this as an episodic experience that may have coincided with

major or multiple triggers, such as loss of employment and unexpected expenses described in *Theme 3 Food insecurity triggers act alone or are cumulative and may be beyond household control*. Often these episodes may have been cyclical, based on the timing of triggers, such as when utility bills, kindergarten fees and university education fees were scheduled. However, for at least two participants, there was evidence that their food insecurity experiences were chronic. Food access was a constant challenge that was influenced by the number and frequency of triggers, as well as by the participant's ability to action their assets.

Additionally, food secure participants described times over their life course where they had experienced being 'at risk of', or actually being, food insecure. These participants described triggers similar to those participants currently experiencing food insecurity. These triggers included, but were not limited to, change in household income and increased household composition size. These findings are consistent with those reported for corresponding income group and lower income households internationally and in Australia.(53-55, 57, 78, 204)

Food insecure participants detailed the covert nature of their food insecurity experience, depicting in their stories an undercurrent that was not visible to family and friends and, where possible, hidden from children. While the findings from the qualitative interviews of FIS participants confirmed responses to the USDA HFSSM, they indicated the desire to keep the appearance on the surface as normal as possible. This supports the experience of food insecurity and the associated shame, fear of being labelled and judged.(57, 199, 205) Both Clara and Ann indicated that they did not want their children to be judged by others, so they always made sure that they had enough food at kindergarten and outings.

The USDA HFSSM classified food security status based on economic access to food and contributed to the understanding of the severity and frequency of the experience. The USDA HFSSM identified the crucial elements of the experience to be situated in: 1) worry about running out of food without money to purchase more; 2) actually running out of or reduced food with limited money to purchase more; 3) perceptions by participants that the food eaten by household members was inadequate in quality or quantity; 4) adjustments to normal food use, substituting

fewer and cheaper foods than usual; 5) instances of reduced food intake by adults in the household and/or consequences of reduced intake such as the physical sensation of hunger or loss of weight.(14) Across the food insecure participants, four responded to the first child question, with two responding affirmatively to the second question in the USDA HFSSM (Appendix 8). These mainly reflected the use of low cost foods and lack of balanced meals, and these responses were confirmed in the interview. Perturbations to children's food intake are considered to be the greatest level of food insecurity due to the implications and evidence for growth and development.(14, 32, 73) In this study perturbations were mainly the reliance on a few kinds of low cost foods. The experience of childhood food insecurity has been reported across lower income Australian households, ranging from reduced quality and/or quality of food.(22, 57, 73, 78)

Supporting the USDA HFSSM responses of FIS participants with the detailed accounts of their experiences elucidated the complexity and magnitude of emotions that occurred with the stress and adaptations to the experience of food insecurity (Appendix 8). Their stories reflected the severity of food insecurity, how it impacted on their lives and provides insight into coping mechanisms or factors that challenged these mechanisms. These constructs of food insecurity are consistent with those reported in lower income groups in the literature.(59, 141, 143, 205, 206) Consistent with the literature is the experience of worry, shame, frustration, wanting to things to appear normal and, in some cases, modifications to quantity and quality of food.

Concern, anxiety and worry about food are considered to be the first indicator of the food insecurity experience.(14) The level of anxiety, stress and strain reflected in the survey response was explored in greater depth, to understand the extent and impact upon participants and other household members. It was evident for many food insecure households that this is a constant experience and one that weighed heavily, and often intensified, especially for the main food provider. Additionally, despite some FIS respondents' not indicating responses to specific questions in the USDA HFSSM, when mapped with interview responses, it was evident that anxiety, stress and adaptations to food were occurring that were not reflected in the survey response. This further strengthens the use of mixed methods research methodology to examine complex issues, such as food insecurity.

Perturbations to food intake were described, impacting on the quantity and nutritional quality of food consumed by food insecure participants and some household members. This consequence proved in conflict with the values of nutritional quality described in *Theme 1: Household food decisions are complex, dynamic & multi-factorial* and is consistent with that reported in the literature by food insecure households. (142, 143, 207) The introduction of low-cost meals was explored where households often used relatively low-cost meals at home to get by: – eggs on toast, tinned tuna, pasta and rice. One food-insecure participant described how, by the end of the shopping week, if there was not enough food the family would resort to sharing takeaway meal to feed the family. Purchasing cheap takeaway food was more economical than home cooking but resulted in compromised serve sizes and nutrition.

As part of the food insecurity experience meal sizes were reduced or meals skipped as a strategy to make food available to the rest of the household. Invariably these strategies were undertaken by the gatekeeper. A good illustration of this is Clara's vivid description where she painstakingly described meal time food rationing for herself to ensure her partner and young children did not go without. Both Clara and Sophie in their USDA HFSSM responses reported not eating for a whole day due to inadequate food resources and this was confirmed in their food insecurity story. Interestingly, their food security severity status classification was low and marginal food security respectively. This highlights the possibility that such strategies may be employed across all severity levels. This is similar to greater severity level households who are marginally food secure and are forced to make compromises among essential expenses. (59, 91, 208) Furthermore, these may be a reflection of the complexity of the experience of food insecurity and of this being household- and context-dependent.

The experience of children living in a food-insecure household was also identified in the findings. Food insecure participants who were parents described children-centred protective strategies for two purposes. First, to shelter children from the experience of food insecurity, and second to conceal the parent(s) own experience. Food insecurity as a managed process and attempting to shield children from any

challenging experiences of food insecurity has been consistently reported in the international literature.(19, 199, 206, 209-211) A similar strategy across the literature and within this study includes alterations to parent food intake, including quantity and nutritional quality. In this study two participants across both groups, who had experienced adversity and/or food insecurity as a child or adolescent, reinforced the importance of protecting their own children from these experiences. The relationship between parental adverse childhood experiences, food insecurity in adulthood and the impacts on children has been explored.(147, 208) This work indicates that, while parents may be attempting to buffer children from food insecurity, they still may be exposed to the stress.

Despite two FIS participants, Maureen and Fay, being classified as marginally food insecure, their stories revealed a history of more severe forms over their lifetime. This highlights the dynamic and precarious nature of food insecurity. Households may experience episodic food insecurity, and transition rapidly between severity levels. This was corroborated by the stories of food-secure household members who recounted previous episodes of food insecurity. This finding supports the proposition that low-to-middle income households are not immune to food insecurity, and highlights the precarious and temporal nature of this experience and the potential to reconsider the classification of marginal food secure as food insecure.

2. Complexity of triggers for food insecurity – inclusive of but beyond economic origin

The USDA HFSSM classification of food insecurity is based on the lack of money available to purchase food and the interviews confirmed financial factors/stressors as being the main food-insecurity trigger. While this finding is supportive of association with financial factors described in Part 1 of this thesis and the existing literature, it is important to reflect upon this trigger more broadly in the context of both financial constraints and assets.(143, 212) The finding provides a rationale for examining the financial causes of food insecurity beyond household annual income, which is a static, insensitive measure and may not reflect sudden household economic changes that can temporarily lead to bouts of food insecurity.(91, 120) Of

note is that all low-to-middle income participants' main income sources were from salaries alone, in some cases supplemented with Government assistance payments such as the Family Tax Benefit. This is supported by previous findings that those who are employed also experience food insecurity.(39, 66, 99, 100) Employment status, having multiple part time jobs rather than full time work has been associated with an increased risk of food insecurity.(99) Additionally, having more than one income earner in a household has been shown to reduce the odds of experiencing food insecurity.(100) In this study 12 of the 16 participants interviewed indicated that the primary income earner in the household was employed at a full-time or near full-time level. Furthermore, in seven of these households another member was employed full-time, part-time or casually. Participants discussed the need for sufficient income or financial resources to meet cost of living expenses. A reported source of financial concern for some Australian households is the stagnation of wage growth: 1.9% in 2016, the lowest since 2012 when compared to cost of living demands.(213, 214)

Most recently (November 2017) the Australian Council of Trade Unions (ACTU) commenced campaigning to move away from a minimum wage (A\$694.90/week or A\$18.39/hour) to a Living Wage that is 60% of median income. This has been framed to help workers avoid poverty and keep up with rising costs of living. The importance of a living wage has been framed to be:

*'sufficient to ensure that all working people are able to afford rent in a suitable dwelling, a healthy diet, a good quality education, healthcare, transport, electricity and other energy costs, adequate clothing, entertainment and a contingency for unexpected expenses.'*pg1(215)

An alternative to the approach of a living wage is the Universal Basic Income (UBI), the provision of minimum income to people regardless of employment status. Although the concept of UBI is not new, around the world it is gaining momentum and being trialled in some parts of Canada in response to a number of issues including food insecurity.(8, 216, 217) The impact of guaranteed income on food insecurity has been examined using Canadian population survey data describing

moderate to severe food insecurity rates in unattached, non-widowed individuals aged between 55-75 years who are reliant on income assistance. The findings suggest that, at age 65 years, aged financial security coupled with the introduction of a guaranteed income supplement, halved the probability of food insecurity.(218) In June 2017 the Brotherhood of St Laurence, Research and Policy Centre published a working paper examining the concept of basic income in an Australian context.(219) While this paper does not discuss food insecurity it recognises that 'social security in Australia is highly targeted and increasingly conditional. Currently little policy attention is given to its adequacy.'pg29 (219) Furthermore, the review acknowledged two key points: first, the importance of understanding basic income proposals in the context of Australia's social policies; and second, the impact of UBI proposals (enabling or constraining) on equitable access to housing, transport, food, education, health care, opportunities for both social and economic participation.

Shocks to income were described by employed participants as a trigger for food insecurity through temporary loss of employment, and change in household composition. These findings of income shocks are consistent with those reported internationally.(39, 92, 102) Exploring shocks to income Chang et al. (2013) reported that financial strain and liquidity constraints or limited financial resources increased the level of food insecurity at all income levels, indicating that households with liquid assets totalling less than 3 months' income had increased likelihood of food insecurity.(120) One participant, Marcie, discussed the impact of their debt and how reducing household debt by downsizing housing and number of cars to cope was a freeing experience. The ability to save or at least have some finances in reserve was described by some food secure and food insecure participants as a buffer to unexpected financial demands; however, the amount and how this capacity varied was not discussed. In Australia, the association between the inability to save and food insecurity has been explored across incomes (119) and in lower income households.(37) The associations between other financial indicators and food insecurity have not been extensively explored.

Increasing utility costs and paying associated bills was referred to by some food-insecure participants. In one case the participant detailed the process of negotiating payment with the energy provider. The relationship between demands of the costs

of heating specifically and food insecurity, also known as 'heat or eat', has been reported internationally.(169, 220) This is becoming an increasing issue of concern in Australia with recent reports highlighting the cost of utilities and associated financial stress.(171-173) The Victorian Essential Services Commission reported customers on standard contracts were faced with average increases of A\$360 per year for gas and electricity. Furthermore, in the quarter from January to March 2017, over 12,700 customers were disconnected for failing to pay their gas or electricity bill, with 40% of customers with debts greater than A\$1000 entering into payment plans. Forty-three percent of those 'hardship' customers were on payment plans of greater than one year's duration.(221)

Short- and long-term change in household composition was described as a trigger for households impacting on financial and material resources. This was discussed by some food secure and food insecure participants who recounted that, when a child was born in the household, there was an associated reduction in income, either short term or longer term. In fact, an extra person - child or adult - placed significantly greater financial demands on the household resources because there was an extra mouth to feed or extra material resources that may have been needed. The impact of change in household composition was reported internationally.(51, 54, 204, 205)

Cost of food, specifically special dietary foods, was crucial in the management of a number of dietary-related conditions and raised by food secure participants only. Concerns reflected the cost to maintain such diets and the ability to access a variety of these foods. The cost of gluten-free food has been found to be significantly more expensive than gluten-containing foods(222). While this was only reported by food secure participants, it does raise concern as a potential precursor for food insecurity and how these households may cope.

Further exploration during the interviews indicated that food-insecure participants were experiencing food-insecurity triggers beyond those of a financial origin. These could be related to the dimensions of food security, such as physical access (lack of a car, poor public transportation), time available, location of food outlets and inability to access culturally appropriate foods. Sophie and Maureen highlighted the impact of not having a car on food access and this placed them at increased risk of

food insecurity. Their stories illustrate the adaptations they made to food access to enable them to feed their household. Invariably these adaptations required considerable investment of time, energy and a reliance on others for help. Car access has been described as an important factor in supporting food security particularly in very low income households.(223)

The key differences between food secure and food insecure participants were the number and complexity of factors and the cumulative and relentless nature of triggers. This placed additional pressures on the household, especially the food gatekeeper when making food decisions.

3. Assets that protect against and/or act as a buffer during periods of food insecurity were valuable/appreciated even if the impact of the assets was limited.

A key interview finding was the depth and strength of assets possessed by food secure and food insecure participants. It has been recognised that food insecure households often possess a range of assets and skills that traverse, but are not limited to, budgeting, planning and preparation of food. (109, 143, 205, 224) These assets provided strength to both capabilities and resources of the household. Assets were developed by participants at varying life stages, often with the support of a key person such as mother or partner, and in different contexts within and across households. However, a key difference between food secure and food insecure participants' was the amplification of these assets and the ability to enact them to provide a crucial buffer to the food insecurity experience. The core to these assets was supported by the subthemes of food literacy and social connection. These will be discussed relating to the study findings and the literature.

Food Literacy

Extensive financial, human and natural assets were centred on budgeting, planning, food knowledge, shopping knowledge, food preparation skills, knowing how to grow food, and modifying recipes. Collectively, these skills and strategies, as described by participants, were crafted over different life stages and were also related to the

broader food, social, economic cultural environment. These characteristics may be considered under the overarching term of food literacy.

Vidgen and Gallegos (2014, p. 54) defined food literacy as:

'the scaffolding that empowers individuals, households, communities or nations to protect diet quality through change and strengthen dietary resilience over time. It is composed of a collection of inter-related knowledge, skills and behaviours required to plan, manage, select, prepare and eat food to meet needs and determine intake'.(225)

These assets may be compartmentalised further into the four components of food literacy, traversing planning and management, selection, preparation and eating of food. Based on a scoping review this definition was expanded by Cullen et al. (p. 143 2015) as follows:

'food literacy is the ability of an individual to understand food in a way that they develop a positive relationship with it, including food skills and practices across the lifespan in order to navigate, engage, and participate within a complex food system. It's the ability to make decisions to support the achievement of personal health and a sustainable food system considering environmental, social, economic, cultural, and political components'.(226)

This definition stresses that in order for individuals and communities to be food-literate it is paramount to also consider their socio-ecological context.(226) Elements from both definitions could be found within the study findings.

As identified by participants, these assets under the food literacy umbrella were not something that was static but slid across a continuum of development over the life course and was context (individual environment) dependent. This is consistent with reports where individuals may have different levels of competence across food literacy areas.(227) This was exemplified by some participants having greater strengths in food knowledge and cooking when compared to growing food.

The food literacy possessed by food insecure participants provided some capacity and resilience to reduce the experience of food insecurity. However, this was only to a point where these resources were exhausted and/or participants were unable to combat the precursor to food insecurity. These specific precursors invariably related to the broader environment and structural issues such as rising costs of utilities or childcare.

Initiatives that address skills such as budgeting, cooking, and growing of foods in community gardens have often been the response to food insecurity at a community level, both internationally and nationally. While these may be a buffer to food insecurity these initiatives often fail to address the broader systemic determinants of food insecurity.(228) However, the benefit of such programs is their impact on social connections and interaction also reported in this study.(108, 109, 224, 229)

Social support through networks

The asset of support through social networks was important to both food-secure and food-insecure participants. Social support in the food security literature has been described in context as emotional, instrumental (child care, food or material items) and informational support (advice and factual information).(85, 230) Consistent with the literature reported in this study, social support was described as arising from two sources: 1) networks of family and friends, and 2) networks in the broader environment, such as community agencies, and government benefits systems (e.g., Family Tax Benefit and Child Care Benefits).(204, 230) The role of support in relation to food insecurity served as a coping function and/or a source of increased income, primarily through government benefit systems. Davis et al. (2016) described these as coping and leverage relationships.(230) The stress-buffering framework suggests that social support may act to reduce the associated negative impacts of catalysts to stressors, through either 1) perception that support is available; or 2) perception of the ability to cope with the situation faced; or 3) solution provision.(231) Participants described how the act of emotional, food or material support from friends or family was a valuable buffer in supporting them to cope with their experience of food insecurity.

The act of reciprocity, including swapping and sharing produce with neighbours, friends or fellow community gardeners, was an important social support which helped to buffer food insecurity, but also provided connection to community. The act of reciprocity and food insecurity has been qualitatively reported amongst US sub-population groups with similarities to this study regarding the use of food.(204, 230) Of interest is the provision of support from grandparents who may provide a meal for grandchildren or the family, or in some cases pay for fees for children, which would allow other assets to be put to use in other areas and alleviate the experience of some triggers. This may be considered with respect to the role social support being described in an emotional and/or instrumental context.

In contrast, while support was considered in a positive light, at times it was juxtaposed with negativity, where the reliance on asking some family members for money was fraught with hesitancy, shame and guilt. In Clara's case there were boundaries around what she would ask for financial support for, from family. The concept of hesitancy was supported in other work from the US.(230)

In this study some participants were receiving financial support through government benefits. Food-insecure participants described this support as a means to contributing to their economic status, but also as a means to cope with food insecurity. This is consistent with the coping and leverage role of social support reported by Davis et al. (2016).(230) Interestingly, it was the FIS participants who also commented in more detail about inadequacies of the social security safety net. These comments may be considered in the context of the financial demands on participants and the concern that the safety net, while important, may be out of step with increasing costs of living expenses. Also, for some participants, their current household income level was too high and they were ineligible to access social supports. The ineligibility of households above the poverty line for some social support has been reported in US low income households (53) and rural and urban Oregon households.(204) Inability to access sufficient government benefits or food and material aid was often contextualised by individual participants as follows: 'that there are always people who are doing it tougher than themselves.' This belief may

be drawn from and built upon the resilience and resourcefulness described by food insecure participants.

4. The consequences of food insecurity are extensive, and there is constant stress related to the threat of food insecurity

The stories of food security and food insecurity provided a detailed insight into the experiences and consequences of food access and provision beyond that of the USDA HFSSM. For food insecure participants specifically, these stories were filled with compromise, stress, guilt, and shame but interspersed with ones of resourcefulness, resilience and hope. As previously reported where food compromises were made, there was a subsequent challenge to uphold the household food values and role of food.(59)

In contrast, food secure participants' stress was at much lower levels. However, at least three participants reflected on the stress they experienced when previously food-insecure and the impact of this. Despite their reflecting on a difficult past, these descriptions were rich, vivid and detailed as they relived the potential of shame, embarrassment and concern due to the stigma of not being able to pay for food or feed children. The experience of shame, especially reported by women, when associated with a stressful experience of food insecurity, has been previously reported.(48, 59, 232, 233) These studies reported stressful experiences that included going without food and using food banks.

While there was commonality in elements of these food insecurity experiences across participants, it was evident that the experience was not uniform but rather was consistent with the severity level and relative hardship experienced. Canadian researchers described the association between increasing food security severity status and other forms of material hardship, such as rent and bill difficulties, giving up services, pawning items to raise money and limited purchasing of milk, fruit and vegetables.(66)

Further exploration in Australia within this and across income groups of the experiences and associated material hardships would support greater understanding of potential interventions to reduce food insecurity where food provisioning is not a suitable solution.

The impact of stress

Stress was associated at two levels. First, food-insecure participants were constantly trying to juggle to make ends meet and make trade-offs in the household. Second, there was the stress associated with feelings of guilt, shame and embarrassment. Whilst stress was ever present it was heightened by the severity of the food insecurity experience.

McEwan (2012) described stress and its impacts:

'stress is a state of mind, involving the brain and body as well as their interactions; it differs among individuals and reflects not only major life events but also the conflicts and pressures of daily life that alter physiological systems to produce a chronic stress burden that in turn is a factor in the expression of disease.' pg 17180(234)

While stress was reported in the survey and interviews, it was evident that it existed beyond these two time points in a 12 month period. The severity of stress fluctuated but stress appeared to be always present. Stress was described in the context of food insecurity experience, but also with other stressors and trade-offs that may or may not be associated with food insecurity such as purchasing medicine for self or a family member or paying a utility bill. Evidence suggests that food insecurity at any level of severity may be considered a form of toxic stress.(146, 208, 211) Toxic stress has been described as:

'disrupted brain architecture as a result of stressful experiences, affecting other organ systems, leading to a prolonged activation of the body's stress response system'.pg 5(146)

The ongoing impact of forms of stress and food insecurity within low-to-middle income groups requires further exploration. Chilton and Rabinowich (2012) recommend that stress must be considered in intervention efforts especially in households where children are present.(146, 208) The negative health impact of stress levels has been reported in marginally food secure households.(19) Associations with marginal food security include poor psychosocial health, depression and health among children.

Additionally, the impacts of continual 'wear and tear' of stress on the body, or allostatic load of stress related to food insecurity should be considered, especially for the food gatekeeper. Allostatic load is a term used to describe all of the long-standing effects on major organ systems of continuously activated stress responses in the body.(235, 236) The long-term impacts of food insecurity and the relationship to allostatic load warrant further exploration.

Often counteracting this constant stress was the high degree of resilience present in many participants. Resilience is a dynamic concept influenced by life course events and has been believed to contain two key elements: adversity and positive adaptation.(237, 238) The level of resilience evident in both food secure and food insecure participants was shaped through life experiences that were often adverse in nature.(239) Resilience was particularly evident with participants who grew up in wartime or if a parent experienced war.

5. Food insecurity measurement - the importance of understanding marginal food security and the dimensions of food security and the value of mixed methods.

This study modified the food security classification from that of the original USDA HFSSM protocol. One or two affirmative responses are classified as food secure with a severity of marginally food secure(14), this was modified to a classification of food insecure with severity of marginally food secure. The understanding of marginal food security is limited. In this study, the classification of these participants as food insecure was supported by relevant literature and allowed for exploration of their experience.(15, 19, 39) Understanding the marginal food secure experience has importance from an epidemiological, public health and public policy perspective.(19) The decision to categorise those experiencing marginal food security as food insecure was supported by the study findings, particularly their stories portrayed with increasing levels of anxiety and stress regarding food provision. As suggested previously by Loopstra (2013) those experiencing marginal food security may experience poorer health outcomes and increased forms of material hardship when compared to food secure individuals.(66)

This study implemented the USDA HFSSM to categorise food security status which is considered the most reliable and valid food security measurement tool across populations. Whilst the USDA HFSSM is based on economic access to food, it does not take into consideration other reasons for the existence of food insecurity. A recent systematic literature review indicated the absence of multi-item tools that assess food security beyond this one dimension.(196) Economic access may be the key driver for food insecurity there is a need to also understand other determining factors.

The methodology undertaken allowed for inclusion of the voices of those who were food secure, classified by the USDA HFSSM. Whilst this group did not respond affirmatively to any of the USDA HFSSM questions, their stories indicated that they had experienced some degree of food stress and anxiety during their past or current life that the tool did not assess. Some participants indicated difficulty accessing food due to physical reasons: having moved into a new area with no personal transport other than walking, and an inadequate public transport system. Physical access is considered to be part of the dimensions of food security.(3) More specifically lack of car access has been associated with increased difficulty of accessing food outlets.(51, 223)

7.4 The Sustainable Livelihood Framework

While no pre-determined framework was established the Sustainable Livelihood Framework was used as a lens and structure to view the results of the quantitative, qualitative and integrated findings of this study; providing a perspective on potential responses to support food security across households of all incomes.(203) Elements of these findings support core components of this theoretical framework. Described by the Department for International Development (1999), the SLF guides the development of policy for economic development to support sustainable livelihood outcomes, such as food security, predominantly in developing countries.(203)

A sustainable livelihood refers to the capabilities or assets required for living by individuals, households or communities in order to cope and recover from shocks and stresses (both internal and external). These capabilities can be maintained, modified or developed.(203, 210, 240) The framework has been described to support the development of activities that are people centred, responsive and participatory, dynamic, multilevel, conducted in partnership across sectors (public and private) and sustainable.(241) The SLF has been applied to food security research across countries of various income levels, including Australia and Canada. However there has been limited application in high income countries. In order to achieve food and nutrition security in Canada Slater and Yeudall(240)have proposed the use of the SLF as a conceptual model to allow for a comprehensive examination of factors necessary to reach food and nutrition security. They further propose for the application of the SLF in both research and applied settings at the individual, household, community and regional and policy level to assess the range of determinants of food and nutrition security and evaluate potential solutions.(240) In Australia, the framework has been used with exploration of food insecurity in single parents to identify relevant policy responses.(210)

The advantage of SLF as a framework for consideration in a high income country context distinct from developing countries is threefold. Firstly, it has a person centred approach; individuals/households are acknowledged in context of their own situation, their strengths and their assets (*Theme 2 Assets*) rather than their deficits. Secondly, the livelihood outcome (food security) is considered in the context of the broader social, political and economic environment structures related to vulnerabilities (*Theme 3 Triggers*) and transforming structures and processes (*Theme 4 Assets amplified*). Thirdly, the framework is not linear but is dynamic and interactive. The dynamic nature is reflective of change that may occur over time and the complexity of the relationships across different aspects of the framework. Furthermore, different entry points across the framework allow identification of structures and processes at various points to improve the outcome (food security) (Figure7-1). Each element of the SLF will be discussed in the context of the study findings and are summarised in Figure 7-1 and Table7-1.

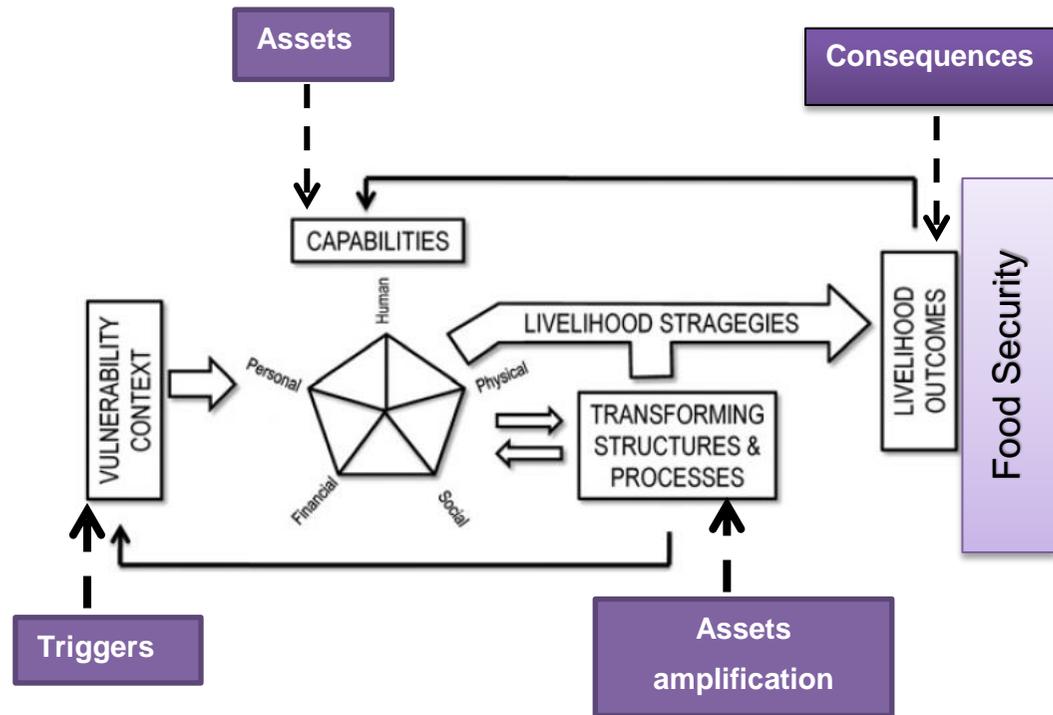


Figure 7-1 Adapted Sustainable Livelihood Framework with Part 2 themes applied. Adapted from Law et al. (2011) and Department for International Development (1999)

Table 7.1 Summary mapping of Sustainable Livelihood Framework (SLF) with Part 2 findings

Sustainable Livelihood Framework	Integrated mapping of Study 2 findings - Qualitative themes and subthemes and Quantitative results
Vulnerability Contexts	Theme 3 Triggers
Shocks	Income fluctuations Household cost of living expenses – Bills expected and unexpected Relationship breakdown Change in household composition Social support changes Fluctuation food costs Availability of food at outlets Physical access – transport
Livelihood Capabilities	Theme 2 Assets and Theme 1 Food Decisions– sub-theme 1.1 Roles and values that shape food decisions FSiMHS characteristic data
FSiMHS characteristic data	Education, employment/income, car ownership
Human	Extensive array of skills that may be defined by food literacy.
Personal	Values and meaning of food.
Financial	Budgeting management skills.
Physical	Cooking facilities, transport, growing food in backyard,
Social	Connections with friends, families, neighbours – exchange of produce, sharing meals, Wider community - local shop keepers.
Transforming structures	Theme 4 Assets amplified – Sub-theme 4.1 From within the households and sub-theme 4.2 From outside the household FSiMHS characteristic data
	Social security - Health Care Card, Family/social/community support. Education level, car ownership, employment/income
Livelihood outcome	USDA Household Food Security Survey module results. Theme 5 The consequences & emotional rollercoaster
	36% of all low-to-middle income FSiMHS households (n=42) were food insecure. Households with children: 18% MFS 13% LFS and 5% VLFS Adult only households: 8% MFS, 9% LFS and 3% VLFS Experience consequences and emotions, frustration, stress, anxiety, compromise re food nutrition, quantity and quality, guilt, resilience, respect, resourcefulness and responsibility

7.4.1 Vulnerability context

The vulnerability context includes the broader physical, economic, social and political environments that people live in and may positively and/or negatively influence the capacity to achieve a sustainable livelihood outcome.(210) The vulnerability context may be considered as the shocks and stresses that impact on a household and may be influenced by factors internal and/or external to the household.(242) Applying the SLF to this study data the vulnerability context was reflected in *Theme 3 Triggers* and corresponding subthemes of internal and external triggers for participants that impacted on their food security status. These triggers were shown to put the assets of participants and households under stress.

Food insecure participants consistently reported triggers of a financial origin; and these often came in the form of income and/or cost of living shocks increasing their vulnerability. In a number of cases, these were unexpected, and many participants reported that they may not have financial resources to counteract these. Reported cost of living expenses related to increased costs of utilities, housing (rent and mortgage), petrol and the cost of food. Child Care fees were discussed as a financial pressure. The impact of Federal Government policy on Child Care Rebates was out of touch with increased fees and subsequently impacted upon the vulnerability of a household. Some food-secure households reflected upon a time when they experienced these shocks, placing them under the threat/or the experience of food insecurity.

Household composition varied across interview participants, with 44% consisting of couples with children under 18 years, typically with two children. Change in household composition such as the birth of a child, return of an adult child or additional extended family was a key trigger. This resulted in a shock to income, and financial resources, and often then placed assets under stress. For two participants a change of household composition precipitated by a relationship breakdown brought with it a number of resulting income and cost of living shocks that triggered their experience of food insecurity. However, regardless of food security status a number of participants with children described tensions between balancing financial and time resources.

Triggers other than financial origin were reported by both food-secure and food insecure. For some households, these acted alone, or were in addition to financial triggers. Food access was impacted upon by time pressures that resulted from juggling roles of parenthood, study, work and being the main gatekeeper of food management. This resulted in challenges and compromises to meet the values of healthy food choices and food preferences. The availability of food in the local food supply that met food preferences including quality, special dietary needs and budget was described as a potential trigger for households. There are some consistencies from this study with other work that identified triggers in South Australian single parents such as cost of food, fuel costs.(210)

7.4.2 Livelihood Capabilities

Livelihood capabilities of a household are fluid, interactive, interchangeable and are core building blocks to supporting households to work towards achieving food security.(203, 210) In Figure 7-1 they are represented visually as a pentagon, which is flexible allowing for greater emphasis on different capabilities within as required. In the context of this study they are referred to as assets discussed in *Theme 1 Household food decisions are complex, dynamic & multi-factorial (Sub-theme 1.1 Roles & values that shape household food decisions)* and *Theme 2 Constant interaction of multiple protective assets*. Law (2011) described these capabilities in the context of food security research with single parents in Adelaide, South Australia (210):

1. Human capabilities represent the skills, knowledge, health and ability to work that allow someone to pursue and achieve their livelihood objectives.
2. Personal capabilities from values and self-perception.
3. Financial capabilities are the financial resources available to a person or household. These will include income (salary or social security) and liquid assets or savings.
4. Physical capabilities may include the natural resources, equipment, services and infrastructure available to a person or household. This includes access to and availability of healthy food.

5. Social capabilities include the social and political networks and connections with others and community. It may include aspects of trust, reciprocity and sharing resources and connections.

These capabilities described by Law (2011) in a developed country context will be applied to the related findings of *Theme 1, Household food decisions are complex, dynamic & multi-factorial Sub Theme 1.1 Values, and Theme 3 Constant interaction of multiple protective assets* of this study. The findings were found to be distributed broadly across all categories.

Human

The quantitative and qualitative data indicated participants had completed or were completing further education. For both food secure and insecure there was a focus on highly developed skills and knowledge, *food literacy capabilities and resources (Sub Theme 2.1)*. This encapsulated: budgeting, planning, food knowledge, shopping knowledge, location of stores in and around the local area, knowing food specials, food preparation skills, knowing how to grow food and recipe modification. Time available to achieve food related tasks such as acquisition and preparation and other demands, child care, study and work was discussed by both groups of participants. These findings were consistent with that reported by Law (2011) in single parent households. (210)

Personal

Personal values incorporated those demonstrated in *Theme 1 Sub Theme 1.1 Roles and values that shape households' food decisions*. These values were of high importance to both participant groups, where food was a priority, with importance placed on nutritional and physical quality of food. Further to this, participants' detailed additional personal values and meanings associated with food in social and metaphorical contexts. For example, food represented family and was an important conduit that supported, and was associated with, socialisation.

Financial

The quantitative demographic data were used to select participants for the qualitative phase indicating that their income was through employment, self-funded retirement (superannuation) or studying and working part time. For a number of participants (food secure and food insecure), income was supplemented with a range of Government Benefits. Only a small number of food secure and food insecure participants mentioned their capacity to save. These savings acted as a buffer if required to cover additional planned and unplanned expenses. Often it was when these financial asset sources were challenged by specific triggers that vulnerability to food insecurity increased. However, for all participants who were food-insecure, it was the inadequacy of income to support the financial demands placed on their household that was the catalyst for episodic and ongoing food insecurity with varying severity levels.

Financial assets went beyond direct income but also access to credit. For some participants this included credit cards and the asset of owning a property. Clara, in particular, reported not having access to such assets and that this created an ongoing financial management struggle.

Refined personal budgeting strategies were described by all participants under 1) Human assets.

Physical

Physical assets, including car access, were reported as an enabling factor for food access, with all participants using a car as their main form of transport to the supermarket and smaller food outlets. However, one food insecure participant reported that they also would ride a bike for small shopping trips, and another at times would catch public transport. Kitchen equipment, storage space and freezers were assets available to all participants and supported food security. Freezers in particular were described by some households as being crucial to buying things in bulk as a way to save money and store foods especially if finances became tight. A number of participants who were food secure and food insecure grew their own food in their back yards or, in one case, in a community garden which supported the supply of fresh fruits, vegetables and herbs.

Social

Social assets were described to be those within and external to households and provided important social connection in the form of social networks. Participants described two levels of social assets. First, there were relationships with friends, family and neighbours that centred on the exchange of produce and sharing food and meals. The sharing of produce related to surplus backyard food production. Reciprocity was evident with friends, family and neighbours helping each other, not only with food, but also with material aid or supporting friendships. The second relationship was with local small shop owners and staff who provided a link to community by food provision, in some cases price or payment flexibility. Although this finding is similar to that described by Law et.al(210) there was not the same degree of personal relationships with supermarket staff. These social networks were described in two contexts as preventing food insecurity, but when people were experiencing a level of food insecurity it helped to minimise the impact.

7.4.3 Transforming structures and processes

Transforming structures and processes may occur at a household or broader environment (organisations, institutions, policies, social structures, markets and laws) and through the capabilities may be able to mediate the impact of the vulnerability shock and progress towards the livelihood outcome of food security. External environment elements of *Theme 4 Asset amplification* may be considered transforming structures and processes.

Government benefits, particularly the Family Tax Benefit and Child Care Rebates, were described as transformational structures, providing additional income to the household. In the case of Child Care Rebates, this reduced the expense of child care fees and enabled participants to attend work or university, as was the case in 19% of interviewed participants. There was mixed emotion and conflict regarding the transformational status of the Child Care Rebate. One participant experiencing food insecurity described the difficulty of paying increasing child care fees when the rebates were often not in step with these increases.

Completing further study was viewed as a transformational structure that would make a difference for the household in the future by the potential for higher income with formal qualification. This, in turn, would increase the household livelihood, potentially ensuring a better standard of living for the family, especially for children.

Tensions and contradictions were evident with the role of supermarkets as transforming structures, with participants conflicted and frustrated that supermarkets may in fact impede aspects of food access. As a transforming structure, participants described the use of supermarket specials and promotions as a strategy to support their food budgets and where possible stock up on foods. However, supermarkets were described by some as monopolising product selection and not providing fresh produce, particularly fruit and vegetable. Additionally, other structures including sporting clubs, schools, kindergartens, community centres and community gardens were described as transforming structures that directly or indirectly supported access to food.

Social support networks with neighbours, friends and family became transformational structures. While these were present at all times, it was when the vulnerability contexts (*Triggers*) were particularly strong and impacting on the capabilities (*Assets*) that social support networks became crucial. This was particularly demonstrated by Maureen in her description of friends buying toilet paper for her meant she had an extra AU\$10 in her budget that week for food.

7.4.4 Livelihood outcome - Food Security

In this study, the outcome of food security and severity status was established using the quantitative data, the affirmative responses from the USDA HFSSM Table 7-1. Thirty-six percent of low to middle income participants were food insecure. The consequences described in Theme 5 were related to the livelihood outcome of food security or food insecurity (Table 7-1)

At a participant level, the framework could be mapped back from the livelihood outcome of food security or food insecurity to identify key and common points. In all food insecure examples in this study it was the strength, magnitude and timeliness of triggers that strained the capabilities (*assets*) and despite transforming structures

(amplification of assets), often resulted in food insecurity of varying severity and temporality. Common to the experience of food insecurity was the inadequacy of financial resources to meet the strain of financial demands that resulted in the experience of food insecurity.

7.4.5 Summary of the Sustainable Livelihood Framework and this study

In summary, the SLF was used as a lens to provide a structure for the findings from this MMR study to explore food insecurity/security in low-to-middle income households (Figure 7-1 and Table 7-1)

An appreciation of the variety and context of vulnerabilities/triggers provides an understanding of the food security livelihoods of households and both identification and insight into the development of potential approaches.(203) Considering the findings of the study in relation to this framework enabled an understanding of the impact of vulnerabilities (triggers) upon other areas that subsequently impacted on the outcome of food security status. Despite the number and variety of capabilities and strengths (assets) possessed by participants, these were challenged to withstand the impacts of triggers. However, at times, the transformational structures, namely asset amplification, could both strengthen the collective range of assets and impact on the trigger. This in turn supported mitigation or reduction of the experience of food insecurity.

Assets and capabilities in this study, particularly pertaining to individual knowledge and skills related to food literacy, were high and there was an immense sense of pride, resilience, respect and responsibility evident in both food secure and food insecure groups. The dynamic interaction of all the livelihood capabilities was evident and is consistent with the reported application of the SLF in Australia.(210) An advantage of using this framework is that it provided a focus on the strengths and resources of a household or individual rather than the weaknesses.

In identifying intervention points to improve the food security livelihood outcome, potential interventions should focus on reducing the vulnerabilities and strengthening the transforming structures, rather than solely focusing on the lack of

available capabilities. In practice this may translate to a focus on reducing the shifts in vulnerability contexts (triggers) for households related to the financial pressures that placed the assets under stress, to a point where their effectiveness was challenged and compromised. However, these triggers should be viewed by how they are influenced in the broader social, political, economic and physical environment beyond that of a household level. For example, the reported disconnect between Child Care Rebates and actual cost of child care, highlighting a potential area for policy consideration.

While supermarkets could be considered as a transforming structure to support access to food, through geographic location and 'pricing specials', this was met with some reservations by participants due to the monopoly of the market, pricing strategies and the perceived freshness of fresh produce. However policy at this food supply level could be considered at a local, state, and federal government level through the approval of and supporting localised fresh produce outlets reducing the monopoly and food pricing strategies.(210, 240)

Whilst the SLF was useful lens to view the data it is not without criticism in the literature regarding its application and outcomes. In some settings the framework has been described as complicated and difficult to use and may not be readily applied in a research context.(243) Contrasting this Serrat (241) described the framework's strength and scope through its people centred approach, facilitating the identification of practical priorities for actions but it does not replace other participatory or multi sector approaches. An additional critique of the SLF is that it may not adequately attend to power imbalances that may occur.(241) As an example when applied at a household level it has been stressed that the livelihood lens must be applied in conjunction with a gender lens, due to the gender power distribution that may occur across households. An additional criticism of the SLF in practice is the often limited evidence of evaluation of the changes in the livelihood outcome as result of the identified strategy e.g. policy.(243)

Despite this further exploration of applicability of the SLF for food security in high income countries may elucidate new intervention points, especially acting on the

vulnerability contexts and the transforming structures and processes to address food insecurity across income groups.

7.5 Strengths and limitations of the study

7.5.1 Strengths

Mixed methods approach

The methodological strength of a mixed methods approach allowed for detailed exploration of the experiences of food insecurity and food security within a low-to-middle income group. The interpretation of the qualitative and quantitative findings together strengthened the understanding of these experiences. The methodology supported the understanding of the construct and experience of food insecurity in this income group, more than a quantitative or qualitative methodology alone. This was reinforced by the integration of the data from both phases, supporting the validity (quantitative phase) or credibility (qualitative phase) of the findings.

An additional strength was the case selection method for the interviews which supported the transferability of the qualitative findings. Selecting participants from those that had participated in the quantitative survey allowed for further interpretation of the meaning of the findings when supported by the stories of participants. Additionally, the focus of the research on the qualitative phase provides an important contribution to the literature, particularly in Australia, providing the first exploration of the experience of food insecurity within this income group.

Food security status determined using a validated multi item tool USDA

HFSSM

Determination of food security status and severity using the rigorously validated USDA HFSSM ensured greater sensitivity in classification of food security status when compared to the current Australian single-item tool used in population surveys.(37, 49, 244) The purposive sampling across moderate to very high

VAMPIRE suburbs and neighbouring suburbs, all of which had a moderate index of relative disadvantage and advantage, correctly identified participants within a low-to-middle income group.

Constant comparison approach

The constant comparison approach to the analysis - comparing and contrasting experiences within and across food secure and food insecure groups - supported the interpretation of the findings.(184, 201) This approach allowed for insight into the experience across participants from households of varying composition and stage of life, including those with children of varying age, couples, adult children caring for elderly parents, women living alone and retired couples and how these factors impact on food security status. The stories depicted by participants were unique in nature and circumstances, but linked by underlying commonalities that could be derived from their narrative. Additionally, the constant comparison approach supported confirmability of the qualitative data across each participant, with the candidate continually immersed in the data.

7.5.2 Limitations

Sampling

A potential limitation is the recruitment strategy where the main food provider was requested to complete the survey resulting in a higher number of women (88%) responding to the FSiMHS. Fifteen women and one male were interviewed potentially impacting on the credibility and dependability of the interview data. The inclusion of only one male voice provided a narrow view of how men may perceive food insecurity.

Household income category

The household income selection category was based on the Australian Bureau of Statistics (ABS) income data that identified a range of incomes to meet low-to-middle income criteria and VPHS income categories used in Part 1. Participants may have misreported total household income by not including all income sources. Additionally, whilst total income was used it may have been useful also to look at

disposable income and equalise across the household composition as resources are not necessarily evenly distributed. However, where income has been discussed across the cited literature, total annual income has been used with a small number using equalised income being clearly identified.

7.6 Summary

This study detailed the **EXISTENCE** and **EXPERIENCE** of food insecurity for low-to-middle income households using a mixed methods research design. It has highlighted the food insecurity experiences of this income group and is the first in Australia to detail this story beyond very low income households. Whilst there have been commonalities portrayed in the food insecurity experiences of very low income, it has highlighted this experience is invariably hidden and accompanied with considerable stress.

Food insecurity exists in low-to-middle income households, who own their house, who are educated and who are often supported within their environment. The face of food insecurity as those living primarily in poverty is challenged.

The story that emanated from data from low-to-middle income households as illustrated in Figure 7-2, reinforces the existence of food insecurity below the surface for those experiencing it, described as an ‘underbelly’ or undercurrent of food insecurity. It illustrates the hidden nature of food insecurity and, as the consequences of food insecurity increase, so does the level of stress and anxiety. Above the surface participants are supported by assets, food literacy and social networks. The supports and strengths of hope, resourcefulness and resilience are depicted. However, when placed under stress by a number of varying triggers, these assets are challenged, often resulting in an increase in the consequences experienced below the surface.

The next chapter will summarise of the key findings from Part One and Two to describe the **EXISTENCE and EXPERIENCE** of food insecurity in low-to-middle income households, with recommendations for future research.



Figure 7-2 Summary of the food insecurity underbelly experience for low-to-middle income participants

Chapter 8

Part 1 and 2

Discussion

Chapter 8: Summary of the EXISTENCE and EXPERIENCE of food insecurity in low-to-middle income Melbourne, Victorian households

8.1 Introduction

The previous chapters of this thesis have detailed the findings of the **EXISTENCE** (Part 1) and **EXPERIENCE** (Part 2) of food insecurity and have discussed these findings in the context of existing literature. This final chapter presents how the combined findings of the **EXISTENCE** and **EXPERIENCE** address the overarching research aim and objectives of this thesis and contribute to developing a picture of food insecurity in low-to-middle income (defined as A\$40,000-\$80,000) households in Melbourne, Victoria. Finally, implications and recommendations for practice, policy and research will be proposed.

8.2 Summary of research need/gap and objectives

Food insecurity has been described as a wicked health problem impacting on the lives of adults and children.(12) Conservative estimates indicate that four percent or over 900,000 Australians are living in a household that was reported to be food insecure.(44) To date much of the focus of the food insecurity research in Australia has been on those where the prevalence of food insecurity is higher; that is, for those in very low income groups. International evidence suggests that food insecurity is not confined to those on a very low income, with some studies suggesting food insecurity exists in higher income groups.(53-55) Meanwhile, in Australia little is known about the extent of the problem or the experience of food insecurity in low-to-middle income households.

The objectives of this research were:

Part 1: EXISTENCE

- To document the ***prevalence of food insecurity*** in low-to-middle income Victorian households.
- To explore potential ***determinants of food insecurity*** in low-to-middle income Victorian households.
- To explore the ***relationship and factors associated between the 'ability and inability to raise A\$2000 in an emergency in 2 days'*** (indicator of financial stress) and food insecurity.

Part 2: EXPERIENCE

- To ***identify low-to-middle Melbourne households who are food secure and food insecure*** (or at risk of food insecurity).
- To ***explore and compare the food security and insecurity experiences*** of these households in this income group. Specifically exploring precursors, strategies to prevent or address and the implications of the experience of food insecurity.

8.3 Summary of the key findings in accordance with PhD aims

8.3.1 Part 1 the EXISTENCE of food insecurity

The prevalence and frequency of food insecurity

Analysis of the 2006-2009 Victorian Population Health Survey (VPHS) data determined that the prevalence of food insecurity in low to middle income respondents ranged between 3.9%-4.8%. This was established by an affirmative response to the single-item question in the VPHS '*In the last 12 months did you run out of food and were unable to afford to buy more?*' For those low-to-middle income households experiencing food insecurity, between 6%-29% indicated that this occurred once a month and 10%-18% indicated this was a weekly or fortnightly experience.

Potential determinants of food insecurity

The 2008 VPHS data set was further analysed to explore variables that were associated with food insecurity in this income group. The strongest associations in the multivariable model with food insecurity included '*inability to get food wanted due to its expense*', support from friends, '*ability to raise money in an emergency in 2 days*', housing tenure that was neither renting nor owning own home, gender and age.

Associations between ability to raise money in an emergency and food insecurity

PART 1B **EXISTENCE** aimed to look more deeply into the association that was found between the '*ability to raise A\$2000 in an emergency in 2 days*' and food insecurity. This variable was considered as an indicator of financial stress.(245) Being a sole parent with children over 18 years and living alone were most strongly associated with being '*unable to raise money in an emergency*' and food insecurity. Households composed of a couple and dependent children were also potentially at risk (p=0.06). For those who were '*able to raise money in an emergency*', the associations with food insecurity were housing tenure other than renting or owning, and inability to get help from friends. A reduced risk of food insecurity was associated with increased age and educational attainment equivalent to high school level and beyond. There was also a strong association between the ability to raise money in an emergency and '*the ability to get the food wanted due to its expense.*' Regardless of respondents' ability to raise money in an emergency, they reported that they were unable to get the food wanted due to its expense.

8.3.2 Part 2 the EXPERIENCE of food insecurity

Part 2 built on the confirmation of the **EXISTENCE** of food insecurity in low-to-middle incomes and explored the **EXPERIENCE** of food insecurity in this income group. A sequential explanatory mixed methods design, with a quantitative and qualitative phase was implemented.

Identify low-to-middle income food secure and food insecure participants

Classification of food security status and income level was achieved through the implementation of the *'Food security in Melbourne Households Survey'*. Of the 134 respondents 121 provided income data, 35% were classified as low-to-middle income, with 36% of these classified as food insecure. An advantage of using the USDA HFSSM multi-item tool to classify food security status was the ability to assess the severity of food insecurity based on household composition (those with children, n=74, and adult only, n=60) and severity of food insecurity. In households with children, the severity varied from marginal (18%), low (13%) and very low (5%) food severity. In contrast, in adult only households, the distribution of severity was eight, nine and three percent respectively. The classification identified 64% of participants as food secure, based on the ability to access food due to financial resources.

The experiences of food insecurity and food security

Eight food insecure and eight food secure participants from the quantitative survey were selected for in-depth interviews that explored the experiences of food insecurity/security. Five themes were identified from the interview data: (i) household food decisions, (ii) assets, (iii) triggers for food insecurity, (iv) amplification of assets and (v) the consequences and roller coaster of emotions.

The five key findings from Part 2 are summarised in Table 8.1:

Table 8.1 Five key findings from Part 2 EXPERIENCE of food insecurity

Part 2 EXPERIENCE of food insecurity findings
1. The food insecurity experience varied from episodic to chronic, was covert in nature and graded in severity.
2. The complexities of triggers for food insecurity were inclusive of, yet beyond, economic origin.
3. Assets that protect against or buffer during periods of food insecurity were valuable, even if the impact of the asset was limited.
4. The consequences of food insecurity were extensive and there was constant stress related to the threat of food insecurity.
5. When measuring food insecurity it is important to identify marginal food security and the four dimensions of food security, not just economic access.

Whilst the prevalence of food insecurity in low-to-middle income households may be at a lower level when compared to those on much lower incomes, there are similarities in the severity of the experience within low-to-middle income groups, across the food insecurity experience continuum. These experiences ranged from stress, concern and worry to perturbations in food quantity and quality, often situated with the household food gatekeeper. This was described by the candidate as the 'Underbelly of Food Insecurity', referring to an undercurrent of food insecurity that was hidden and insidious and included a range of consequences.

8.4 Implications of findings

In summary, this research has determined that food insecurity exists in low-to-middle-income households, but the experience varies in severity, uniformity and nature. The true magnitude of the issue is hidden, in part due to the nature of the experience and the shame associated with it. To the candidate's knowledge, this is the first time this evidence has been reported within Australia. The research undertaken as part of this thesis makes an original contribution to the field of food insecurity, both nationally and internationally, by providing additional understanding of both the EXISTENCE and EXPERIENCE of this public health issue beyond those on very low incomes. This research provides a novel and unique view of food insecurity in Australia and challenges the perception that it is an experience that that is situated only amongst those on very low income in our society.(97)

The contribution of this thesis to the understanding of food insecurity in low-to-middle income is summarised in Figure 8-1. The complexity of this conceptualisation reflects the nature of food insecurity.

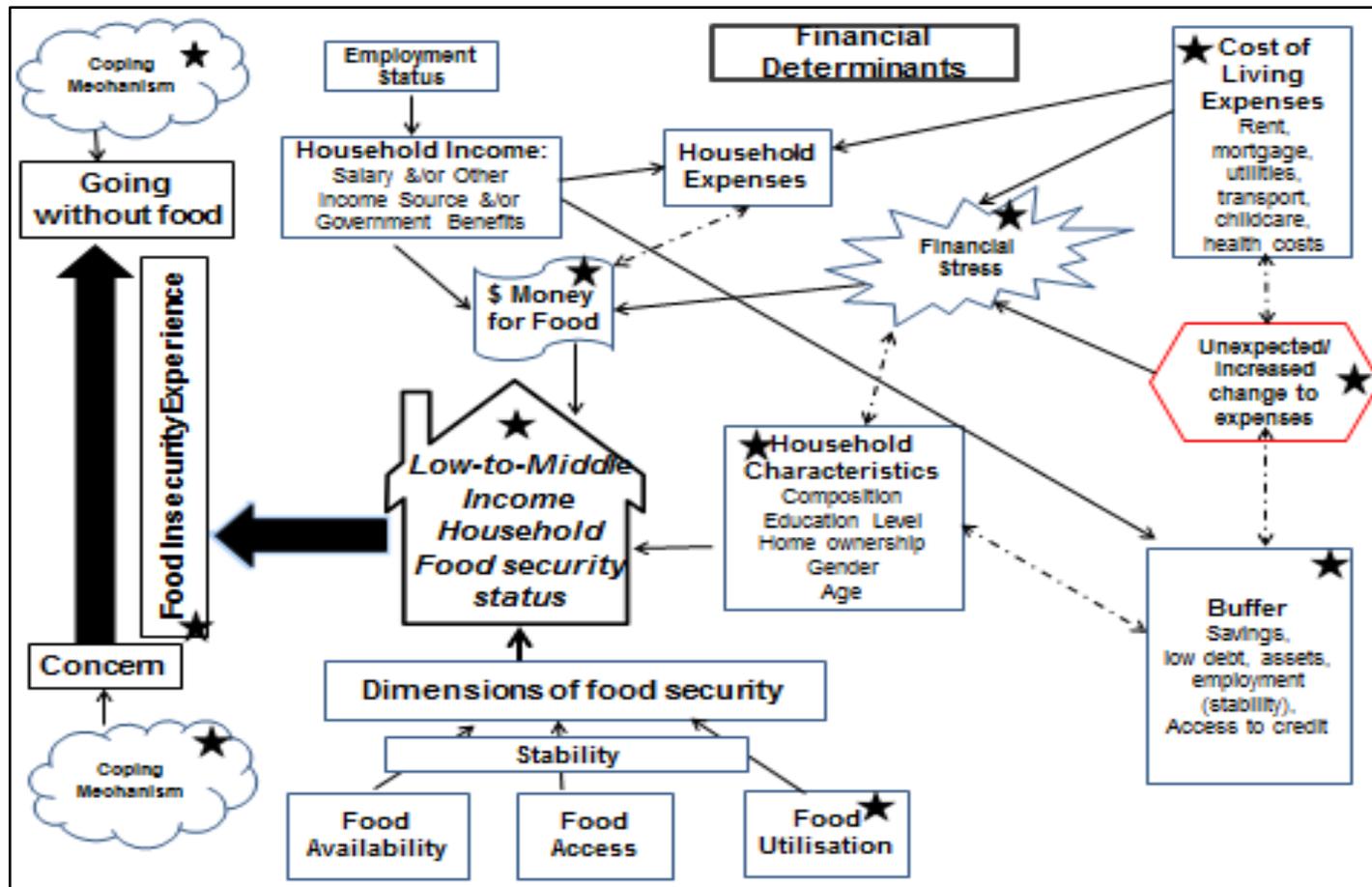


Figure 8-1 Summary of findings of and contribution of Exploring the EXISTENCE and EXPERIENCE of food insecurity in low-to-middle income households

★Contribution to the understanding of food insecurity in low-to-middle income households.

8.5 Recommendations encompassing future research, policy and practice in food insecurity in Australia.

The proof of the **EXISTENCE** and the documentation of the **EXPERIENCE** of food insecurity within those on low-to-middle income have implications for the direction of research, policy and practice in food insecurity. Three key recommendations established from reflecting upon the literature discussed and findings of this thesis will be presented. Underpinning each of these recommendations is the need for an increased food security research agenda in Australia, using a range of methodologies at a population and subpopulation level across income groups. This is crucial to appropriately inform, direct and evaluate policy and practice options that address the determinants of food insecurity. Research needs to be focussed not only on investigating pathways out of food insecurity and trialling targeted interventions that stop people from falling deeper into food insecurity but in prevention strategies.

Recommendations:

- 1. Commitment to annual monitoring using a more sophisticated multi-item measure of household food security in Australia. Reporting of the prevalence and severity of household food insecurity across income groups at a national and state level.*
- 2. A need to adequately measure food insecurity according to its dimensions to understand its determinants.*
- 3. The current dominant downstream food based responses in Australia fail to address the problem of food insecurity in the long term. Development and implementation of policy and practice responses must address the systemic issues of food insecurity.*

8.5.1 Recommendation 1:

Commitment to annual monitoring using a more sophisticated multi-item measure of household food security in Australia. Reporting of the prevalence and severity of household food insecurity across income groups at a national and state level.

Monitoring and reporting of the prevalence and severity of households' food insecurity is crucial to: provide a more accurate understanding of the prevalence of household food insecurity and who is experiencing it; recommend and guide effective policy and other program interventions to address it; and allow for the capacity to assess the impact of such policy and program interventions.

Routine annual monitoring

Currently in Australia, food insecurity is measured at a population level by the Australian Bureau of Statistics in the Australian Health Survey using a single-item tool. This is reported at best every three years for the population, at national and state level and for Indigenous Australians. However, it is not reported across income groups, household types or severity levels.

The analysis of the Victorian Population Health Survey undertaken in Part 1 highlighted that food insecurity exists across income groups and that there were other determinants of food insecurity than income. This exploration is reliant on the annual inclusion of food insecurity measurement in annual population surveys. With the perceived low prevalence of food insecurity, the single-item question has been excluded from some state and national surveys: for example, the 2015 and 2016 VPHS. This creates inconsistent data sets from population surveys and an inability to monitor the prevalence over time. In the absence of a regular national monitoring system, ideally state level population data should be collected consistently with similar covariates analysed in Part 1 so that data can be extrapolated across the nation. Comparative to the US and Canada, who monitor annually across all states and provinces using the USDA HFSSM, the monitoring system in Australia needs commitment, investment and improvement.

The availability of national and state-based data on food insecurity can inform further research that supports a more comprehensive understanding of the issue

and identify areas for action. Additionally it can also inform evaluation of initiatives and policies implemented to address food insecurity

Use of a multi-item tool that allows for understanding of the severity and temporality of food insecurity

This research provides further evidence that the prevalence of food insecurity may be much higher than is identified by the single item tool used to measure food insecurity in Australia.(37, 49) The focus of this single item tool is on the extreme experience of food insecurity – food insufficiency and running out of food. The use of the USDA HFSSM in this research provided a quantitative insight into the stress, anxiety and concern that often precedes the changes to quality and quantity of food, to the more severe form of food insecurity with multiple indications of disrupted eating pattern and reduced food intake.

Food security in Part 1 and 2 of this thesis was determined at one point in time asking for a reflection over the previous 12 months. Through the qualitative interviews, food-secure participants reflected on their lives identifying times they had difficulty accessing food, describing experiences similar to food insecurity. This was also supported by those classified as food insecure, identifying times where their experience may have been different from the one that they currently reported. This highlights the precarious nature of food insecurity and that household situations may change over time. Despite food insecurity experiences being many years prior, its impact were still felt, both psychologically and physically on households. Understanding the temporality of food insecurity will inform both policy and program based interventions. Additionally it is important that the lived experiences be determined.

Categorisation of marginal food secure as food insecure

The USDA HFSSM allowed for both the classification of food security status and categorisation as marginally food secure, low food security and very low food insecurity.(68) In the absence of qualitative data relating to the experience of food insecurity in this income group this categorisation provided insight into the severity of experience. This study classified those with one or two affirmative responses (marginal food security) as ‘food insecure’. This was supported by literature

suggesting that this experience of marginal food security with anxiety and concern was situated and similar in experience to food insecurity rather than food security. (9, 15, 246) Closer examination of responses to the USDA HFSSM indicated that a small number of respondents who were classified as marginally food secure had in fact only responded to questions relating to perturbations in food quantity - the more severe end of the spectrum rather than those relating to stress. When coupled with the qualitative data it was evident that the experience supported the decision by the candidate to categorise this group as food insecure. This raises two points that requires further examination: first that those who are experiencing marginal food security require closer examination to understand this experience and its implications for health. Second, based on this and existing evidence, should the classification of food insecure include those with one or two affirmative responses to the USDA HFSSM?

8.5.2 Recommendation 2:

A need to adequately measure food insecurity according to its dimensions to understand its determinants.

Developing an understanding of the array of determinants of food security according to its four dimensions - food supply, access, utilisation and stability, and the spectrum of food insecurity experiences across the populations and within sub population groups, is crucial. This will provide a more accurate understanding of the determinants and the gaps in knowledge that have the capacity to better inform policy and program interventions. This will also allow assessment of the impact of such policy and program interventions on the determinants of food insecurity.

This research has shown that mixed methods research methodology approaches including quantitative and qualitative data is invaluable for developing the picture of food insecurity in Australia. Further research that uses mixed methods methodology is recommended to allow for a deeper examination of such a complex issue as food insecurity.

Measure the multiple dimensions of food security

Limited or constrained financial resources were identified as a key trigger to the experience. However, the qualitative findings highlighted additional reasons for food insecurity consistent with the dimensions of food security. Some food secure participants identified difficulties to food access that may have related to the local availability of food, and the time available to source and prepare food. This suggests the importance of acknowledging that other factors may be contributing to food insecurity experiences. A recent literature review revealed the absence of a tool that measures all the dimensions of food insecurity.(247) The preliminary validation and piloting of a comprehensive measure of household food insecurity in Australia found a significantly higher proportion of food insecurity due to other reasons (and including) limited financial access when compared to the USDA HFSSM.(198) While financial constraints are important, consideration of a range of determinants across the dimensions of food supply, access and utilisation need also to be determined so as to inform policy and planning at a national, state and local government area. For example, in Victoria, the availability of Healthy Food Basket data at a local level and municipal scans of food supply has been used to develop action plans to improve access to food across the municipality (local government area).(130)

Where there is existing data available on the dimensions of food security, there is a need to further examine these sources to develop the picture of how they may contribute to food insecurity, the dimensions and impact on health or in fact evaluation of strategies that aim to address the dimensions.

Look beyond income level to other financial determinants of food insecurity

Income is a key determinant of food insecurity. This study has shown that food insecurity is experienced beyond those Australians on very low incomes. The findings of this research supported findings internationally suggesting that food insecurity must be considered beyond household income level alone. Importantly, consideration should extend to factors that may constrain income and other financial issues. These may include assets and access to credit and the financial constraints of households.

The analysis undertaken in Part 1B provided an important, but limited, view into the associations between food insecurity and the marker of financial stress ‘ability to raise A\$2000 in two day in an emergency in two days’. In Australia there are a number of national data sets that have a comprehensive suite of indicators relating to financial stress and other financial indicators; however, currently there is limited capacity to link these to current food security data.

Part 2 of this study emphasised some of the precursors to demands placed on household financial resources. Changes in household composition, additional unexpected family members drawing on household food supply or the birth of a child all placed greater demands on a household’s financial resources. There may be a need for consideration of the adequacy of social policy and payments that impact on areas that may be associated with food insecurity. At the very least, further research examining the impact of the rise in cost of living expenses, such as utilities and housing specifically, on food insecurity is required. This can then inform policy and also examine the effectiveness of changes made by energy retailers to pricing plans and for those who are unable to make payments. These recommendations are supported through the discussion of these findings using the Sustainable Livelihood Framework.

8.5.3 Recommendation 3:

The current dominant downstream food based responses in Australia fail to address the problem of food insecurity in the long term. Development and implementation of policy and practice responses must address the systemic issues of food insecurity.

There is a need for research that assesses the impact of approaches that address the determinants of food insecurity.

In Australia, the problem of food insecurity is fuelled by the neo-liberal government view of it being the responsibility of individuals. The current responses summarised in Chapter 2 has traditionally been dominated by two frames. The first frame is that of food charity through the emergency food relief sector. The second is framed by the assumption that individuals need to be ‘upskilled’ by participating in programs. This response in Australia detracts from the fact that there is already an inadequate

policy response by the Australian Government. While this response of food relief and programs is needed to alleviate hunger, it may perpetuate the notion of individuals' responsibility for food insecurity.(97) Food insecurity is experienced by Australians across income groups at varying severity levels and highlights its complex nature. These findings further show that current responses to alleviate food insecurity will not be adequate.

Strategies identified by participants in this study indicated that they possessed a refined set of assets that supported food security and/or were a mechanism to deal with food insecurity. These included, but were not limited to, extensive food literacy and financial management strategies, thus challenging the perception of the need for food programs or food relief as a response to food insecurity. The effectiveness of food based programs to address an income based problem such as food insecurity has limited reach and impact on food insecure households.(248)

The use of the Sustainable Livelihood Framework as a lens to view the findings of Part 2 supports the need to focus, not on inadequacies of households, but areas of their strengths, on broader determinants that increase vulnerability to food insecurity and existing and potential transforming structures and processes. In order support pathways out of and/or prevent food insecurity, research and policy responses need to reflect consideration of the primary determinants - income or financial constraint-based issues. More specifically these may include adequate income, wage growth, social security safety net, financial stress and cost of living expenses. In Australia robust discussion and further research must occur identifying the impact of proposed policy strategies including: the living wage(215), universal basic income(217, 219), review of current social safety net(112) and the impact cost of living(113) have on food insecurity. Food based policies alone will not be sufficient to address the primary determinant of food insecurity.

Of key importance underlying any approaches is the adoption of a rights-based approach to food in Australia, one that shifts from a charitable approach to one of rights and entitlement to nutritious food for all Australians. Gallegos et.al. (2017) suggested 'that rights based strategies offer scope for policy analysis and a framework for accountability.'p66 (97) The findings of food insecurity in low-to-

middle income reinforces the critical importance of such a change in framing the issue of food security in Australia.

8.6 Conclusion

Food insecurity, the limited or uncertain availability of individuals' and households' physical, social and economic access to sufficient, safe and culturally relevant food is an underreported, yet salient, issue in Australia. Food insecurity is typically associated with those on very low income, but there is a paucity of understanding of food insecurity for those on higher income groups. The research undertaken as part of this thesis aimed to explore the **EXISTENCE** and **EXPERIENCE** of food insecurity in low-to-middle income households. This thesis has exposed new information on the intractable problem of food insecurity. Evident from this work is the fact that food insecurity is showing signs of bracket creep and is no longer an issue for low income groups specifically.

An underbelly of food insecurity was found to exist, hidden but varying in its severity and its temporality, in low-to-middle income Victorian households. Triggers into food insecurity were predominantly situated in relation to income constraints, which included events that impacted on income level for the household and increasing costs of living expenses. Additional factors beyond income constraints included local food supply, and time available to procure and prepare food.

This work documents the deep insight into the lived experience of food insecurity. Presented as one that was engulfed in guilt, worry and concern particularly on the part of the main food gatekeeper. Resilience manifested in an established array of personal/household assets (food and financial) to protect the household. These findings are novel to the understanding of food insecurity in Australia.

However, in order to address this complex public health issue now, and in the future, there needs to be a shift from current food based responses and expectation of individual responsibility; towards one that is of shared action by government and decision makers that listens to and includes the voices of those experiencing this intractable issue. This shared responsibility needs to be shaped in commitment to

a regular, more sophisticated measurement and monitoring, that reflects the prevalence, severity and understanding of the determinants of food insecurity to inform policy and practice responses beyond food across income groups.

References

References

1. Wilkinson R, Marmot M. Social Determinants of Health: The Solid Facts Copenhagen(DK): WHO Regional Office for Europe; 2003. 26-7.
2. Committee on World Food Security. Coming to terms with terminology Rome (IT): Food and Agriculture Organisation; 2012. 1-33 Report No.: CFS 2012/39/4
3. Food and Agriculture Organisation. An introduction to the basic concepts of food security [Internet]. Rome (IT): EC - FAO Food Security Programme; 2008 [cited 2017 Nov]. Available from: www.fao.org/docrep/013/al936e/al936e00.pdf.
4. Carletto C, Zezza A, Banerjee R. Towards better measurement of household food security: Harmonizing indicators and the role of household surveys. *Global Food Security*. 2013;2(1):30-40.
5. Anderson MD. Community Food Security: Practice in Need of Theory? *Agriculture and Human Values*. 1999;16(2):141-50.
6. Radimer KL, Olson CM, Campbell CC. Development of Indicators to Assess Hunger. *The Journal of Nutrition*. 1990;120(suppl_11):1544-8.
7. Farmar-Bowers Q, Higgins V, Millar J. Introduction food security problem in Australia. In: Farmar-Bowers Q, Higgins V, Millar J, editors. *Food security in Australia Challenges and prospects for the future*. New York: Springer; 2013. p. 21-35.
8. Dietitians of Canada. Addressing Household Food Insecurity in Canada. Position Statement and Recommendations from Dietitians of Canada. Vancouver (BC): Dietitians of Canada (DC); 2016. 1-38.
9. Gunderson C. Food insecurity is an ongoing national concern. *Adv Nutr*. 2013(4):36-41.
10. Tarasuk V. Household food insecurity in Canada. *Top Clin Nutr*. 2005;20(4):299-312.
11. Martin-Fernandez J, Grillo F, Parizot I, Caillavet F, Chauvin P. Prevalence and socioeconomic and geographical inequalities of household food insecurity in the Paris region, France, 2010. *BMC Public Health*. 2013;13(1):486.
12. Signal LN, Walton MD, Ni Mhurchu C, Maddison R, Bowers SG, Carter KN, et al. Tackling 'wicked' health promotion problems: a New Zealand case study. *Health Promot Int*. 2013;28(1):84-94.
13. Dowler EA, Kneafsey M, Lambie H, Inman A, Collier R. Thinking about 'food security': Engaging with UK consumers. *Critical Public Health*. 2011;21(4):403-16.
14. Bickel G, Nord M, Price C, Hamilton, W, Cook J. *Guide to Measuring Household Food Security, Revised 2000*. Alexandria (VA): U.S. Department of Agriculture, Food and Nutrition Service; 2013. 1-75.
15. Coleman-Jensen A. U.S. Food Insecurity Status: Toward a Refined Definition. *Social Indicators Research*. 2010;95(2):215-30.
16. Radimer KL. Measurement of household food security in the USA and other industrialised countries. *Public Health Nutr*. 2002;5(6a):859-64.
17. Vozoris NT, Tarasuk VS. Household food insufficiency is associated with poorer health. *J Nutr*. 2003;133(1):120-6.

18. Stuff JE, Casey PH, Szeto KL, Gossett JM, Robbins JM, Simpson PM, et al. Household food insecurity is associated with adult health status. *J Nutr.* 2004;134(9):2330-5.
19. Cook JT, Black M, Chilton M, Cutts D, Ettinger de Cuba S, Heeren TC, et al. Are food insecurity's health impacts underestimated in the U.S. population? Marginal food security also predicts adverse health outcomes in young U.S. children and mothers. *Adv Nutr.* 2013;4(1):51-61.
20. Sharkey JR, Johnson CM, Dean WR. Relationship of household food insecurity to health-related quality of life in a large sample of rural and urban women. *Women Health.* 2011;51(5):442-60.
21. Tarasuk V, Cheng J, de Oliveira C, Dachner N, Gundersen C, Kurdyak P. Association between household food insecurity and annual health care costs. *Can Med Assoc J.* 2015;187(14):E429-E36.
22. Adams D, Galvin L. Institutional Capability. Food security and local government in Tasmania. Tasmania: Heart Foundation; 2015. 1-29.
23. Laraia BA. Food insecurity and chronic disease. *Adv Nutr.* 2013;4(2):203-12.
24. Seligman HK, Laraia BA, Kushel MB. Food insecurity is associated with chronic disease among low-income NHANES Participants 1,2. *The Journal of Nutrition.* 2010;140(2):304-10.
25. Seligman H, Bindman A, Vittinghoff E, Kanaya A, Kushel M. Food insecurity is associated with diabetes mellitus: results from the national health examination and nutrition examination survey (NHANES) 1999–2002. *J Gen Intern Med.* 2007;22(7):1018-23.
26. Huddlestone-Casas C, Charnigo R, Simmons LA. Food insecurity and maternal depression in rural, low-income families: a longitudinal investigation. *Public Health Nutr.* 2009;12(08):1133-40.
27. Carter KN, Kruse K, Blakely T, Collings S. The association of food security with psychological distress in New Zealand and any gender differences. *Soc Sci Med.* 2011;72(9):1463-71.
28. Drewnowski A, Specter S. Poverty and obesity: the role of energy density and energy costs. *The American Journal of Clinical Nutrition.* 2004;79(1):6-16.
29. Holben DH. Position of the American Dietetic Association: food insecurity and hunger in the United States. *J Am Diet Assoc.* 2006;106(3):446-58.
30. Winicki J, Jemison K. Food insecurity and hunger in the kindergarten classroom: Its effect on learning and growth. *Contemp Econ Policy.* 2003;21(2):145-57.
31. Metallinos-Katsaras E, Must A, Gorman K. A longitudinal study of food insecurity on obesity in preschool children. *J Acad Nutr Diet.* 2012;112(12):1949-58.
32. Casey PH. The association of child and household food insecurity with childhood overweight status. *Paediatrics* 2006;118(5):1406-13.
33. Burns C. A review of the literature describing the link between poverty, food insecurity and obesity with specific reference to Australia. Melbourne (AU): Victorian Health Promotion Foundation; 2004. 1-26.
34. Finney Rutten LJ, Yaroch AL, Colón-Ramos U, Johnson-Askew W, Story M. Poverty, Food Insecurity, and Obesity: A Conceptual Framework for Research, Practice, and Policy. *J Hunger Environ Nutr.* 2010;5(4):403-15.

35. Institute of Medicine. Hunger and Obesity : Understanding a Food Insecurity Paradigm—Workshop Summary. Washington, UNITED STATES: National Academies Press; 2011.
36. Bartfeld J, Dunifon R. State-level predictors of food insecurity among households with children. *J Policy Anal Manage.* 2006;25(4):921-42.
37. Nolan M, Williams M, Rikard-Bell G, Mohsin M. Food insecurity in three socially disadvantaged localities in Sydney, Australia. *Health Promot J Austr.* 2006;17(3):247-54.
38. Kirkpatrick SI, Tarasuk V. Assessing the relevance of neighbourhood characteristics to the household food security of low-income Toronto families. *Public Health Nutr.* 2010;13(07):1139-48.
39. Gunderson C, Kreider B, Pepper J. The economics of food insecurity in the United States. *AEPP.* 2011;33(3):281-303.
40. Carter KN, Lanumata T, Kruse K, Gorton D. What are the determinants of food insecurity in New Zealand and does this differ for males and females? *Aust N Z J Public Health.* 2010;34(6):602-8.
41. Tarasuk V, Mitchell A, Dachner N. Household food insecurity in Canada, 2012. [Internet]. Toronto: Research to identify policy options to reduce food insecurity (PROOF); 2014 [cited 2015 Nov]. Available from: <http://proof.utoronto.ca/resources/proof-annual-reports/annual-report-2012/>.
42. United States Department of Agriculture. Food Security Status of U.S. Households in 2014 [Internet]. United States Department of Agriculture; 2014 [Available from: : <http://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us.aspx>].
43. Loopstra R, Reeves A, Taylor-Robinson D, Barr B, McKee M, Stuckler D. Austerity, sanctions, and the rise of food banks in the UK. *BMJ.* 2015;350.
44. Australian Bureau of Statistics. Australian Health Survey : Nutrition - State and Territory results, 2011-12 Cat no 4364.0.55.009 [Internet]. Canberra (AU): Australian Bureau of Statistics; 2015 [cited 2015 10th June]. Available from: <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4364.0.55.0092011-12?OpenDocument>.
45. Australian Bureau of Statistics. Australian Aboriginal and Torres Strait Islander Health Survey: Nutrition Results - Food and Nutrients, 2012-13 4727.0.55.005, [Internet]. Canberra, Australian Capital Territory 2015 [Available from: www.abs.gov.au/].
46. McKay FH, Dunn M. Food security among asylum seekers in Melbourne. *Aust N Z J Public Health.* 2015;39(4):344-9.
47. Gallegos D, Ellies P, Wright J. Still there's no food! Food insecurity in a refugee population in Perth, Western Australia. *Nutr Diet.* 2008;65(1):78-83.
48. Booth S. Eating rough: food sources and acquisition practices of homeless young people in Adelaide, South Australia. *Public Health Nutr.* 2006;9(2):212-8.
49. Ramsey R, Giskes K, Turrell G, Gallegos D. Food insecurity among adults residing in disadvantaged urban areas: potential health and dietary consequences. *Public Health Nutr.* 2012;15(02):227-37.
50. Booth S, Smith A. Food security and poverty in Australia--challenges for dietitians. *Australian Journal of Nutrition & Dietetics.* 2001;58(3):150-6.
51. Gorton D, Bullen CR, Mhurchu CN. Environmental influences on food security in high-income countries. *Nutr Rev.* 2010;68(1):1-29.
52. Tarasuk V, Vogt J. Household food insecurity in Ontario. *Can J Public Health.* 2009;100(3):184-8.

53. Nord M. Food spending declined and food insecurity increased for middle-income and low-income households from 2000 to 2007. Washington (DC): United States Dept. of Agriculture., ERS; 2009. 1-25 Report No.: 61.
54. Olabiyi OM, McIntyre L. Determinants of Food Insecurity in Higher-Income Households in Canada. *J Hunger Environ Nutr.* 2014;9(4):433-48.
55. Nord M, Brent C. Food insecurity in higher income households [Internet]. Washington DC: United States Department of Agriculture; 2002 [Available from: www.ers.usda.gov/media/887406/efan02016_002.pdf].
56. King S, Bellamy J, Kemp B, Mollenhauer J. Hard choices. Going without in a time of plenty a study of food insecurity in NSW and the ACT. Sydney (AU): ANGLICARE Sydney, ANGLICARE Diocese of Sydney Social Policy & Research Unit; 2013. 1-54.
57. King S, Moffitt A, Bellamy J, Carter S, McDowell C, Mollenhauer J. When there's not enough to eat. A national study of food insecurity among emergency relief clients. Sydney, (AU): Anglicare, Diocese of Sydney, Social Policy and Research Unit; 2012. 1-138.
58. Grant MJ, Booth A. A typology of reviews: an analysis of 14 review types and associated methodologies. *Health Information & Libraries Journal.* 2009;26(2):91-108.
59. Hamelin AM, Beaudry M, Habicht JP. Characterization of household food insecurity in Quebec: food and feelings. *Soc Sci Med.* 2002;54(1):119-32.
60. Laraia BA, Siega-Riz AM, Gundersen C, Dole N. Psychosocial Factors and Socioeconomic Indicators Are Associated with Household Food Insecurity among Pregnant Women. *The Journal of Nutrition.* 2006;136(1):177-82.
61. Australian Public Service Commission. Tackling wicked problems A public policy perspective [Internet]. Australian Government; 2012 [cited 2017 February]. Available from: <http://www.apsc.gov.au/publications-and-media/archive/publications-archive/tackling-wicked-problems>.
62. Rittel HWJ, Webber MM. Dilemmas in a General Theory of Planning. *Policy Sciences.* 1973;4(2):155-69.
63. Shepard D, Setren E, Cooper C. Hunger in America: The Suffering We All Pay For [Internet]. Washington (DC): Center for American Progress; 2011 [cited 2016 November]. Available from: www.americanprogress.org/issues/poverty/reports/2011/10/05/10504/hunger-in-america/.
64. Temple JBP. Severe and moderate forms of food insecurity in Australia: are they distinguishable? *Aust J Soc Issues.* 2008;43(4):649-68,525.
65. Nord M, Andrews M, Winicki J. Frequency and Duration of Food Insecurity and Hunger in US Households. *JNEB.* 2002;34(4):194-201.
66. Loopstra R, Tarasuk V. What does increasing severity of food insecurity indicate for food insecure families? Relationships between severity of food insecurity and indicators of material hardship and constrained food purchasing. *J Hunger Environ Nutr.* 2013;8(3):337-49.
67. Tarasuk V, Mitchell A, Dachner N. Household food insecurity in Canada, 2012 [Internet]. Toronto: Canadian Institutes of Health Research; 2014 [19th May 2014]. Available from: <http://nutritionalsciences.lamp.utoronto.ca/Research>
68. Economic Research Service. Ranges of food security and food insecurity. USDA labels describe range of food security [Internet]. Washington, DC: United States Department of Agriculture; 2006 [Available from:

www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/definitions-of-food-security/#ranges.

69. Centre for Epidemiology and Evidence. NSW Population Health Survey 2014 [Internet]. Sydney (AU): NSW Ministry of Health; 2015 [cited 2017 10 Oct]. Available from: www.healthstats.nsw.gov.au.

70. SA Health. South Australian Monitoring Surveillance System Food Insecurity adults 2015 [Internet]. Adelaide (AU): SA Health; 2015 [cited 2017 10 Oct]. Available from: <http://www.sahealth.sa.gov.au/wps/wcm/connect/ccc070804dbc83a189b8a946e4df54bc/Food+Insecurity+adults+2015+-+Indicator.pdf?MOD=AJPERES&CACHEID=ccc070804dbc83a189b8a946e4df54bc>.

71. Pollard C, Harray A, Daly A, Kerr D. Nutrition Monitoring Survey Series 2012 Key Findings. Perth, (AU): WA Health; 2015.

72. Department of Health. Victorian Population Health Survey 2011–12, survey findings. Melbourne, Victoria; 2014.

73. Ramsey R, Giskes K, Turrell G, Gallegos D. Food insecurity among Australian children: potential determinants, health and developmental consequences. *Journal of child health care : for professionals working with children in the hospital and community*. 2011;15(4):401-16.

74. Crawford B, Yamazaki R, Franke E, Amanatidis S, Ravulo J, Torvaldsen S. Is something better than nothing? Food insecurity and eating patterns of young people experiencing homelessness. *Aust N Z J Public Health*. 2015;39(4):350-4.

75. Foodbank Australia. End Hunger in Australia 2012. Sydney (AU); 2012. 1-34.

76. Foodbank Australia. End Hunger in Australia 2013 Sydney (AU): Foodbank Australia; 2013. 1-32.

77. FoodBank Australia. Food Bank Hunger Report 2014. Sydney (AU): Food Bank Australia; 2014.

78. King S, Bellamy J, Kemp B, Mollenhauer J. Hard choices. Going without in a time of plenty a study of food insecurity in NSW and the ACT. NSW: ANGLICARE Sydney, the Samaritans Foundation and Anglicare NSW South, NSW West & ACT; 2013 May 2013.

79. Loopstra R, Tarasuk V. Food Bank Usage Is a Poor Indicator of Food Insecurity: Insights from Canada. *Social Policy and Society*. 2015;14(03):443-55.

80. Coleman-Jensen A, Rabbitt MP, Gregory CA, Singh A. Household food security in the United States in 2015. Washington (DC): United States Department of Agriculture; 2016. 1-44.

81. Innes-Hughes C, Bowers K, King L, Chapman K, Eden B. Food security: the what,how,why and where to of food security in NSW. discussion paper. Sydney (AU): PANORG the physical activity nutrition obesity research group, Heart Foundation NSW, Cancer Council NSW; 2010 2010. 1-26.

82. Webb KL, Rutishauser IH, Marks GC, Masters G, Leeder SR. Nutrition surveys or surveillance: one-night stands or a long-term commitment? *Med J Aust*. 2006;185(5):248-9.

83. Masters G, Coles-Rutishauser I, Webb K, Marks G, Pearse J. National food and nutrition monitoring and surveillance system: a framework and a business case. Sydney (AU): Nexus Management Consulting; 2006. 27-8.

84. Matheson J, McIntyre L. Women respondents report higher household food insecurity than do men in similar Canadian households. *Public Health Nutr.* 2014;17(1):40-8.
85. De Marco M, Thorburn S. The relationship between income and food insecurity among Oregon residents: does social support matter? *Public Health Nutr.* 2009;12(11):2104-12.
86. Chilton MM, Rabinowich JR, NH. W. Very low food security in the USA is linked with exposure to violence. *Public Health Nutr.* 2014;17(1):73-82.
87. McIntyre L, Wu X, Fleisch VC, Herbert Emery JC. Homeowner versus non-homeowner differences in household food insecurity in Canada. *Journal of Housing and the Built Environment.* 2015:1-18.
88. Huddleston-Casas C, Charnigo R, Simmons L. Food insecurity and maternal depression in rural, low-income families: a longitudinal investigation. *Public Health Nutr.* 2009;12(08):1133-40.
89. Thornton LE, Pearce JR, Ball K. Sociodemographic factors associated with healthy eating and food security in socio-economically disadvantaged groups in the UK and Victoria, Australia. *Public Health Nutr.* 2014;17(1):20-30.
90. Langellier BA, Chaparro MP, Sharp M, Birnbach K, Brown ER, Harrison GG. Trends and Determinants of Food Insecurity Among Adults in Low-Income Households in California. *J Hunger Environ Nutr.* 2012;7(4):401-13.
91. Rose D. Economic determinants and dietary consequences of food insecurity in the United States. *J Nutr.* 1999;129(2 SUPPL.):517S-20S.
92. Guo B. Household Assets and Food Security: Evidence from the Survey of Program Dynamics. *Journal of Family and Economic Issues.* 2011;32(1):98-110.
93. Ledrou I, Gervais J. Food Insecurity. Ottawa (ON): Statistics Canada; 2005. 47-51 Report No.: Catalogue 82-003.
94. Coleman-Jensen A, Nord M, Singh A. Household food security in the United States in 2012: statistical supplement [Internet]. Washington (DC): United States Department of Agriculture 2013 [updated September 2013. Available from: www.ers.usda.gov/publications/ap-administrative-publication/ap-061.aspx.
95. Nord M, Hooper MD, Hopwood H. Household level income related food insecurity is less prevalent in Canada than in the United States. *J Hunger Environ Nutr.* 2008;3(1):17-35.
96. Gundersen C, Gruber J. The dynamic determinants of food insufficiency. In: Andrews M, Prell M, editors. *Second Food Security Measurement and Research Conference*; Washington (DC): Economic Research Service, US Department of Agriculture; 2001. p. 92-110.
97. Gallegos D, Booth S, Kleve S, McKenchie R, Linderg R. Food insecurity in Australian households; from charity to entitlement. In: Germov J, Williams L, editors. *A sociology of food and nutrition The social appetite*. 4th ed. South Melbourne, Victoria: Oxford; 2017. p. 55-74.
98. Tarasuk V, Mitchell A, McLaren L, McIntyre L. Chronic Physical and Mental Health Conditions among Adults May Increase Vulnerability to Household Food Insecurity. *The Journal of Nutrition.* 2013;143(11):1785-93.
99. Coleman-Jensen AJ. Working for Peanuts: Nonstandard Work and Food Insecurity Across Household Structure. *Journal of Family and Economic Issues.* 2011;32(1):84-97.
100. McIntyre L, Bartoo AC, Emery JH. When working is not enough: food insecurity in the Canadian labour force. *Public Health Nutr.* 2012;17(1):49-57.

101. Fair Work Ombudsman Australian Government. Penalty rates changes 2017 [Internet]. Canberra (AU): Australian Government 2017 [cited 2017 10 Nov]. Available from: <https://www.fairwork.gov.au/pay/penalty-rates-and-allowances/penalty-rates-changes-2017>.
102. Leete L, Bania N. The effect of income shocks on food insufficiency. *Review of Economics of the Household*. 2010;8(4):505-26.
103. Dahl M, DeLeire T, Mok S. Food Insufficiency and Income Volatility in US Households: The Effects of Imputed Income in the Survey of Income and Program Participation. *Applied Economic Perspectives and Policy*. 2014;36(3):416-37.
104. Loopstra R, Lalor D. Financial insecurity, food insecurity and disability: the profile of people receiving emergency food assistance from The Trussell Trust Foodbank Network in Britain. Salisbury (GB): Trussell Trust; 2017. 1-70.
105. Pollard C, Begley A, Landrigan T. The rise of food inequality in Australia. In: Caraher M, Coveney J, editors. *Food poverty and insecurity: International food inequalities*. 1st ed. Switzerland: Springer; 2016. p. 89-103.
106. Lindberg R, Whelan J, Lawrence M, Gold L, Friel S. Still serving hot soup? Two hundred years of a charitable food sector in Australia: a narrative review. *Aust N Z J Public Health*. 2015;39(4):358-65.
107. Booth S. Food banks in Australia: Discouraging the Right to Food. In: Riches G, Silvasti T, editors. *First world hunger revisited: food charity or the right to food?*: Springer; 2014. p. 15-28.
108. Tarasuk V, Reynolds R. A qualitative study of community kitchens as a response to income-related food insecurity. *Canadian Journal of Dietetic Practice & Research*. 1999;60(1):11-6.
109. Loopstra R, Tarasuk V. Perspectives on community gardens, community kitchens and the good food box program in a community-based sample of low-income families. *Canadian Journal of Public Health*. 2013;104(1):e55-e9.
110. Dowler EA, O'Connor D. Rights-based approaches to addressing food poverty and food insecurity in Ireland and UK. *Soc Sci Med*. 2012;74(1):44-51.
111. Friel S, Hattersley L, Ford L, O'Rourke K. Addressing inequities in healthy eating. *Health Promot Int*. 2015;30(suppl_2):ii77-ii88.
112. Australian Council of Social Service. *Social Security in Australia. Current trends* [Internet]. Sydney (AU): Australian Council of Social Service; 2017 [cited 2017 Nov]. Available from: http://www.acoss.org.au/wp-content/uploads/2017/05/ACOSS-snapshot_social-security-spending_Final.pdf.
113. Australian Council of Social Service. *The cost of living a decent life: new report highlights the inadequacies of income support for low-paid and unemployed Australians* [Internet]. Sydney (AU): Australian Council of Social Service; 2017 [cited 2017 Oct]. Available from: http://www.acoss.org.au/media-releases/?media_release=the-cost-of-living-a-decent-life-new-report-highlights-the-inadequacies-of-income-support-for-low-paid-and-unemployed-australians.
114. Chilton M, Rose D. A rights-based approach to food insecurity in the United States. *Am J Public Health*. 2009;99(7):1203-11.
115. Riches G. Thinking and acting outside the charitable food box: hunger and the right to food in rich societies. *Development in Practice*. 2011;21(4-5):768-75.
116. Right to Food Coalition. *Right to Food Coalition, The story so far* [Internet]. 2016 [Available from: <https://righttofood.com.au/>].
117. Barbour L, Rose N, Montegriffo E, Wingrove K, Clarke B, Browne J, et al. *The Human Right to Food*. Melbourne (AU): The Right to Food Coalition; 2016. 1-11.

118. Public Health Association of Australia, Dietitians Association of Australia, Nutrition Australia, Foundation. H. Background paper .Supporting document for the joint Position Statement: Towards a National Nutrition Policy in Australia,. Canberra, Australia: Public Health Association of Australia,; 2017. 1-14.
119. Foley W, Ward P, Carter P, Coveney J, Tsourtos G, Taylor A. An ecological analysis of factors associated with food insecurity in South Australia, 2002–7. *Public Health Nutr.* 2010;13(02):215-21.
120. Chang Y, Chatterjee S, Kim J. Household Finance and Food Insecurity. *Journal of Family and Economic Issues.* 2013:1-17.
121. Olson CM, Rauschenbach BS, Frongillo EA, Jr., Kendall A. Factors contributing to household food insecurity in a rural upstate New York county. *Family Economics and Nutrition Review.* 1997;10(2):2-17.
122. Ribar DC, Hamrick KS. Dynamics of poverty and food sufficiency. Washington (DC): United States Department of Agriculture; 2003. 1-33.
123. Lee JH, Ralston RA, Truby H. Influence of food cost on diet quality and risk factors for chronic disease: A systematic review. *Nutr Diet.* 2011;68(4):248-61.
124. Australian Bureau of Statistics. 6530.0 - Household Expenditure Survey, Australia: Summary of Results, 2009-10 [Internet]. Canberra: Australian Bureau of Statistics; 2011 [Available from: <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6530.02009-10?OpenDocument>].
125. Palermo C. The cost of nutritious food: a determinant of health. *Nutr Diet.* 2011;68(4):246-7.
126. Palermo CE, Walker KZ, Hill P, McDonald J. The cost of healthy food in rural Victoria. *Rural & Remote Health.* 2008;8(4):1074.
127. Barosh L, Friel S, Engelhardt K, Chan L. The cost of a healthy and sustainable diet – who can afford it? *Aust N Z J Public Health.* 2014;38(1):7-12.
128. Harrison M, Lee A, Findlay M, Nicholls R, Leonard D, Martin C. The increasing cost of healthy food. *Aust N Z J Public Health.* 2010;34(2):179-86.
129. Kettings C, Sinclair AJ, Voevodin M. A healthy diet consistent with Australian health recommendations is too expensive for welfare-dependent families. *Aust N Z J Public Health.* 2009;33(6):566-72.
130. Palermo C, McCartan J, Kleve S, Sinha K, Shiell A. A longitudinal study of the cost of food in Victoria influenced by geography and nutritional quality. *Aust N Z J Public Health.* 2016;40(3):270-3.
131. Kirkpatrick SI, Tarasuk V. Adequacy of food spending is related to housing expenditures among lower-income Canadian households. *Public Health Nutr.* 2007;10(12):1464-73.
132. Australian Bureau of Statistics. Household expenditure survey Australia [Internet]. Canberra, Australia: ABS; 2011 [Available from: <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6530.02009-10?OpenDocument>].
133. Vu QN, AMP Limited, University of Canberra. National Centre for Social and Economic Modelling. Advance Australia fair? Trends in small area socio-economic inequality, 2001 to 2006. Canberra (AU): NATSEM University of Canberra; 2008. 1-34.
134. Phillips B. NATSEM Household budget report. Cost of living and standard of living indexes for Australia, . University of Canberra: NATSEM; 2013 June 2013. 1-24.

135. Rowley S, Ong R. Housing affordability housing stress and household wellbeing in Australia. Melbourne (AU): Australian Housing and Urban Research Institute West Australian Research Centre; 2012. 1-96 Report No.: 192.
136. Wood G, Ong R, Cigdem M. Housing Affordability Dynamics in Australia: New Insights from the Last Decade. . Melbourne (AU): Australian Housing and Research Institute Limited; 2014. Report No.: 233.
137. Worrall A. Melbourne median house price rises to \$880,902 over September quarter [Internet]. Sydney (AU): Domain group; 2017 [cited 2017 Nov]. Available from: <https://www.domain.com.au/news/melbourne-median-house-price-rises-to-880902-over-september-quarter-domain-group-report-20171012-gyyhzn/>.
138. Western Australian Council of Social Service Inc. Cost of living report 2014, [Internet]. Perth (AU): WACOSS; 2014 [cited 2015 Sep]. Available from: http://www.wacoss.org.au/policy_and_advocacy/CostofLiving.aspx.
139. Retail energy prices increase 12% in 2011-2012 report [press release]. Melbourne: Essential Services Commission of Victoria, 20th September 2012.
140. commission Es. Water bills increase 15% as consumption recovers [Internet]. Melbourne: Essential services commission Victoria; 2012 [Available from: <http://www.esc.vic.gov.au/getattachment/659d2698-8d8c-4a5e-a1e4-b12c9fe18eb9/Water-bills-increase-15-per-cent-as-consumption-re.aspx>].
141. Hamelin AM, Habicht JP, Beaudry M. Food insecurity: Consequences for the household and broader social implications. *J Nutr.* 1999;129(2 SUPPL.):525S-8S.
142. Hamelin A, Mercier C, Bédard A. Perception of needs and responses in food security: Divergence between households and stakeholders. *Public Health Nutr.* 2008;11(12):1389-96.
143. Hamelin A-M, Mercier C, Bédard A. Discrepancies in households and other stakeholders viewpoints on the food security experience: a gap to address. *Health Educ Res.* 2010;25(3):401-12.
144. Hamelin A-M, Mercier C, Bédard A. Needs for food security from the standpoint of Canadian households participating and not participating in community food programmes. *International Journal of Consumer Studies.* 2011;35(1):58-68.
145. Chilton M, Rabinowich J, Council C, Breaux J. Witnesses to hunger: participation through photovoice to ensure the right to food. *Health Hum Rights.* 2009;11(1):73-85.
146. Chilton M, Rabinowich J. Toxic Stress and Child Hunger Over the Life Course: Three Case Studies. *Journal of Applied Research on Children Informing Policy for Children at Risk.* 2012;3(1):1-28.
147. Chilton M, Knowles M, Rabinowich J, Arnold KT. The relationship between childhood adversity and food insecurity: 'It's like a bird nesting in your head'. *Public Health Nutr.* 2015;18(14):2643-53.
148. Lambie-Mumford H, Dowler E. Rising use of "food aid" in the United Kingdom. *British Food Journal.* 2014;116(9):1418-25.
149. Victorian Department of Health. Victorian Population Health Survey 2008 [Internet]. Melbourne (AU): Victorian Government Department of Health; 2010 [cited 2013 Mar]. Available from: www.health.vic.gov.au/healthstatus/vphs.htm.
150. Victorian Department of Health. Victorian Population Health Survey 2009. Melbourne (AU): Victorian Department of Health, Health Intelligence Unit Prevention and Population Health; 2011.

151. Victorian Department of Human Services. Victorian Population Health Survey 2006 [Internet]. Melbourne, Victoria: Victorian Department of Human Services; 2007 [cited 2013 Mar]. Available from: www.health.vic.gov.au/healthstatus/vphs.htm.
152. Victorian Department of Human Services. Victorian Population Health Survey 2007 [Internet]. Melbourne (AU): Victorian Department of Human Services; 2008 [updated October 2008; cited 2013 Mar]. Available from: www.health.vic.gov.au/healthstatus/vphs.htm.
153. Riley M, Rutishauser I, Webb K. Comparison of short questions with weighed dietary records [Internet]. Canberra (AU): Australian Food and Nutrition Monitoring Unit, Commonwealth Department of Health and Aged Care; 2001 [cited 2016 Sep]. Available from: [http://mbsonline.gov.au/internet/main/publishing.nsf/Content/A8DAA741F85353A0CA257BF000209A82/\\$File/comparison.pdf](http://mbsonline.gov.au/internet/main/publishing.nsf/Content/A8DAA741F85353A0CA257BF000209A82/$File/comparison.pdf).
154. Australian Bureau of Statistics. Household Expenditure Survey, Australia: Summary of Results, 2015-16 6530.0 [Internet]. Canberra(AU): Australian Bureau of Statistics; 2017 [cited 2017 Sep]. Available from: <http://www.abs.gov.au/ausstats/abs@.nsf/mf/6530.0>.
155. Australian Bureau of Statistics. Household Income and Wealth, Australia 2013-2014 Financial stress indicators No. 6523.0 [Internet]. Canberra (AU): Australian Bureau of Statistics; 2016 [cited 2017 Aug]. Available from: <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/6523.0~2013-14~Main%20Features~Financial%20Stress%20Indicators~33>.
156. Food and Agriculture Organisation. Rome declaration on world food security [Internet]. Rome (IT): FAO; 1996 [cited 2015 Jan]. Available from: www.fao.org/docrep/003/w3613e/w3613e00.HTM.
157. Vozoris N, Tarasuk V. Household food insufficiency is associated with poorer health. *J Nutr*. 2003;133(1):120-6.
158. Willows ND, Veugelers P, Raine K, Kuhle S. Prevalence and sociodemographic risk factors related to household food security in Aboriginal peoples in Canada. *Public Health Nutr*. 2009;12(08):1150-6.
159. Sriram U, Tarasuk V. Economic Predictors of Household Food Insecurity in Canadian Metropolitan Areas. *J Hunger Environ Nutr*. 2016;11(1):1-13.
160. Australian Bureau of Statistics. Household income and income distribution Australia detailed tables 2011-2012 [Internet]. Canberra (AU): ABS; 2013 [cited 2014 Feb]. Available from: www.abs.gov.au?AUSSTATS/abs@.nsf/DetailsPage/6523.02011-12?OpenDocument.
161. Archer K, Lemeshow S, Hosmer D. Goodness-of-fit tests for logistic regression models when data are collected using a complex sampling design. *Computational Statistics & Data Analysis*. 2007;51(9):4450-64.
162. Hernandez DC. The impact of cumulative family risks on various levels of food insecurity. *Soc Sci Res*. 2015;50(0):292-302.
163. Kleve S, Davidson ZE, Gearon E, Booth S, Palermo C. Are low-to-middle-income households experiencing food insecurity in Victoria, Australia? An examination of the Victorian Population Health Survey, 2006–2009. *Australian Journal of Primary Health*. 2017;23(3):249-56.
164. Australian Bureau of Statistics. Household Income and Wealth, Australia, 2013-2014 6523.0 [Internet]. Canberra (AU): Australian Bureau of Statistics; 2016 [cited 2017 Oct]. Available from:

<http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/6523.0~2013-14~Main%20Features~Financial%20Stress%20Indicators~33>.

165. Gundersen CG, Garasky SB. Financial management skills are associated with food insecurity in a sample of households with children in the United States. *J Nutr*. 2012;142(10):1865-70.

166. Kelly S. Saving tomorrow the savings and spending patterns of Australians. Sydney (AU): AMP; 2010. 1-30.

167. Jones AD, Ngure FM, Pelto G, Young SL. What Are We Assessing When We Measure Food Security? A Compendium and Review of Current Metrics. *Advances in Nutrition: An International Review Journal*. 2013;4(5):481-505.

168. Wright D. Not on struggle street yet, but mortgage stress risk is rising [Internet]. Melbourne (AU): The Conversation; 2016 [cited 2017 Oct]. Available from: www.theconversation.com/not-on-struggle-street-yet-but-mortgage-stress-risk-is-rising-64293.

169. Tuttle C, Beatty T. The effects of energy price shocks on household food security in low income households. Washington (DC): U.S. Department of Agriculture Economic Research Service 2017 July 2017. 1-32 Report No.: 233.

170. Wood T, Blowers D, Moran G. Price shock: is the retail electricity market failing consumers? Melbourne (AU): Grattan Institute; 2017. 1-40.

171. Victorian Council Of Social Service. Power struggles. Everyday battles to stay connected. Melbourne, (AU): Victorian Council of Social Service; 2017. 1-47 Report No.: Aug 2017.

172. New South Wales Council of Social Service. Turning off the lights. The Cost of Living in NSW. Sydney (AU): New South Wales Council of Social Service; 2017 June 2017. 1-38 Report No.: June 2017.

173. Bowman D, Banks M. We lost the house, we lost everything' what dealing with financial stress looks like [Internet]. Melbourne (AU): The Conversation; 2016 [cited 2017 Sep]. Available from: <https://theconversation.com/we-lost-the-house-we-lost-everything-what-dealing-with-financial-stress-looks-like-69788>.

174. Engels B, Nissim R, Landvogt K. Financial Hardship and Emergency Relief in Victoria. *Australian Social Work*. 2011;65(1):54-72.

175. Marston G, Shevellar L. Exploring the role of fringe lenders in the lives of Queenslanders. *Australian Journal of Social Issues*. 2011;46:205+.

176. Muir K, Young A, Marjolin A, Salignac F. Payday lending trap requires a credit supply rethink [Internet]. Melbourne (AU): The Conversation; 2015 [cited 2017 Nov]. Available from: <https://theconversation.com/payday-lending-trap-requires-a-credit-supply-rethink-39311>.

177. Fitzpatrick K, Coleman-Jensen A. Food on the Fringe: Food Insecurity and the Use of Payday Loans. *Soc Serv Rev*. 2014;88(4):553-93.

178. Phillips B, Nepal B. Going Without: Financial Hardship in Australia. Canberra (AU): National Centre for Social and Economic Modelling; 2012. 1-23 Report No.: August 2012.

179. Creswell JW, Piano Clark VL. Designing and conducting mixed methods research. 2nd ed. Creswell JW, Piano Clark VL, editors. Thousand Oaks (CA): Sage Publications Inc.; 2011. 1-443 p.

180. Tashakkori A, Teddlie C. Handbook of mixed methods in social & behavioral research. 1st ed. Thousand Oak (CA): Sage Publications; 2003. 1-768 p.

181. Tashakkori A, Teddlie C. Handbook of mixed methods in social & behavioral research. 2nd ed: Sage; 2010.

182. Piano Clark V, Badiee M. Research questions in mixed methods research. . In: Tashakkori A, Teddlie C, editors. SAGE Handbook of mixed methods in social and behavioral research. 2nd ed. Thousand Oaks (CA): SAGE; 2010. p. 275-304.
183. Morgan D. Practical strategies for combining qualitative and quantitative methods. Applications in health research. Qual Health Res. 1998;8(3):362-76.
184. Liamputtong P. Research Methods in Health. Foundations for evidence-based practice. 2nd ed. Liamputtong P, editor. Melbourne (AU): Oxford University Press; 2013.
185. Patton MQ. Qualitative Research & Evaluation Methods. 4th ed. Patton MQ, editor. Saint Paul,MN: SAGE; 2015. 1-832 p.
186. Creswell JW. Research design: Qualitative, quantitative, and mixed methods approaches. 4th ed. JW C, editor. Thousand Oaks (CA): Sage publications; 2013.
187. Liamputtong P. Qualitative research methods. 4th ed. Liamputtong P, editor. Melbourne (AU): Oxford University Press; 2013. 1-379 p.
188. Starks H, Trinidad S. Choose Your Method: A Comparison of Phenomenology, Discourse Analysis, and Grounded Theory. Qual Health Res. 2007;17(10):1372-80.
189. Dodson J, Sipe N. Unsettling suburbia the new landscape of oil and mortgage vulnerability in Australian cities. Aueensland (AU): Griffith University; 2008. 1-42 Report No.: 17.
190. Harrington J, Friel S, Thunhurst C, Kirby A, McElroy B. Obesogenic island: the financial burden of private transport on low-income households. Journal of Public Health. 2008;30(1):38-44.
191. Webber CB, Rojhani A. Rise In Gasoline Price Affects Food Buying Habits of Low-Income, Ethnically-Diverse Families Enrolled In Southwest Michigan WIC Program. J Nutr Educ Behav. 2009;41(4, Supplement):S1.
192. Alley DE, Lloyd J, Pagán JA, Pollack CE, Shardell M, Cannuscio C. Mortgage Delinquency and Changes in Access to Health Resources and Depressive Symptoms in a Nationally Representative Cohort of Americans Older Than 50 Years. Am J Public Health. 2011;101(12):2293-8.
193. Rossimel A, Han SS, Larsen K, Palermo C. Access and affordability of nutritious food in metropolitan Melbourne. Nutr Diet. 2016;73(1):13-8.
194. Australian Bureau of Statistics. Australian historical population statistics 3105.0.65.001 [Internet]. Canberra (AU): Australian Bureau of Statistics,; 2014 [cited 2015 Sep]. Available from: <http://www.abs.gov.au/ausstats/abs@.nsf/mf/3105.0.65.001>.
195. Australian Bureau of Statistics. Census of Population and Housing: Estimating homelessness 2049.0 , [Internet]. 2011 [Available from: <http://www.abs.gov.au>.
196. Ashby S, Kleve S, McKechnie R, Palermo C. Measurement of the dimensions of food insecurity in developed countries: a systematic literature review. Public Health Nutr. 2016:1-10.
197. Marques ES, Reichenheim ME, de Moraes CL, Antunes MM, Salles-Costa R. Household food insecurity: a systematic review of the measuring instruments used in epidemiological studies. Public Health Nutr. 2015;18(05):877-92.
198. Kleve S, Gallegos D, Ashby S, Palermo CE, McKechnie R. Preliminary validation and piloting of a measure of household food security in the Australian context. Public Health Nutr. 2018;21(3):526-34.

199. Hamelin A-M, Beaudry M, Habicht J-P. Characterization of household food insecurity in Québec: food and feelings. *Soc Sci Med*. 2002;54(1):119-32.
200. Varpio L, Ajjawi R, Monrouxe LV, O'Brien BC, Rees CE. Shedding the cobra effect: problematising thematic emergence, triangulation, saturation and member checking. *Med Educ*. 2017;51(1):40-50.
201. Boeije H. A Purposeful Approach to the Constant Comparative Method in the Analysis of Qualitative Interviews. *Quality & Quantity*. 2002;36(4):391-409.
202. Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in Psychology*. 2006;3(2):77-101.
203. Department for international development (DFID). Sustainable livelihood guidance sheets [Internet]. London (GB): Department of international development; 1999 [cited 2017 Jul]. Available from: <http://www.eldis.org/vfile/upload/1/document/0901/section2.pdf>.
204. De Marco M, Thorburn S, Kue J. "In a Country as Affluent as America, People Should be Eating": Experiences With and Perceptions of Food Insecurity Among Rural and Urban Oregonians. *Qual Health Res*. 2009;19(7):1010-24.
205. Buck-McFadyen E. Rural food insecurity: When cooking skills, homegrown food, and perseverance aren't enough to feed a family. *Canadian Journal of Public Health*. 2015;106(3):140-6.
206. McIntyre L, Glanville NT, Raine KD, Dayle JB, Anderson B, Battaglia N. Do low-income lone mothers compromise their nutrition to feed their children? *Can Med Assoc J*. 2003;168(6):686-91.
207. Burns C, Cook K, Mavoja H. Role of expendable income and price in food choice by low income families. *Appetite*. 2013;71:209-17.
208. Knowles M, Rabinowich J, Cuba ED, Cutts DB, Chilton M. "Do you wanna breathe or eat?": Parent perspectives on child health consequences of food insecurity, trade-offs, and toxic stress. *Maternal and Child Health Journal*. 2016;20(1):25-32.
209. Martin MA, Lippert AM. Feeding her children, but risking her health: The intersection of gender, household food insecurity and obesity. *Soc Sci Med*. 2012;74(11):1754-64.
210. Law IR, Ward PR, Coveney J. Food insecurity in South Australian single parents: an assessment of the livelihoods framework approach. *Critical Public Health*. 2011;21(4):455-69.
211. Chilton M, Knowles M, Bloom SL. The Intergenerational Circumstances of Household Food Insecurity and Adversity. *J Hunger Environ Nutr*. 2016:1-29.
212. Coleman-Jensen A, Gregory C, Singh A. Household food security in the united states in 2013. Washington United States Department of Agriculture ,Economic Research Service; 2014.
213. Jericho G. Three years of stagnant wage growth. Don't be surprised if people look for someone to blame [Internet]. Sydney (AU): The Guardian; 2016 [cited 2017 Oct]. Available from: <https://www.theguardian.com/business/grogonomics/2016/nov/17/three-years-of-stagnant-wage-growth-dont-be-surprised-if-people-look-for-someone-to-blame>.
214. Jacobs D, Rush A. Why Is Wage Growth So Low? [Internet]. Sydney (AU): Reserve Bank of Australia; 2015 [cited 2017 Sep]. Available from: <http://www.rba.gov.au/publications/bulletin/2015/jun/pdf/bu-0615-2.pdf>.
215. Australian Council of Trade Unions. Living up to the promise of Harvester: Time for a Living Wage. Melbourne (AU): Australian Council of Trade Unions,; 2017. 1-25 Report No.: 134.

216. Emery JCH, Fleisch VC, McIntyre L. How a guaranteed annual income could put food banks out of business. Calgary (AB): University of Calgary, Policy TSoP; 2013. 1-21 Report No.: 37.
217. Tarasuk V. Implications of a basic income guarantee for household food insecurity. Thunder Bay (ON): Northern Policy Institute; 2017. 1-24 Report No.: 24.
218. McIntyre L, Kwok C, Emery H, Dutton DJ. Impact of a guaranteed annual income program on Canadian seniors' physical, mental and functional health. *Canadian Journal of Public Health*. 2016;107:e176+.
219. Bowman D, Mallet S, Cooney-O'Donoghue D. Basic income: trade-offs and bottom lines. Melbourne (AU): Brotherhood of St Laurence, Research and Policy Centre; 2017. 1-36 Report No.: June 2017.
220. Emery JCH, Bartoo AC, Matheson J, Ferrer A, Kirkpatrick SI, Tarasuk V, et al. Evidence of the Association between Household Food Insecurity and Heating Cost Inflation in Canada, 1998-2001. *Canadian Public Policy / Analyse de Politiques*. 2012;38(2):181-215.
221. Essential Services Commission. Victorian Energy Market Update 2016-17. Melbourne (AU): Essential Services Commission; 2017 30 June 2017. 1-15 Report No.: 2.
222. Lambert K, Ficken C. Cost and affordability of a nutritionally balanced gluten-free diet: Is following a gluten-free diet affordable? *Nutr Diet*. 2016;73(1):36-42.
223. Burns C, Bentley R, Thornton L, Kavanagh A. Reduced food access due to a lack of money, inability to lift and lack of access to a car for food shopping: a multilevel study in Melbourne, Victoria. *Public Health Nutr*. 2011;14(6):1017-23.
224. Tarasuk V. A Critical Examination of Community-Based Responses to Household Food Insecurity in Canada. *Health Educ Behav*. 2001;28(4):487-99.
225. Vidgen H, Gallegos D. Defining food literacy and its components. *Appetite*. 2014;76:50-9.
226. Cullen T, Hatch J, Martin W, Higgins JW, Sheppard R. Food literacy: definition and framework for action. *Canadian Journal of Dietetic Practice and Research*. 2015;76:140+.
227. Vidgen H. *Food Literacy : Key Concepts for Health and Education*. 1 ed. London (GB): Routledge; 2016. 1-244 p.
228. Gallegos D. The nexus between food literacy, food security and disadvantage. In: Vidgen H, editor. *Food Literacy : Key Concepts for Health and Education*. 1st ed. London (GB): Routledge; 2016. p. 134-50.
229. Loopstra R, Tarasuk V. The relationship between food banks and household food insecurity among low-income Toronto Families. *Canadian Public Policy*. 2012;38(4):497-514.
230. Davis BL, Grutzmacher SK, Munger AL. Utilization of Social Support among Food Insecure Individuals: A Qualitative Examination of Network Strategies and Appraisals. *J Hunger Environ Nutr*. 2016:1-18.
231. Berkman LF, Glass T, Brissette I, Seeman TE. From social integration to health: Durkheim in the new millennium. *Soc Sci Med*. 2000;51(6):843-57.
232. Bernal J, Frongillo EA, Jaffe K. Food Insecurity of Children and Shame of Others Knowing They Are Without Food. *J Hunger Environ Nutr*. 2016:1-15.
233. Page-Reeves J, Anixter Scott A, Moffett M, Apodaca V, Apodaca V. "Is always that sense of wanting ... never really being satisfied": Women's Quotidian

Struggles With Food Insecurity in a Hispanic Community in New Mexico. *J Hunger Environ Nutr.* 2014;9(2):183-209.

234. McEwen BS. Brain on stress: How the social environment gets under the skin. *Proceedings of the National Academy of Sciences.* 2012;109(Supplement 2):17180-5.

235. McEwen BS. Stress, Adaptation, and Disease: Allostasis and Allostatic Load. *Ann N Y Acad Sci.* 1998;840(1):33-44.

236. Peters A, McEwen BS. Editorial introduction. *Physiol Behav.* 2012;106(1):1-4.

237. Fletcher D, Sarkar M. Psychological Resilience: A Review and Critique of Definitions, Concepts, and Theory. *Eur Psychol.* 2013;18(1):12-23.

238. Rutter M. Resilience as a dynamic concept. *Dev Psychopathol.* 2012;24(2):335-44.

239. Younginer NA, Blake CE, Draper CL, Jones SJ. Resilience and Hope: Identifying Trajectories and Contexts of Household Food Insecurity. *J Hunger Environ Nutr.* 2015;10(2):230-58.

240. Slater J, Yeudall F. Sustainable Livelihoods for Food and Nutrition Security in Canada: A Conceptual Framework for Public Health Research, Policy, and Practice. *J Hunger Environ Nutr.* 2015;10(1):1-21.

241. Serrat O. The Sustainable Livelihoods Approach. In: Asian Development Bank. *The Sustainable Livelihoods Approach* [Internet]. Singapore: Springer; 2017. [p21-6]. Available from: https://link-springer-com.ezproxy.lib.monash.edu.au/content/pdf/10.1007%2F978-981-10-0983-9_5.pdf.

242. Morse S, McNamara N. The Theory Behind the Sustainable Livelihood Approach. In: Morse S, McNamara N, editors. *Sustainable Livelihood Approach A Critique of Theory and Practice*. Dordrecht (NL): Springer; 2013. p. 15-60.

243. Levine S. How to study livelihoods: Bringing a sustainable livelihoods framework to life [Internet]. London, UK: Overseas Development Institute; 2014 [Available from: <https://securelivelihoods.org/wp-content/uploads/How-to-study-livelihoods-Bringing-a-sustainable-livelihoods-framework-to-life.pdf>].

244. The pre-publication history for this paper can be accessed here: <http://www.biomedcentral.com/1471-2458/11/67/prepub>.

245. Statistics ABo. 6523.0 Household Income and Wealth, Australia 2013-2014 Financial stress indicators [Internet]. Canberra, ACT: Australian Bureau of Statistics; 2016 [Available from:

<http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/6523.0~2013-14~Main%20Features~Financial%20Stress%20Indicators~33>.

246. Tarasuk V, Mitchell, A, Dachner, N. Household food insecurity in Canada, 2012 [Internet]. Toronto (ON): Canadian Institutes of Health Research; 2014 [cited 2014 19 May]. Available from:

<http://nutritionalsciences.lamp.utoronto.ca/Research>

247. Ashby S, Kleve S, McKechnie R, Palermo CE. Measurement of the dimensions of food insecurity in developed countries: a systematic literature review. *Public Health Nutr.* 2016;19(16):2887-96.

248. Collins PA, Power EM, Little MH. Municipal-level responses to household food insecurity in Canada: A call for critical, evaluative research. *Canadian Journal of Public Health.* 2014;105(2):e138-41.

Appendices

Appendices

Appendix 1 Ethics Approval Part 1



Monash University Human Research Ethics Committee (MUHREC)
Research Office

PLEASE NOTE: To ensure speedy turnaround time, this correspondence is now being sent by email only. MUHREC will endeavour to copy all investigators on correspondence relating to this project, but it is the responsibility of the first-named investigator to ensure that their co-investigators are aware of the content of the correspondence.

28 February 2013

Dr Claire Palermo

Dear Researchers

CF13/933 - 2013000438: Food insecurity experiences of low to medium income households

The above application has been reviewed by the Chairs of the Monash University Human Research Ethics Committee (MUHREC) who determined that the proposal satisfies section 5.1.22 of the National Statement on Ethical Conduct in Human Research.

Therefore, the Committee has granted an exemption from ethical review for the research as described in your proposal.

Thank you for your assistance.



Professor Ben Canny
Chair, MUHREC

cc: Ms Suzanne Kleve, Dr Sue Booth

Appendix 2 Ethics Approval Part 2



Monash University Human Research Ethics Committee (MUHREC)
Research Office

Human Ethics Certificate of Approval

This is to certify that the project below was considered by the Monash University Human Research Ethics Committee. The Committee was satisfied that the proposal meets the requirements of the *National Statement on Ethical Conduct in Human Research* and has granted approval.

Project Number: CF14/1382 - 2014000647

Project Title: Food Security in Melbourne Households

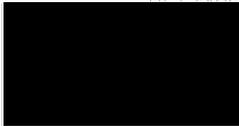
Chief Investigator: Dr Claire Palermo

Approved: **From:** 8 May 2014

To: 8 May 2019

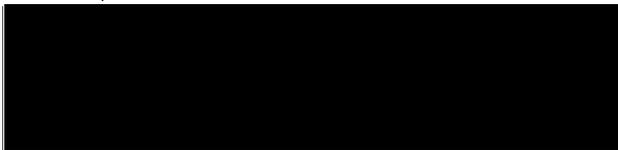
Terms of approval - Failure to comply with the terms below is in breach of your approval and the Australian Code for the Responsible Conduct of Research.

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, before any data collection can occur at the specified organisation.
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash University letterhead and the Monash University complaints clause must include your project number.
6. **Amendments to the approved project (including changes in personnel):** Require the submission of a Request for Amendment form to MUHREC and must not begin without written approval from MUHREC. Substantial variations may require a new application.
7. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
8. **Annual reports:** Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. **Final report:** A Final Report should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected date of completion.
10. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by MUHREC at any time.
11. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.



Professor Nip Thomson
Chair, MUHREC

cc: Dr Zoe Davidson, Dr Sue Booth, Ms Suzanne Kleve, Ms Stephanie Ashby





MONASH University

Explanatory Statement

Melbourne Resident

Title: Food security in Melbourne households

This information sheet is for you to keep.

Dr Claire Palermo

Chief Investigator
Department of Nutrition and
Dietetics

[Redacted]
Road, Notting Hill

Ph: [Redacted]

Sue Kleve

PhD student researcher
Department of Nutrition and
Dietetics

[Redacted]
Road, Notting Hill

Ph: [Redacted]

Stephanie Ashby

Honours student researcher
Department of Nutrition and
Dietetics

[Redacted]
Notting Hill

Ph: [Redacted]

You are invited to take part in this study. Please read this Explanatory Statement in full before deciding whether or not to participate in this research. If you would like further information regarding any aspect of this project, you are encouraged to contact the researchers via the phone numbers or email addresses listed above.

We are working with Dr Zoe Davidson, lecturer and Dr Sue Booth, adjunct lecturer in the Department of Nutrition and Dietetics towards an Honours Degree of the Bachelor of Nutrition and Dietetics and a Doctor of Philosophy (PhD). This means that we each will be writing a thesis about different parts of this study.

The aim of this research is to measure your households level of food security, this means that you can access affordable, healthy, culturally appropriate and safe food at all times without relying on emergency food relief. This will be measured by trialling a newly developed Australian food security scale and comparing the results to a widely used United States food security survey. There may be questions that are the same or similar in the two surveys but this is so that we can compare responses from the two surveys. The other part of the study, depending on your household meeting certain criteria, is an interview about your experiences of food security.

Why were you chosen for this research?

You have been approached to participate because you live in one of the suburbs chosen for the study.

Whilst this research may not provide benefits for you directly, it will assist our understanding of food security and experiences in households in Melbourne with the view to recommend strategies to address this as an issue in the future

What does the research involve?

The research involves data collection using a range of methods. Background information will be collected on a questionnaire and then you will be asked to complete the Household Food and Nutrition Security scale questionnaire and the US Food Security Survey. If you agree to complete these questionnaires it will be implied that you consent for your data to be collected for use in this study.

Dependent on further criteria with your permission you will be contacted to participate in an interview with Sue Kleve at a mutually arranged time and location to talk in more detail about your experiences of food security. This interview will be audio taped and your individual signed consent will be obtained prior to your participation.

How much time will the research take?

Completing the background questions and the Household Food and Nutrition Security scale questionnaire will take 20 minutes. The interview should not exceed 1 hour and will take place during weekdays and at a mutually agreed upon location.

Will there be payment?

Participants who complete the first part of this study will go in the draw for one of ten \$20 Coles or Woolworths gift cards.

Payment of a \$30 Coles or Woolworths gift card will be provided to participants who complete the interview.

It is possible that some participants may find participating in the study as inconvenient as a result of either having to fill in background information or completing the Household Food and Nutrition Security scale or giving up their time to participate in the interview. Some participants may also experience discomfort or feel anxious in providing information on their food security experiences. Should a participant become anxious and uncomfortable during or after the data collection they should contact Lifeline on phone 13 11 14.

Being in this study is voluntary and you are under no obligation to consent to participation. If you do not want your data to be used in this study you must notify the researchers. Once you have completed this data you cannot withdraw your answers, as responses are anonymous. Interviews will be transcribed by a professional transcription service and participant information will remain confidential during this process.

Confidentiality of the data will be ensured by assigning codes to each individual participant. Data collected will be stored in accordance with Monash University regulations, kept on University premises, in the Department of Nutrition and Dietetics in a locked filing cabinet for 5 years. A report of the study will be submitted for publication, but individual participants will not be identifiable in such a report. You can contact the researcher to obtain a copy of the report.

Please note that all data collected is anonymous. Please keep in mind that it is sometimes impossible to make an absolute guarantee of anonymity but every attempt will be made to protect the identity of participants.

Results

If you would like to be informed of the aggregate research finding, please contact Sue Kleve on phone [REDACTED] or email [REDACTED]

Should you have any concerns or complaints about the conduct of the project, you are welcome to contact the

Executive Officer, Monash University Human Research Ethics (MUHREC):

Executive Officer
Monash University Human Research Ethics Committee (MUHREC)

[REDACTED]
Research Office
Monash University VIC 3800

[REDACTED] [REDACTED]
[REDACTED]



MONASH University

Consent Form

Title: Food security in Melbourne households

Chief Investigator:

Dr Claire Palermo
Monash University
Department of Nutrition and Dietetics

██
██
Ph: ██████████

I have been asked to take part in the Monash University research project specified above. I have read and understood the Explanatory Statement and I hereby consent to participate in this project. I understand that once I completed the interview I cannot withdraw my answers, as responses are anonymous.

I consent to the following	Yes	No
To be interviewed in more detail about my households food security experiences by the student researcher Sue Kleve		
To the interview to be audiotaped		

Name of Participant _____

Participant Signature _____ Date _____



Food security in Melbourne households study

Do you live in one of these suburbs*?

Deer Park	Werribee
Sunshine	South Morang
Beaconsfield	Essendon
Roxburgh Park	Oakleigh
Knoxfield	Glen Waverley
Lilydale	Nunawading

Researchers at Monash University are interested in hearing about your experience of accessing food and the factors affecting it.

Food security is about your ability to access nutritious and affordable food.

- ✓ Would you like to go into the draw to **win one of ten \$20 Coles or Woolworths gift cards**
- ✓ Do you have **15 minutes to complete a survey?**
- ✓ Are you **over 18 years old?**
- ✓ Are you the **main food shopper or preparer?**



After completing the survey, you will have the opportunity to participate in further research on food security, for which you will be reimbursed for your time.

How to participate and go in the draw to win:

1. **By February 28th 2015** go to <http://bit.ly/monashfood> **OR** complete a paper copy of the survey & return in the reply paid envelope **OR** scan the barcode with your phone
2. Enter the draw to win one of ten \$20 Coles or Woolworths gift cards



***Note if you do not live in one of these suburbs you are still welcome to complete the survey.**

For further information, or if you have any questions, please contact:

PhD candidate: Sue Kleve
Monash University, Dept. of Nutrition & Dietetics
Email: [REDACTED]
Tel: [REDACTED]

Student investigator: Stephanie Ashby
Monash University, Dept of Nutrition & Dietetics
Email: scash4@student.monash.edu



Food security in Melbourne households

**Food security is about your ability to
access, nutritious and affordable food**

**Please read the attached explanatory statement before you
complete this survey**

- Provide only one answer for each item, unless otherwise stated.
- Your answers will be treated as strictly **PRIVATE** and **CONFIDENTIAL**.
- Once you have completed the survey, please return it in the enclosed reply paid envelope (no stamps necessary).

Section 1: Suburb I live in

1.1 Please tick:

- Deer Park
- Beaconsfield
- Roxburgh Park
- Knoxfield
- Sunshine
- Lilydale
- Werribee
- South Morang
- Essendon
- Glen Waverley
- Oakleigh
- Nunawading
- None of the above

If you ticked one of the above suburbs please continue the survey

If you answered none of the above please do not continue the survey. Thanks for your time

Section 2: About you and your household

2.1 ARE YOU:

- Male
- Female
- Prefer not to say

2.2 WHAT IS YOUR AGE GROUP?

- 18-25
- 26-35
- 36-45
- 46-55
- 56-65
- Over 65

2.3 WHAT IS YOUR COUNTRY OF BIRTH?

- Australia
- Other (please specify) _____

2.4 ARE YOU OF ABORIGINAL OR TORRES STRAIT ISLANDER ORIGIN?

- No
- Yes Aboriginal
- Yes Torres Strait Islander

2.5 WHICH ONE OF THE FOLLOWING BEST DESCRIBES YOUR LIVING ARRANGEMENTS?

(Please select one only)

- Home owner with a mortgage
- Home owner no mortgage
- Renting, privately
- Renting, public or social housing
- Boarding
- Other (Please specify) _____

2.6 WHICH ONE OF THE FOLLOWING BEST DESCRIBES YOUR CURRENT HOUSEHOLD LIVING ARRANGEMENTS?

(Please select one only)

- Living alone
- Living with my parents/family
- Living with my spouse/partner
- Living with my spouse/partner and children under 18 years
- Living with my spouse/partner and children over 18 years
- Living with my spouse/partner and children under and over 18 years
- Living with my children under 18 years
- Living with my children under 18 years
- Living with my children under and over 18 years
- Living in a share house
- Other living arrangements _____

2.7 HOW MANY PEOPLE LIVE IN YOUR HOUSEHOLD?

(Include yourself, partner, children or anyone else living with you)

2.8 HOW MANY CHILDREN IN YOUR HOUSEHOLD ARE UNDER AGE OF 18 YEARS?

(please specify)

2.9 WHAT IS THE HIGHEST LEVEL OF EDUCATION YOU HAVE COMPLETED?

(Please select one only)

- Primary school
- Year 7-9 Secondary school
- Year 10-11 Secondary school
- Year 12 Secondary school
- Certificate (Trade or business)
- Diploma or TAFE study
- Bachelor Degree
- Graduate Diploma or Graduate Certificate
- Postgraduate Degree (Masters or Doctorate)
- Other ((Please specify)_____

2.10 WHICH ONE OF THE FOLLOWING BEST DESCRIBES YOUR EMPLOYMENT SITUATION?

(Please select one only)

- Full time paid work
- Part time paid work
- Casual paid work
- Self employed
- Work without pay in a family or other business
- Home duties
- Unemployed looking for work
- Retired
 - Permanently unable to work
 - Carer
- Volunteering
- Studying
- Other (Please specify) _____

We would be grateful if you could provide an estimate of your total household income in the last 12 months.

To make this easier we have grouped incomes into categories so that your actual income can't be identified.

2.11 WHAT IS THE TOTAL INCOME FOR YOU HOUSEHOLD BEFORE TAX IN THE LAST 12 MONTHS? (i.e. the income of each person in your house combined)

(Please select one only)

- Less than \$19,999
- \$20,000- \$39,999
- \$40,000- \$59,999
- \$60,000- \$79,999
- \$80,000- \$99,999
- Over\$100,000
- Prefer not to say
- Don't know

2.12 WHICH ONE OF THE FOLLOWING BEST DESCRIBES YOUR MAIN FORM OF TRANSPORT?

(Please select one only)

- Car
- Walking
- Motor bike
- Bike
- Public transport - tram, bus, train
- Other (Please specify)_____

2.13 HOW MANY CARS IN YOUR HOUSEHOLD?

(Please select one only)

- 0
- 1
- 2
- 3
- 4 or more

2.14 WHO IS THE USUAL FOOD PROVIDER – THE MAIN PERSON WHO SHOPS AND COOKS IN YOUR HOUSEHOLD?

(Please select one only)

- Self
- Parent
- Spouse/partner
- Children
- House mate
- Carer
- Other_____

Section 3: US Household Food Security Survey Module

3.1 WHICH OF THESE STATEMENTS BEST DESCRIBES THE FOOD EATEN IN YOUR HOUSEHOLD IN THE LAST 12 MONTHS?

- Enough of the kinds of food we want to eat
- Enough but not always the kinds of food we want
- Sometimes not enough to eat
- Often not enough to eat
- DK or Refused

For the following statements, please indicate whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months.

3.2 'WE WORRIED WHETHER OUR FOOD WOULD RUN OUT BEFORE WE GOT MONEY TO BUY MORE.'

- Often true
- Sometimes true
- Never true

3.3 'THE FOOD THAT WE BOUGHT JUST DIDN'T LAST AND WE DIDN'T HAVE MONEY TO GET MORE.'

- Often true
- Sometimes true
- Never true

3.4 'WE COULDN'T AFFORD TO EAT BALANCED MEALS.'

- Often true
- Sometimes true
- Never true

3.5 IN THE LAST 12 MONTHS, DID YOU OR OTHER ADULTS IN THE HOUSEHOLD EVER CUT THE SIZE OF YOUR MEALS OR SKIP MEALS BECAUSE THERE WASN'T ENOUGH MONEY FOR FOOD?

- Yes
- No

If you answered yes to question 3.5

3.6 HOW OFTEN DID THIS HAPPEN?

- Almost every month,
- Some months but not every month, or
- In only 1 or 2 months?

3.7 IN THE LAST 12 MONTHS, DID YOU EVER EAT LESS THAN YOU FELT YOU SHOULD BECAUSE THERE WASN'T ENOUGH MONEY FOR FOOD?

- Yes
- No

3.8. IN THE LAST 12 MONTHS, WERE YOU EVER HUNGRY, BUT DIDN'T EAT, BECAUSE THERE WASN'T ENOUGH MONEY FORFOOD?

- Yes
- No

3.9 IN THE LAST 12 MONTHS, DID YOU LOSE WEIGHT BECAUSE THERE WASN'T ENOUGH MONEY FOR FOOD?

- Yes
- No

3.10 IN THE LAST 12 MONTHS DID YOU OR OTHER ADULTS IN YOUR HOUSEHOLD EVER NOT EAT FOR A WHOLE DAY BECAUSE THERE WASN'T ENOUGH MONEY FOR FOOD?

- Yes
- No

If you answered no to 3.10 please go to 3.12

3.11. IF YOU ANSWERED YES TO QUESTION 4.10 HOW OFTEN DID THIS HAPPEN?

- Almost every month
- Some months but not every month,
- In only 1 or 2 months?

3.12 IN YOUR HOUSEHOLD ARE THERE CHILDREN AGED 0-11

- Yes

- No

If you answered no to 3.12 please skip to 3.21

If you answered yes to 3.12

For the following statements, please indicate whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months

3.13 'WE RELIED ON ONLY A FEW KINDS OF LOW-COST FOOD TO FEED OUR CHILDREN BECAUSE WE WERE RUNNING OUT OF MONEY TO BUY FOOD.'

- Often true
- Sometimes true
- Never true

3.14 'WE COULDN'T FEED OUR CHILDREN A BALANCED MEAL, BECAUSE WE COULDN'T AFFORD THAT.'

- Often true
- Sometimes true
- Never true

3.15 'THE CHILDREN WERE NOT EATING ENOUGH BECAUSE WE JUST COULDN'T AFFORD ENOUGH FOOD.'

- Often true
- Sometimes true
- Never true

3.16 IN THE LAST 12 MONTHS, DID YOU EVER CUT THE SIZE OF ANY OF THE CHILDREN'S MEALS BECAUSE THERE WASN'T ENOUGH MONEY FOR FOOD?

- Yes
- No

3.17 IN THE LAST 12 MONTHS, WERE THE CHILDREN EVER HUNGRY BUT YOU JUST COULDN'T AFFORD MORE FOOD?

- Yes
- No

3.18 IN THE LAST 12 MONTHS, DID ANY OF THE CHILDREN EVER SKIP A MEAL BECAUSE THERE WASN'T ENOUGH MONEYFOR FOOD?

- Yes
- No

**If you answered no to 3.18 please skip to 3.20
If you answered yes to 3.18**

3.19 HOW OFTEN DID THIS HAPPEN?

- Almost every month,
- Some months but not every month,
- Only 1 or 2 months?

3.20 IN THE LAST 12 MONTHS DID ANY OF THE CHILDREN EVER NOT EAT FOR A WHOLE DAY BECAUSE THERE WASN'TENOUGH MONEY FOR FOOD?

- Yes
- No

**3.21 PLEASE PROVIDE YOUR DETAILS IF YOU WOULD LIKE TO PARTICIPATE IN FURTHER RESEARCH ABOUT FOOD SECURITY?
IF YOU DO PARTICIPATE, YOU WILL BE REIMBURSED FOR YOUR TIME WITH A \$30 COLES OR WOOLWORTHS GIFT CARD.**

First Name_____

Surname_____

Phone_____

Email_____

3.22 THANK YOU FOR COMPLETING THE SURVEY.

TO GO INTO THE DRAW TO WIN ONE OF TEN \$20 COLES OR WOOLWORTHS GIFT CARDS, PLEASE ENTER YOUR DETAILS BELOW:

First Name_____

Surname_____

Phone_____

Appendix 6 Part 2 Qualitative Phase Interview Outline

Interview outline

Introductory self

My background:

- I have worked as a dietitian for over 20 years, in community based centres. I am really interested in hearing the stories people have about accessing food to feed themselves and their household.
- About 2 years ago I decided to go back to Uni and start my PhD to research this in more detail and look at things that may make it easier for households to access healthy food.
- I am a Mum to 2 teenage children

Can you tell me a little bit about yourself?

Consent:

- Signing of consent form.
- Taping interview and taking notes – everything confidential, they won't be identified when I write up my thesis (my report)
- All information is not identifiable
- They can stop at any time. If they wish to discontinue or need a break
- Interview duration about an hour

Re intro interview –

- My research is looking at food security in Melbourne households – this term, ' food security' is used to describe the ability to access enough, nutritious affordable and appropriate food.
- There are 2 parts of the research; the first part was the survey you completed either online or paper copy and the second part is an interview with a small group of people who completed the survey. The survey answers have helped me to form some of my questions today.
- The main reason for the interview is so I can get a better understanding and more detailed information about your experiences accessing food and some of the things that affect it.
- **There are no right or wrong answers to these questions; it's about hearing your story and experiences.**

Interview note sheet

Time of interview (commencement and conclusion):

Date:

Place:

Interviewer:

Interviewee and Id no.:

Description/Sketch of how interviewee and interviewer are positioned in relation to each other:

Introduction outlining components of interview.

This interview consists of 4 main sections, each with 2-3 questions. I will give you some indication of where we are at and how much more is left to complete as we go. We are going to start off with some general questions and then we will get more specific. I may also ask you to say more about some of your answers. Does that sound OK?'

Section 1

These questions are generally related to accessing food for your household and some of the food choices that you might make.

Q 1 Let's start off by talking about your experience getting food for your household. Can you walk me through your usual routine?

Prompt-

1. shopping – who, what when, where and why?
2. getting to the supermarket
3. daily vs weekly vs fortnightly –frequency

Q2 Can you tell me more about some of the food choices that you might normally make for your household ?

Prompt

1. staple items – what might they consider these to be
2. snacks
3. fruit, veg
4. special occasions

Q 3 Now that I understand a bit more about your household food routine, I'd like to ask you about what are some of the decisions behind or things that affect your food access routine

Prompt –

1. Children
2. Time
3. Health – special dietary needs
4. Money. Timing with social security payments/ pay checks etc
5. Employment
6. Life event

Section 2 Things that impact on food for the household

This next section of the interview is trying to find out more about the things that impact on food for you.

Q 4 In the first question you mentioned that xyz (depending on response) influenced your ability to access food. So I can get a better understanding can you tell me more about this/these trigger(s)?

Prompt:

1. frequency of triggers

E.g. **follow up questions:** (depending on response)

1 Money for other expenses:

1. You mentioned not enough money as you had bills to pay can you please tell me more about these?
2. Can you share with me what you would do if these situations come up?
3. In what way do these pressures impact on food and food choices within and outside the home?
4. Are there changes in overall spending patterns on food?

2 You mentioned food is too expensive can you please tell me more what you mean about this? How does this affect your food choices?

3. You mentioned that you don't have any difficulties accessing food. I would be interested to hear more about what things you think protect you from experiencing this (Explore assets/ protective factors)

Section 3 – Consequences / Knock on effects

We're over half way through the interview now. This next section is looking at what tends to happen to the family/household when you can't access sufficient food or the food you want.

Q5 If there are times when it is hard to access the food you want or enough food can you please share with me with me how this affects you or your household.

Prompts

1. outings,
2. social impacts
3. family/friend occasion,
4. health

Section 4 - Coping and protective strategies (asset exploration)

This final section is about how people manage when they don't have enough food or access to they food they want. What I'm getting at here is how people might re-organise their routines to get through a difficult time. For example, people might eat less meat, buy cheaper food, shop at different places, get support from family and friends.

Or if FS

This final section is about what are some of the things that people do to make sure that they have enough food . For example shop specials, go to markets to get cheaper fruit and vegies.

Q 6 Can you describe to me what are some of the things that you do to make sure that you and your household has enough food?

Prompts:

1. Support from Family and friends
2. Modifying what you might buy – home brand, less meat , cheaper meat
3. Using EFRS

Q7 If you had a crystal ball what are a couple of things that you think that would make accessing food, especially healthy food easier?

Prompts:

1. Thinking also in their community
2. Better transport to the shops
3. Support –family/friends
4. Skills/training – this could be related specifically to food but may go beyond

Section 5 Conclusion

Q8 We've covered a lot in our interview, is there anything that you've said , that you would like to expand on or add to?

Q 9 Out of everything you've shared today, what 2 points would you like to emphasize to me that are really important in terms of food access for your household?

Wrap up :

What happens now is that this taped interview will be typed up and checked to make sure it makes sense and is accurate. If something is unclear in the typed version, can I clarify with you via a quick phone call?

In research like this it is usual to offer the interviewee the chance to also check the typed version. Would you like to view and check the typed version?' If yes, get details

If I feel I need to check something with you is it ok if I contact you by phone?..... Check number.

Thank you - Give participant voucher

Appendix 7 Biographical Summary of Food Secure and Food Insecure In-Depth Interview Participants n=16

<p>'Sophie'</p>	<p>Food security status: Food insecure, marginal food security Age: 36-45 years old Living arrangements: Renting in Oakleigh Household income: A\$40,000-60,000. Salary and study scholarship About: 'Sophie' is married and is 37 weeks pregnant with their first child. She moved from the UK about 2.5 years ago and her husband is originally from the USA. She is completing a PhD full-time in the area of water sustainability. She receives casual paid work through the university. They have recently purchased a car in readiness for the arrival of the baby. Prior to this they did not own a car so they would walk a 4km round trip to the grocery shops two to three times a week. Sophie is the main food preparer for the household. She describes a very different food culture growing up between herself and her husband. Significant points: the household has a tight budget that has meant that she cannot necessarily purchase the types of foods that she would prefer. A major enabling factor has been the purchasing of a car that means that she no longer has to make number of trips by foot to access food.</p>
<p>'Maureen'</p>	<p>Food security status: Food insecure, marginal food security Age: in her 50s Living arrangements: homeowner with a mortgage Household income: A\$40,000-60,000. Salary About: 'Maureen' lives by herself. She divorced a number of years ago, has 2 adult children (son, 26 & daughter, 23). Both children initially lived with their father until Maureen gained full time employment. Her son continued to live with his Dad while her daughter moved back home in her teens. Currently both children live in Darwin, NT. However the children may return home for periods of time and this adds significant financial strain to Maureen. She currently works full time in an administration role and she completed her schooling to year 10/11. While Maureen has a car she disclosed that she has had her licence suspended and now relies on other forms of transport: walking, public transport, and friends. She prepares food herself. Maureen has experienced significant financial hardship over the years where her level of food insecurity was greater. She described that currently she is in a more comfortable place financially. Significant points: for her when she was first divorced and the financial strain that occurred with this. Maureen described this experience in great detail highlighting difficulties and the importance of having support from friends.</p>
<p>'Fay'</p>	<p>Food security status: Food insecure, marginal food security Age: 36-45 years old Living arrangements: homeowner with a mortgage in South Morang Household income: A\$40,000-60,000. Salary and receipt of the Federal Government Family Tax Benefit About: 'Fay' lives in with husband and their two children (7 and 9 years). 'Fay' completed year 12 and prior to having children she worked in an administration role for a lawyer. She describes herself as 'stay-at-home Mum' but is actively involved in community: on the local school council, the school canteen committee, president of the local community garden and as a scout leader.</p>

	<p>Through the community garden Fay has been involved in establishing produce swaps. She stresses the importance of connection to community and to food and how the two can mutually support one another, growing some of her food at the community garden (individual and communal plot) and at home supplements the household fruit and vegetable intake.</p> <p>'Fay' is the main food preparer though her husband also does shopping (meat) on weekend at Coles (supermarket) to get the best deals and then cooks on Sunday. They are a 1 car household, but she uses a bike as her main form of transport.</p> <p>Significant point: When her husband was recently retrenched from work; he has since found employment. This added financial strain but she felt that they had some protective factors that supported them through this time. 'Fay' articulated the stress of juggling bill shocks, unexpected household expenses and the importance of trying to have some money saved for these times.</p>
'Marcie'	<p>Food security status: Food insecure, marginal food security</p> <p>Age: 26-35 years old</p> <p>Living arrangements: homeowner with a mortgage</p> <p>Household income: A\$60,000-80,000K. Salary though husband's employment and Marcie with casual work as a radiation therapist. In addition she works once a week at a large Department store as a sales assistant</p> <p>About 'Marcie' is married with 2 children (4 and 2 years). Marcie was born in Australia but is of Vietnamese background. At the time of the survey, Marcie and family were renting, but have now purchased a townhouse in Brunswick. The family moved from Toowoomba, QLD (her husband was from there) to Melbourne to be close to her family – especially for her children. Marcie described a change of living since shifting to Melbourne: 'minimising our lives- we feel freer'. They had a number of properties in QLD that they sold including their large house and yard requiring constant maintenance. They were a 3 car household now reduced to 1. As they are now living simpler this has had implications of not being on a tight budget. Marcie's husband is a financial planner who did the figures when they downsized and established the financial benefits for the household. She described how he had made comment' of those people living out in the growth areas in Melbourne where there is poor transport and being reliant on cars, with limited income and mortgage may have financial issues especially if fuel and mortgage rates increase.' Buying in Brunswick, they do not have a yard but they have a park down the road that children play in.</p> <p>Marcie and has strong cultural (food) ties. However, she indicates that she can't cook cultural food like her mother and describes how she goes around there to get her 'real Asian food and vegetables'. Mother grows a variety of herbs and vegetables. Marcie described that she at times feels limited in access to her cultural foods due to availability in the area.</p> <p>Marcie's oldest child has a number of allergies: these manifest as eczema. Her husband has developed food Intolerances and has specific food preferences as a result of his family food culture growing up. Hence the scope of food choices at home is limited and she misses her culturally appropriate foods.</p> <p>Significant point While downsizing has been life changing a significant point allowing them to save money, in Marcie's life it was the birth of children and the shock that this provided in the lack of readiness: 'I'm trained and have qualifications in x,y,z but not for having children and dealing [with] food allergies.'</p>
'Clara'	<p>Food security status: Food insecure, low food security severity level</p> <p>Age: between 36-45 years</p> <p>Living arrangements: renting</p> <p>Household income: A\$60,000-80,000. Her husband is a data cabling technician, income is AU\$64,000.' Clara' receives family benefits and a small student benefit of \$20/week from the Federal Government</p> <p>About: 'Clara' is married with 2 boys, 5 and 3.</p>

	<p>She completed school to year 10-11, and is currently completing a 2 year online Certificate 4 in Bookkeeping and Accounting. Prior to children she worked as the executive assistant to the managing director of a company. She described the shock finishing work both from a financial sense but her change in role with progression to motherhood</p> <p>Due to strained financial situation they are renting their home through the private rental market. She explained that once the children are at school and kinder she plans to go back to work around the boys' hours to supplement the household income. She hopes to one day be able to buy a house, but the priority is to get the family back financially. They are a 2 car household.</p> <p>'Clara' is community oriented and is a parent representative at kinder. Participating in this voluntary role has allowed her to 'keep the brain ticking' She has close connections with her elderly neighbours.</p> <p>'Clara' describes her role and sense of duty regarding home duties and is responsible for all cooking and shopping. She wears the responsibility of the load of the financial management. She describes her constant struggle in this role and making thing seemingly ok for her household.</p> <p>Significant point: 'Clara' left home at 17 due to the home environment with mother and partner. She doesn't know her biological father. Her late adolescent years were a struggle but ones that taught her to be street wise and resilient. Clara describes the importance of these skills that she draws upon still to this day.</p> <p>Another key point is when her half-brother (in his late teens) lived with her and her husband prior to children. This impacted significantly on their financial position: as a result they continue to have large credit card debits and do not have back up plans regarding money.</p>
'Kim'	<p>Food security status: Food insecure, low food security severity level</p> <p>Age: Between 56-65 years</p> <p>Living arrangements: homeowner with a mortgage in South Morang</p> <p>Household income: A\$60,000-80,000. Salary</p> <p>About 'Kim' lives by herself. She is divorced and has 1 adult married son and granddaughter who is under 12 months. Her son is supportive and they have a good relationship.</p> <p>Kim has tertiary qualifications and works full time work in local government in administration. She reported her income being between?</p> <p>Kim has a car, cooks and shops. She describes how she continually watches her budget and her expenses and that she needs to plan ahead for birthdays etc. to manage the financial strain.</p> <p>Significant point: For her was post-divorce when she experienced financial issues where she described that she had debt collectors on the door and was close to bankruptcy. She sought help with My Budget, a commercial financial management service, who have worked with her since that point and she has significantly reduced the level of debt.</p>
'Nancy'	<p>Food security status: Food insecure very low food security severity level</p> <p>Age: is a 25 year old woman</p> <p>Living arrangements: renting in Knoxfield, then moved to neighbouring Boronia</p> <p>Household income: A\$40,000-60,000</p> <p>About 'Nancy' is unable to keep time for face to face interview - given unpredictable casual work hours, agreed to phone interview. –As English is second language, Nancy's sister also listened to interview and helped with any translation that was required.</p> <p>Nancy migrated from Iran in 2013 with her younger siblings and her mother. Nancy lives with her family in a unit/town house. There are 6 people in the house including her mother and 4 siblings; 3 are under 18.</p> <p>'Nancy' has a Bachelor of Science majoring in Chemistry that she gained in Iran. When she arrived in Australia she completed an employment and learning course. She has completed a Certificate 4 as laboratory technician and is currently completing Certificate 3 in</p>

	<p>Child Care. She is completing this additional training to increase her employment opportunities. Nancy is working part time 3 days/ week in Family Day Care to support skills gained through training. Although there are 3 cars in the household she uses public transport. She shares the cooking and the shopping with her mother, although her mother is the main food preparer.</p> <p>Significant point: for Nancy was the shift to Australia where she described the initial difficulties of not being able to get culturally appropriate food but now they have included Westernised foods. She is now finding it easier to get culturally appropriate foods as she knows the shops/foods and has learnt this through family, TV and friends. Additionally, regular family celebrations when held at her house have significant financial implications and cultural pressures. In order to prepare for these foods, personal and financial sacrifices are made.</p>
'Ann'	<p>Food security status: Food insecure, very low food security severity level</p> <p>Age: is between 26-35 years of age</p> <p>Living arrangements: live in their own home (mortgage) in South Morang.</p> <p>Household income: A\$60,000-80,000. Salary and some casual employment and Government benefits, Family Tax Benefit and Child Care Rebate</p> <p>About Phone interview - due to difficulty with work, study and caring for her son</p> <p>'Ann' lives with her husband and 2 year old son. She is Fijian, Indian decent born in Fiji, and her husband is Macedonian.</p> <p>'Ann' is studying nursing (year 2) fulltime at University. She also works 2 shifts a week as a disability support worker.' Ann' described how her husband works long hours. Her son attends child care 4 days a week to enable her to attend university and she received Federal Government child care rebates.</p> <p>They have 2 cars in their household enabling access to shops. Ann is responsible for cooking and shopping.</p> <p>Significant point: For the household was the birth of their son. This was due to the reduction in income and increase in expenses. The demand of study and part time work has meant that Ann is time pressured.</p>
'Rowena'	<p>Food security status: Food secure.</p> <p>Age: is between 46-55 year years of age</p> <p>Living arrangements: Living in a parish-owned house in Essendon. They are purchasing a house in Wangaratta (which is rented) and have purchased a camper van</p> <p>Household income: A\$60,000-80,000. Husband's salary (Church minister) and some Family Tax Benefit Salary</p> <p>About: 'Rowena' lives with her husband and 2 teenage children. They moved back to Melbourne 3 years ago after living in Wangaratta and other country areas of Victoria.</p> <p>Rowena has completed a Diploma level education she describes her employment as house duties but is involved in facilitating groups/ activities in the parish, playgroups weekly and recently an Alpha group that involved cooking. She is actively involved in Parish life.</p> <p>They are a 2 car household but she will often walk to the local strip shops. She has a small vegetable patch that supplements their vegetables at home. Generally is the main food provider for the household. Self and husband eat gluten free due to intolerances and family history of coeliac disease.</p> <p>Significant point: Described impact of limited access (physical and financial) to special dietary food</p>
'Sara'	<p>Food security status: Food secure</p> <p>Age: is between 26-35 year old years of age</p> <p>Living arrangements: Lives with her partner. They are renting a house through private rental in Lilydale.</p> <p>Household income: A\$40,000- 60,000. Salary</p>

	<p>About 'Sara' at the time of completing the survey she was living by herself and employed by City of Yarra Ranges working in the area of environmental health and planning. Though her work she has an interest in food security.</p> <p>'Sara' was born in Iraq but left 15 years ago and moved to New Zealand with family then to Australia (Brisbane) to study post graduate Environmental Science.</p> <p>She now lives with her partner, sharing food preparation and shopping with partner. They have a car which she has described as an enabling factor.</p> <p>Significant points: Included studying in Brisbane with no money to spare, 'went on food and rent and bills.' Additionally the challenge when first moved to Lilydale without partner and had no car, essentially unable to physically access preferred cultural foods and foods preferences. Her family has been significant in the development of a positive food culture.</p>
'Kate'	<p>Food security status: Food secure</p> <p>Age: is between 46-55 years of age</p> <p>Living arrangements: She lives in South Morang in own house (no mortgage).</p> <p>Household income: A\$40,000-60,000. Salary and support payment from ex-husband</p> <p>About: 'Kate' is a divorced single mum of a teenage daughter. She was born in Italy but has been in Australia for over 30 years. Kate completed an education level to year 7-9 and she works 3 days a week in administration at a legal association. Her daughter spends time with her father on Sundays.</p> <p>Kate has a car that supports her access to the shops although she says that she has a good public transport system. She is the gatekeeper of food for the household.</p> <p>Significant points: Kate described the significance of cultural influences and the importance of food. The experience of war time in Europe had a significant impact on her parents and then subsequently on the culture of food in her household.</p>
'Erica'	<p>Food security status: Food secure</p> <p>Age: is between 46-55 years of age</p> <p>Living arrangements: She owns her own home outright but is currently living at her parents' home (Wheelers Hill close to Knoxfield) so she can care for them and do the cooking and shopping. They live in their own home (mortgage) in South Morang.</p> <p>Household income: A\$60,000-80,000. Through savings and a small carer allowance through the Federal Government.</p> <p>About: 'Erica' was born in Peru but has lived in Australia for over 30 years. She is an architect (post graduate qualification) but she is currently not working (3 months prior to completing survey) as she is the live-in carer for her parents. Her father has multiple myeloma- can't walk, is also blind and deaf. She recently got support to help with general care. Her mother is generally in good health but does have dietary restrictions.</p> <p>Significant point: For Erica has been her father's illness and she has 'put life on hold' to care for terminally ill father. She may go out on the weekend with friends. Otherwise she dedicates her time to maximise nutrition for father.</p>
'Lucy'	<p>Food security status: Food insecure very low food security severity level</p> <p>Age: is between 18-25 years of age</p> <p>Living arrangements: Lives in an apartment in Oakleigh with her partner. They have a mortgage</p> <p>Household income: AU\$60,000-80,000. Salary</p> <p>About 'Lucy's' cultural background is Chinese although this did not feature as a point. Lucy is a new graduate allied health practitioner – currently looking for work in this field but in between is working as massage therapist. Her working hours are long, starting late and often until 8pm in the evening.</p>

	<p>'Lucy' and her partner rent out the second bedroom in apartment but it is currently vacant. They are a 2 car household. She is responsible for the food preparation although shopping may be shared.</p> <p>Significant point: When she was studying and she needed to take a year off and work to save money to reduce the stress that she was facing regarding study, paying bills and money for food – did not want the constant stress.</p>
'Eric'	<p>Food security status: Food secure.</p> <p>Age: is over 65 years of age</p> <p>Living arrangements: lives with his wife in their own home (no mortgage). They live in Mt Waverly (near Oakleigh).</p> <p>Household income: A\$60,000-80,000. From superannuation and investments.</p> <p>About: 'Eric' was born in England and spent his childhood there. His parents experienced war in England and the associated rationing. His life story described a range of jobs over his working life from baker's assistant, retail, to finally environmental health officer (EHO) Has lived and worked in France, Australia and the UK before returning to study in Australia at TAFE and completed EHO training. Since retiring 'Eric' and wife travel overseas. Had a vineyard but sold as unable to manage upkeep. Loves cars. He loves growing his own vegetables where he can. He describes that he is frugal with expenses such as does not need the latest phones/ TV's etc. However shared that he has a love and passion for food and cooking</p> <p>Significant point: Growing up post war time and the impact of this experience and how it taught him the importance of food, growing food and participating in community to share produce. He also discusses another point when they had children and his wife gave up work and the impact that this had on household finances –he described a tightening of the 'belt' mentality.</p>
'Amelia'	<p>Food security status: Food secure</p> <p>Age: is between 26-35 years of age</p> <p>Living arrangements: lives with her husband in their own home (mortgage) in South Morang.</p> <p>Household income: A\$40,000-60,000. Salary and Family Tax Benefit</p> <p>About 'Amelia' has 2 small children - 19 months and 3 years. She has been with her partner since her late teens. At 19 they had their mortgage and she described themselves as savers. 'We have always worked hard– so rather than rely on credit we pay cash where we can.' An example of this was when she bought her first car she paid cash. Their only current debt is the mortgage. Completed school to year 10-11. Currently stay at home mum – sees this as being very important due to her upbringing. Her parents were 16 and 18 when she was born and they moved around a lot during her childhood. Amelia described her parents as good – 'we didn't really miss out on material things but we missed stability'. Amelia is the main food preparer, but husband often cooks on the weekend. They have 2 cars in the household which supports food access.</p> <p>A year and half ago Amelia was diagnosed with Hashimoto's Disease – an auto immune disease of the thyroid. The impact of that has been weight gain, lack of energy, and she is currently on cortisol. The last 6 months she has felt better but has manipulated her diet – eats gluten free and feels better for it. Discussed in length the impact of this condition on her and the implication for her family.</p> <p>Her grandparents (in particular 'Pop') were a key figure. Recently passed away in the last month- emotional when talking about his influence about providing family ritual, especially with food and family gatherings. Described as her rock when she was growing up. Amelia receives support from her mother in law who looks after the children so that she can go and do the grocery shopping.</p> <p>Significant points: In 'Amelia's' life has been her childhood and the instability of feeling like she did not have a set home as her family moved around a lot, and the importance of having a figurehead in the family – this being her Pop , who passed away 2 weeks prior to the interview. She described this as a significant event in her and her family's life. She now felt that she had the important role of being the matriarch of the family and a significant role model for the family and to continue with family celebrations. Amelia also described her</p>

	recent diagnosis of Hashimoto's disease impacting on how she feels – energy levels and ability to do tasks and the importance of modifying her diet.
'Ava'	<p>Food security status: Food secure</p> <p>Age: is between 36-45 years of age</p> <p>Living arrangements: lives with husband in their own home (mortgage) in Lilydale.</p> <p>Household income: A\$60,000-80,000. Salary(double income) Government benefits ,Family Tax Benefit and Child Care Rebate</p> <p>About: 'Ava' has 2 children 11 and 13 years old. She described how she didn't complete year 12 schooling as it was at this time that her parents' marriage broke down. She has returned to complete Year 12 at TAFE (completed 3 subjects and currently doing her final subject maths.). Her goal is to apply for paramedics at Monash University and then aim to transfer to nursing.</p> <p>Whilst completing her VCE Ava works part time 2-3 days per week as a Community Safety Officer at council.</p> <p>She does the majority of cooking although she is encouraging the children to contribute to the food preparation. Her husband very occasionally does the shopping and may cook. They have 2 cars in their household.</p> <p>Ava has irritable bowel syndrome with food (gluten – FODMAPS) intolerances and describes the impact that this has on her purchasing food but more significantly eating out or at functions at her children's sporting clubs.</p> <p>Significant point: For Ava has been the diagnosis of her food intolerances. Ava frequently talked about time being a precious resource to her as she juggles the roles of studying to achieve her goals: work, motherhood and being the gatekeeper of food for the household. The lack of time impacted on her decision making around chopping and cooking.</p>

Appendix 8 Part 2 Integration of quantitative and qualitative data for participants experiencing food insecurity

USDA HFSSM* question item	Food Insecure Participants and severity classification								
	<i>Sophie</i>	<i>Maureen</i>	<i>Fay</i>	<i>Marcie</i>	<i>Clara</i>	<i>Kim</i>	<i>Nancy</i>	<i>Ann</i>	
	Marginal Food Secure	Marginal Food Secure	Marginal Food Secure	Marginal Food Secure	Low Food Security	Low Food Security	Very Low Food Secure	Very Low Food Secure	
Adult specific items	Survey response mapped with related qualitative data								
<p>We worried whether our food would run out before we got money to buy more.</p> <p>Reflection from interview</p>	No	Yes Concern when adult children stay. Worry /concerns discussed from previous experience when finances were very tight.	No	No	Yes Constant worry and stress. Defined the juggling act of paying bills and money for food	Yes Financially in a' better' position there was still concern of having enough food. Grounded in experience when things were financially dire – facing bankruptcy.	Yes Worry evident and increased at times of family celebration, described as the major stressor for the household	Yes Constant worry about balancing food and budget ensuring enough food.	
<p>The food that we bought just didn't last and we didn't have money to get more.</p>	No	Yes	No	No	Yes	No	Yes	Yes	

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	<i>Sophie</i>	<i>Maureen</i>	<i>Fay</i>	<i>Marcie</i>	<i>Clara</i>	<i>Kim</i>	<i>Nancy</i>	<i>Ann</i>
	Marginal Food Secure	Marginal Food Secure	Marginal Food Secure	Marginal Food Secure	Low Food Security	Low Food Security	Very Low Food Secure	Very Low Food Secure
Reflection from interview		Increased when adult children come to stay, Meals extended with bread. Experienced previously when FIS was more severe			Often household budget there is \$10 to spare, no credit cards as backup. Fall-back position may include converting Fly Buy points to shopping \$.		Not discussed directly in i/v but this may have been increased at times around family celebrations	Relied on fall backs of things in cupboard tuna etc May buy a \$5 pizza to feed the family at the end of the week to get by.
We couldn't afford to eat balanced meals. Reflection from interview	No	No	Yes Although strong food literacy skills, income & cost of food & living expense where the limiting factor. On occasions there was	No	Yes Could only give the boys 80% of their nutritional needs Nutrition/ food for family was important but compromise due to limited budget	Yes Tries to eat healthy but in tight times says eats pasta and rice to fill up on. Used to have jam s/wiches for lunch, bake biscuits	Yes Nancy discussed generally in context of impacts of social functions	Yes Felt compromise especially at times when the budget was tight and cheap takeaway was purchased to

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	<i>Sophie</i> Marginal Food Secure	<i>Maureen</i> Marginal Food Secure	<i>Fay</i> Marginal Food Secure	<i>Marcie</i> Marginal Food Secure	<i>Clara</i> Low Food Security	<i>Kim</i> Low Food Security	<i>Nancy</i> Very Low Food Secure	<i>Ann</i> Very Low Food Secure
			compromise to food balance.			cheap/filling. Now budget is in more control can afford to buy muesli, more fruit, range of fillings for rolls Described that when budget tight may not be a full nutritious meal used soup and bread, eggs		feed the family. Try to ensure veg, meat and dairy for husband and son.
<p>In the last 12 months, did you or other adults in the household ever cut the size of your meals or skip meals because there wasn't enough money for food?</p> <p><i>Reflection from interview</i></p>	No	No	No	No	Yes Strategy undertaken on almost a daily	Yes Despite living alone this was a coping	Yes Not specifically mentioned in the i/v but may	Yes Reduce size discussed skipping

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	Marginal Food Secure	Marginal Food Secure	Marginal Food Secure	Marginal Food Secure	Low Food Security	Low Food Security	Very Low Food Secure	Very Low Food Secure
					basis – 1 sausage, crust of the bread, small amount of potato. Everyone was feed first then self	strategy used especially in great financial difficulty.	be considered in context of the pressure or and outcome of the family entertaining	social eating opportunities related to food.
<p>Frequency response: In the last 12 months, did you or other adults in the household ever cut the size of your meals or skip meals because there wasn't enough money for food?</p> <p>Reflection from interview</p>	No	No	No	No	almost every month Interviews reflected more frequent	1 or 2 months Confirmed in i/v	almost every month Matches frequency of social situations.	1 or 2 months Confirmed in i/v
<p>In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?</p> <p>Reflection from interview</p>	No	No	No	No	Yes Evidence from above question confirm this	Yes Evidence from above	Yes Evidence from above question confirm this	Yes Evidence from above

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	<i>Sophie</i>	<i>Maureen</i>	<i>Fay</i>	<i>Marcie</i>	<i>Clara</i>	<i>Kim</i>	<i>Nancy</i>	<i>Ann</i>
	Marginal Food Secure	Marginal Food Secure	Marginal Food Secure	Marginal Food Secure	Low Food Security	Low Food Security	Very Low Food Secure	Very Low Food Secure
						question confirm this		question confirm this
<p>In the last 12 months, were you ever hungry, but didn't eat, because there wasn't enough money for food?</p> <p>Reflection from interview</p>	No	No	No	No	Yes	No	No	No
<p>In the last 12 months, did you lose weight because there wasn't enough money for food?</p> <p>In the last 12 months did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?</p>	No	No	No	No	No	No	No	No
	Yes	No	No	No	Yes	No	No	No

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	<i>Sophie</i> Marginal Food Secure	<i>Maureen</i> Marginal Food Secure	<i>Fay</i> Marginal Food Secure	<i>Marcie</i> Marginal Food Secure	<i>Clara</i> Low Food Security	<i>Kim</i> Low Food Security	<i>Nancy</i> Very Low Food Secure	<i>Ann</i> Very Low Food Secure
<p>Reflection from interview</p> <p>Frequency response: In the last 12 months did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?</p>	<p>Sophie indirectly mentioned this. This would be an extreme experience for her. Due to planning she was more likely to make something from pantry using pulses and tomatoes</p> <p>No response</p>	<p>No</p>	<p>No</p>	<p>No</p>	<p>This was part of Clara's experience of ensuring that everyone got food before she did.</p> <p>No response</p>	<p>No</p>	<p>No</p>	<p>No</p>
<p>Children specific items</p>								
<p>We relied on only a few kinds of low-cost food to feed our children because we were running out of money to buy food.</p>	<p>No</p>	<p>No</p>	<p>Yes</p>	<p>Yes</p>	<p>No</p>	<p>No</p>	<p>Yes</p>	<p>Ye</p>

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	Marginal Food Secure	Marginal Food Secure	Marginal Food Secure	Marginal Food Secure	Low Food Security	Low Food Security	Very Low Food Secure	Very Low Food Secure
Reflection from interview			This may have been in an episode when finances were very tight.	This was more of an issue in QLD when had greater expenses but now here in Melbourne because of downsizing freed some finances			This may have been a flow on effect from the family catering that Nancy's siblings may have been affected	Example of pizza/noodles takeaway to feed the family – shared amongst 3
<p>'We couldn't feed our children a balanced meal, because we couldn't afford that</p> <p>Reflection from interview</p>	No	No	No	No	No	No	Yes	Yes
<p>'The children were not eating enough because we just couldn't afford enough food.'</p>	No	No	No	No	No	No	Yes	No

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	Marginal Food Secure	Marginal Food Secure	Marginal Food Secure	Marginal Food Secure	Low Food Security	Low Food Security	Very Low Food Secure	Very Low Food Secure
Reflection from interview							Not reflected in i/v	
In the last 12 months, did you ever cut the size of any of the children's meals because there wasn't enough money for food?	No	No	No	No	No	No	No	No
In the last 12 months, were the children ever hungry but you just couldn't afford more food?	No	No	No	No	No	No	No	No
In the last 12 months, did any of the children ever skip a meal because there wasn't enough money for food?	No	No	No	No	No	No	No	No
In the last 12 months, did any of the children ever skip a meal because there wasn't enough money for food?	No	No	No	No	No	No	No	No
In the last 12 months did any of the children ever not eat for a whole day because there wasn't enough money for food?	No	No	No	No	No	No	No	No