

# Housing: A contextual determinant of household food insecurity among renters?

Andrée-Anne Fafard St-Germain, RD, PhD student

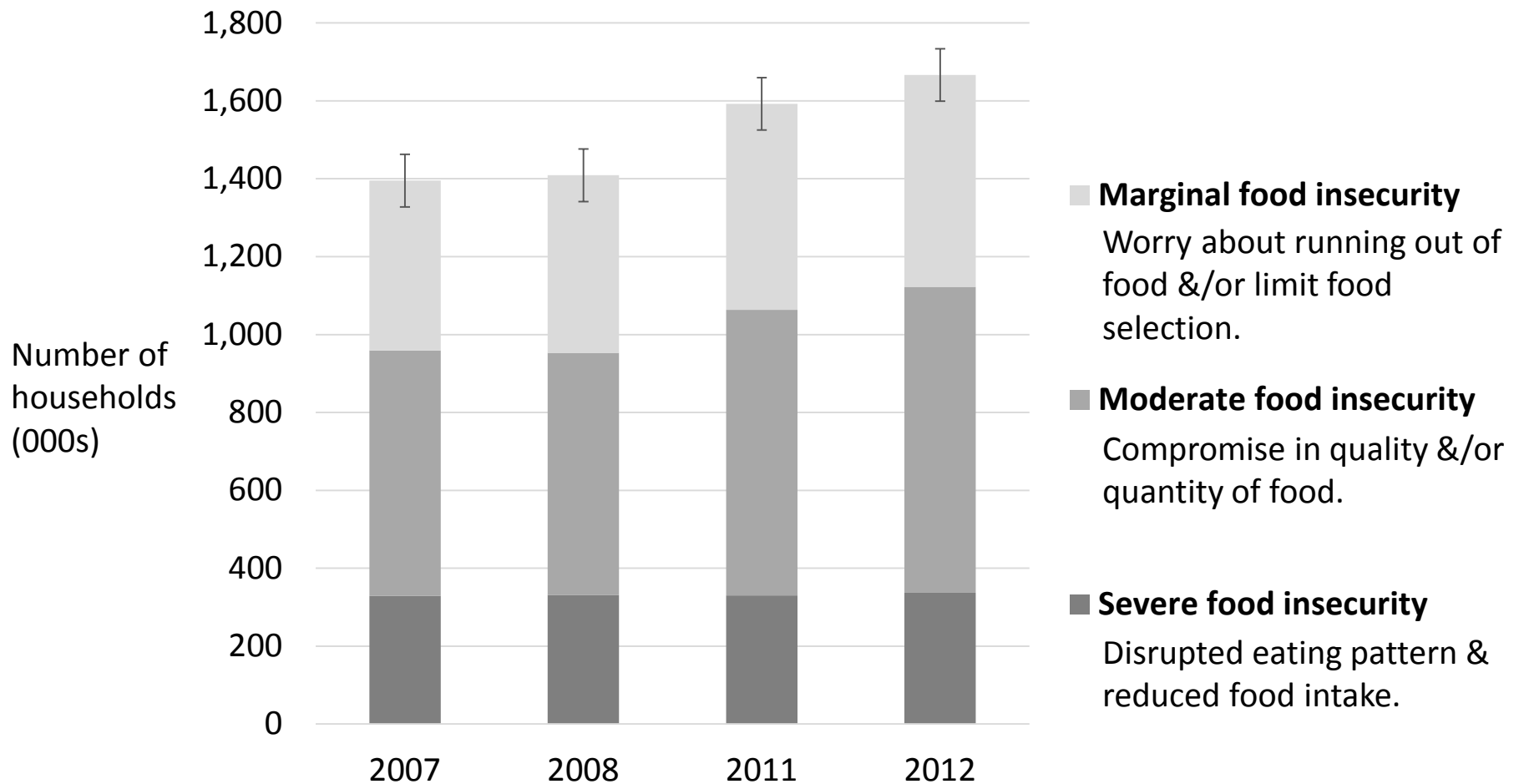
Valerie Tarasuk, PhD

Department of Nutritional Sciences

University of Toronto

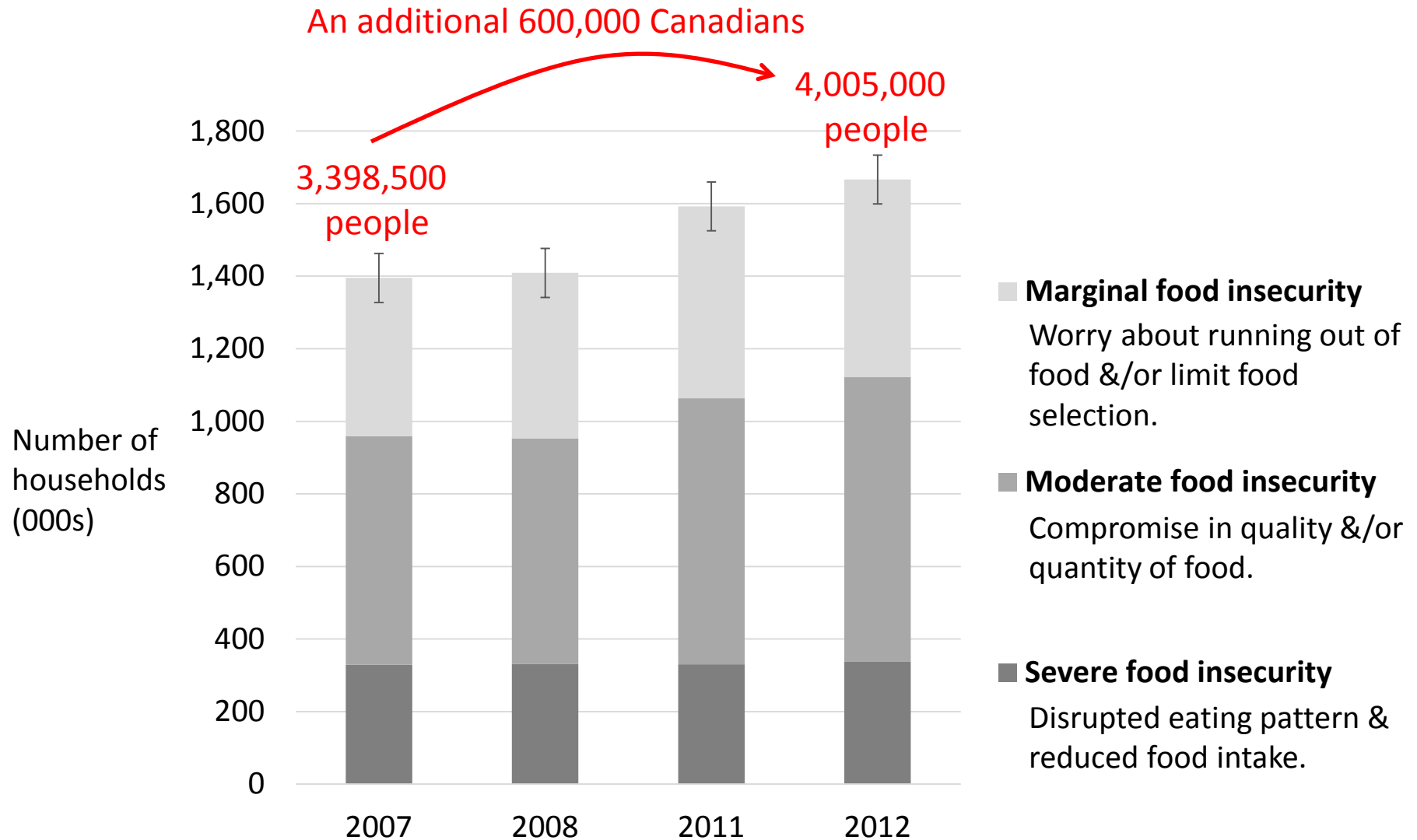
Acknowledgements: This research is funded by a programmatic grant to Tackle Health and Health Equity in Canada from the Canadian Institutes of Health Research.

# Household food insecurity in Canada



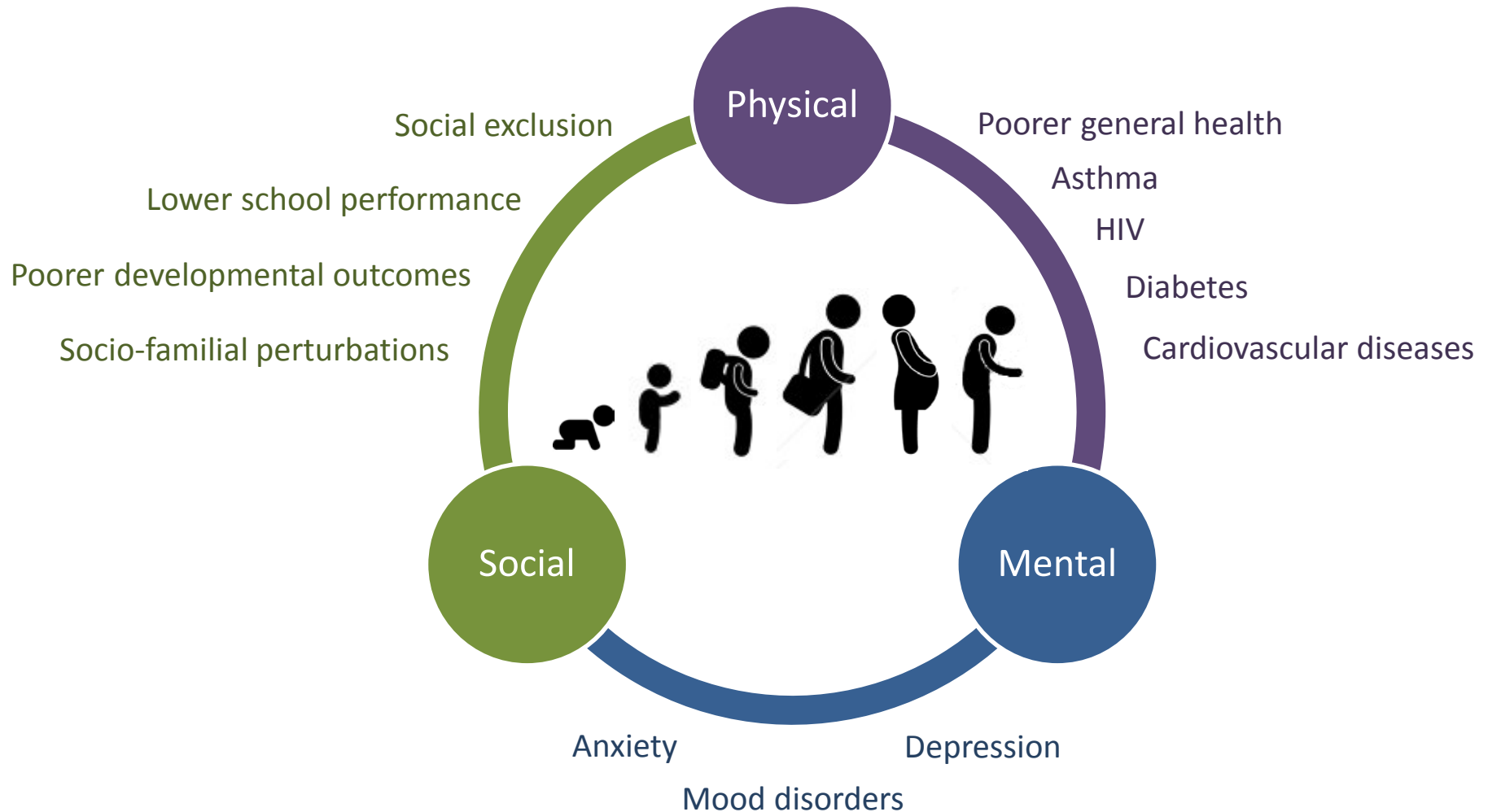
(Adapted from Tarasuk et al. *Household Food Insecurity in Canada, 2012 2014*)

# Household food insecurity in Canada



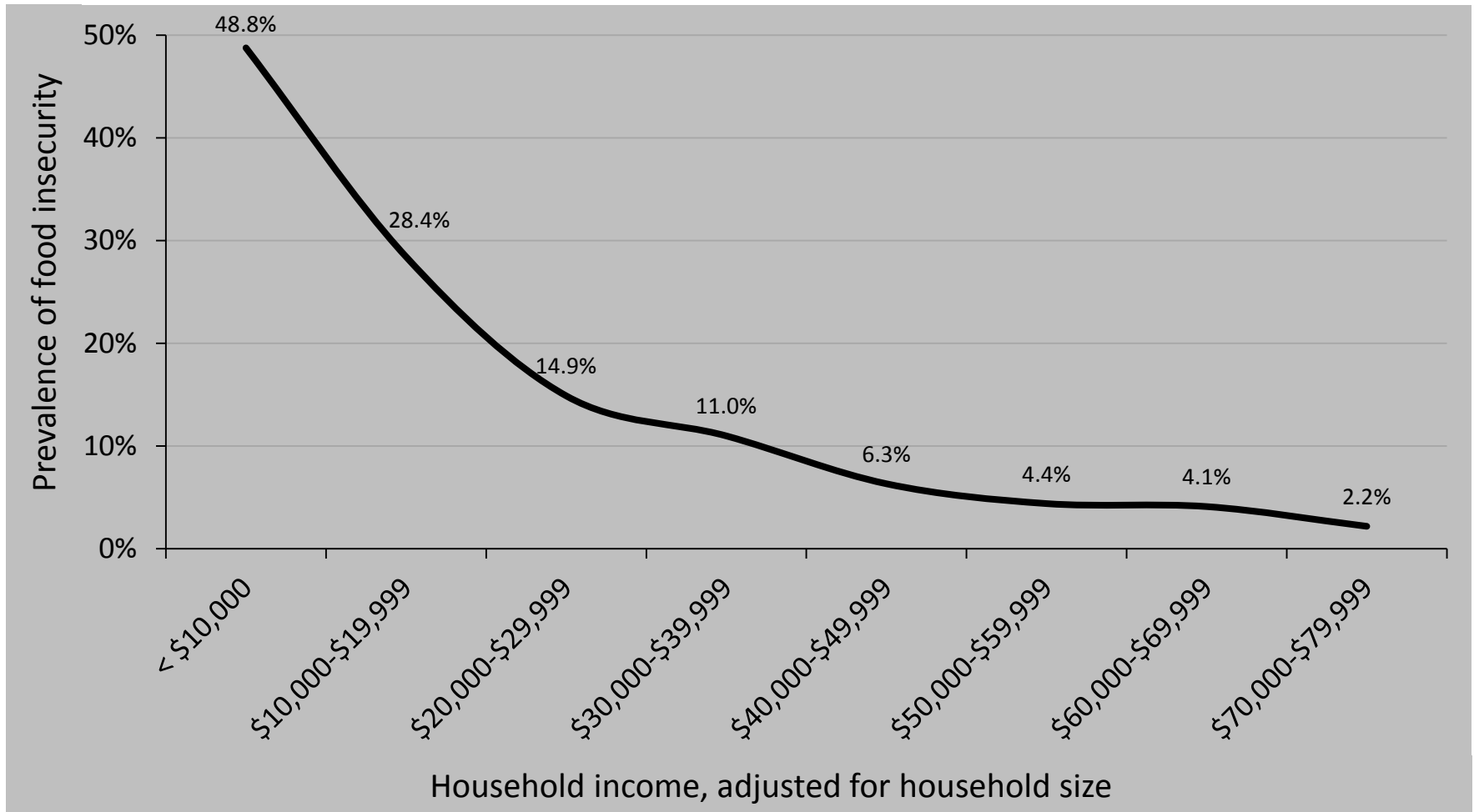
(Adapted from Tarasuk et al. *Household Food Insecurity in Canada, 2012 2014*)

# Household food insecurity is a major population health problem



(Gucciardi et al. Diabetes Care 2009; Hamelin et al. Soc Sci Med 2002; Jyoti et al. J Nutr 2005; Kirkpatrick et al. Arch Pediatr Adolesc Med 2010; McIntyre et al. J Affect Disord 2013; Muldoon et al. Soc Psychiatry Psychiatr Epidemiol 2013; Normen et al. J Nutr 2005; Roustit et al. Pediatrics 2010; Tarasuk et al. J Nutr 2013; Vozoris & Tarasuk J Nutr 2002; Willows et al. Health Reports 2011; Zaslow et al. Matern Child Health J 2009)

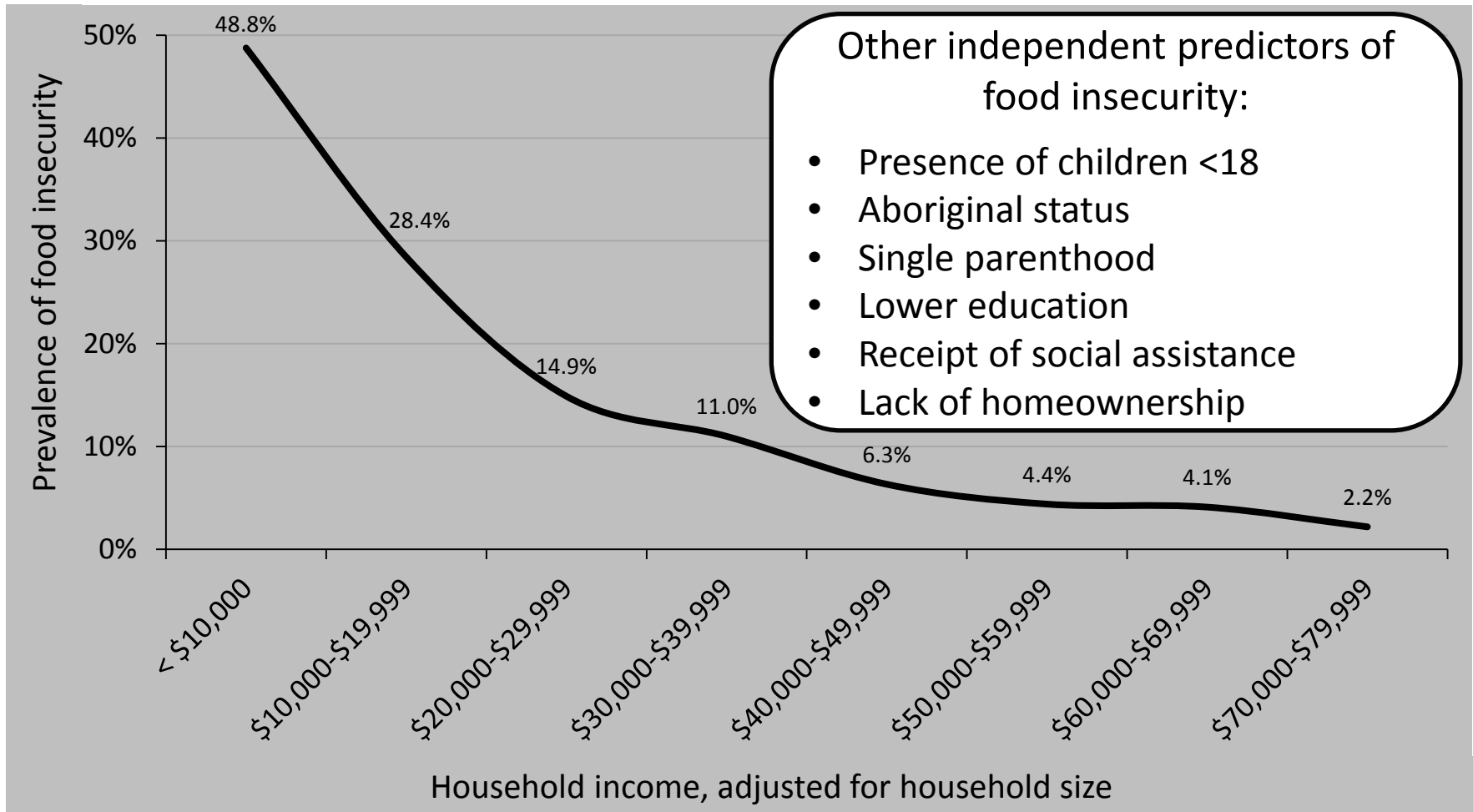
# Income is a strong predictor of food insecurity, but the relationship is imperfect



(Data source: Statistics Canada, Canadian Community Health Survey (CCHS), 2013, 2014.)

(McIntyre et al CMAJ 2000; Che & Chen Health Reports 2001; Vozoris & Tarasuk J Nutr 2003; Ledrou & Gervais Health Reports 2005; Willows et al. Public Health Nutr 2008; Tarasuk & Vogt CJPB 2009; McIntyre et al. Public Health Nutr 2011; Tarasuk et al. J Nutr 2013)

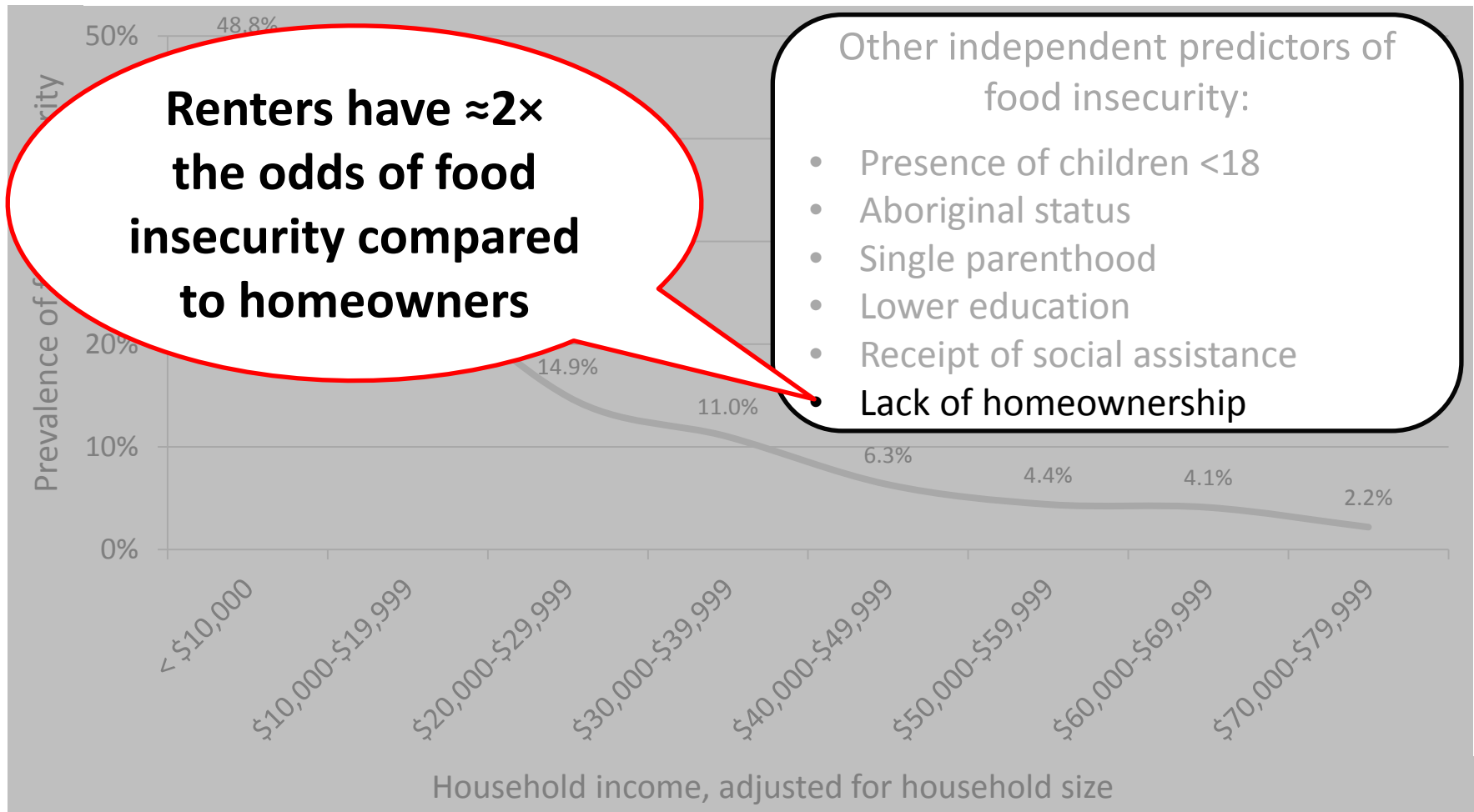
# Income is a strong predictor of food insecurity, but the relationship is imperfect



(Data source: Statistics Canada, Canadian Community Health Survey (CCHS), 2013, 2014.)

(McIntyre et al CMAJ 2000; Che & Chen Health Reports 2001; Vozoris & Tarasuk J Nutr 2003; Ledrou & Gervais Health Reports 2005; Willows et al. Public Health Nutr 2008; Tarasuk & Vogt CJP 2009; McIntyre et al. Public Health Nutr 2011; Tarasuk et al. J Nutr 2013)

# Income is a strong predictor of food insecurity, but the relationship is imperfect

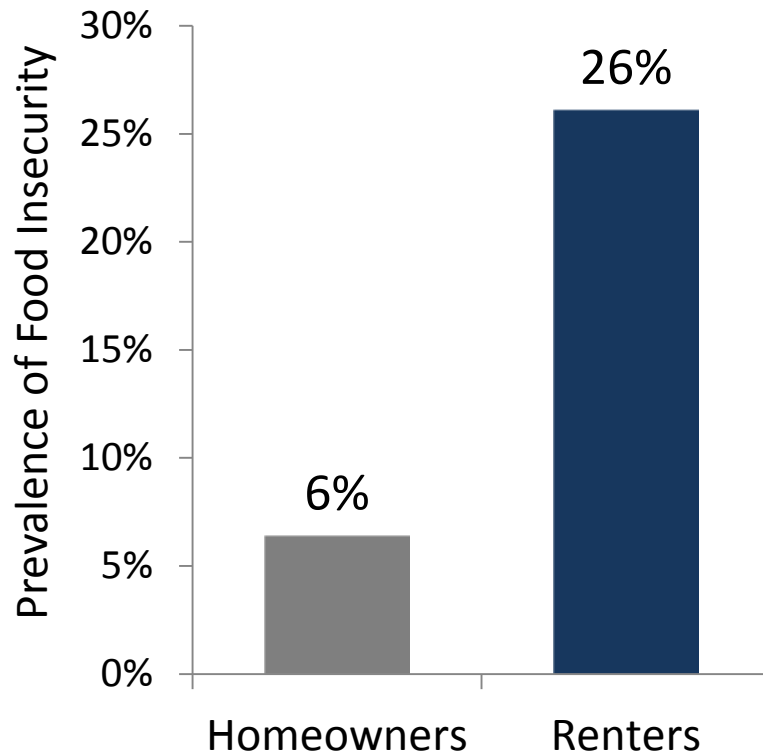


(Data source: Statistics Canada, Canadian Community Health Survey (CCHS), 2013, 2014.)

(McIntyre et al CMAJ 2000; Che & Chen Health Reports 2001; Vozoris & Tarasuk J Nutr 2003; Ledrou & Gervais Health Reports 2005; Willows et al. Public Health Nutr 2008; Tarasuk & Vogt CJPH 2009; McIntyre et al. Public Health Nutr 2011; Tarasuk et al. J Nutr 2013)

# Renters are more vulnerable & they represent the majority of food insecure households

Canadian Community  
Health Survey 2012

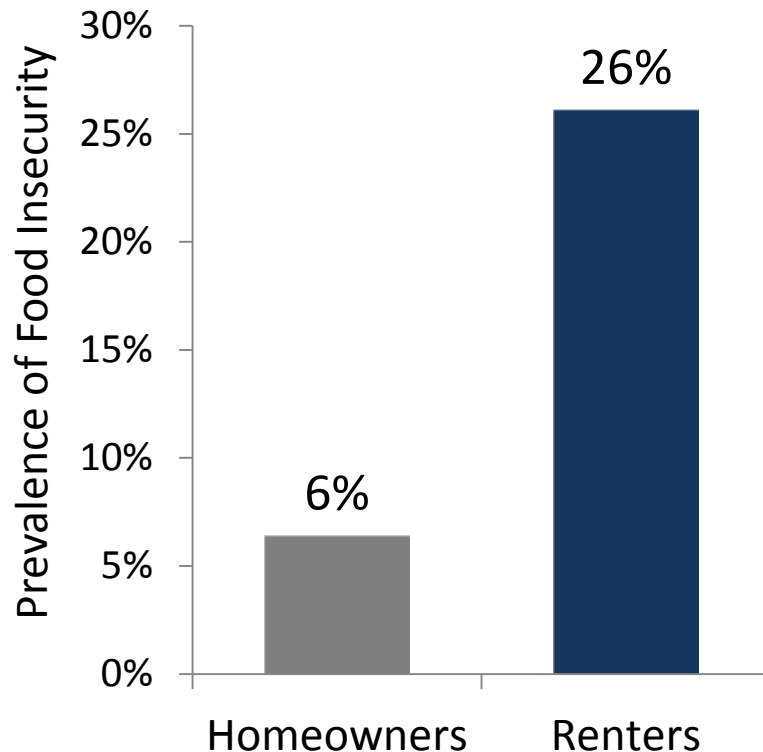


(Adapted from Tarasuk et al., *Household Food Insecurity*, 2012, 2014)

(McIntyre et al. J Hous and the Built Environ 2015)

# Homeowners & renters are systematically different

Canadian Community  
Health Survey 2012



Renters compared to homeowners:

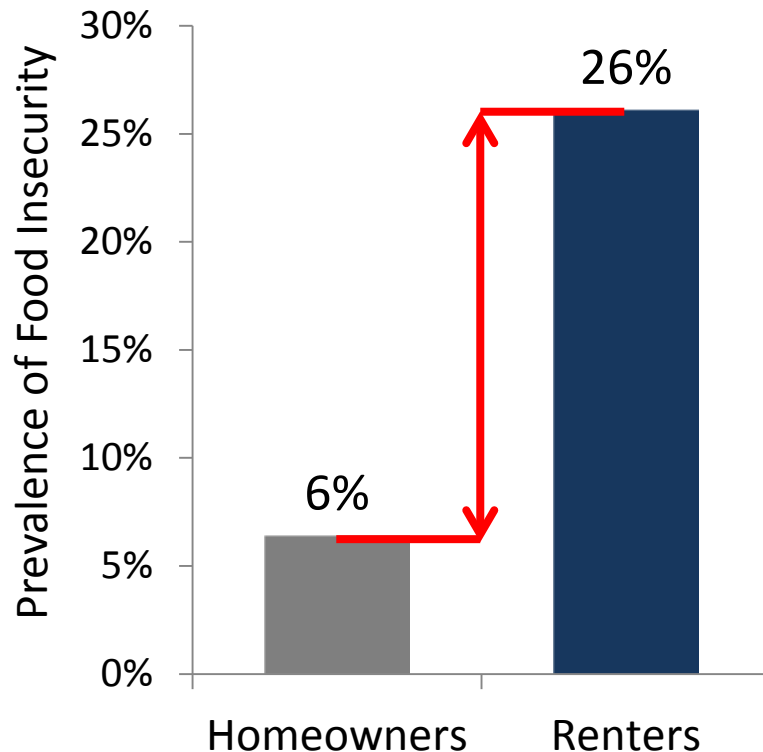
- Different household composition
- Lower income
- Lower education
- Higher % receive social assistance
- Higher % are visible minority

(Adapted from Tarasuk et al., *Household Food Insecurity*, 2012, 2014)

(McIntyre et al. *J Hous and the Built Environ* 2015)

# Homeowners & renters are systematically different

Canadian Community  
Health Survey 2012



Renters compared to homeowners:

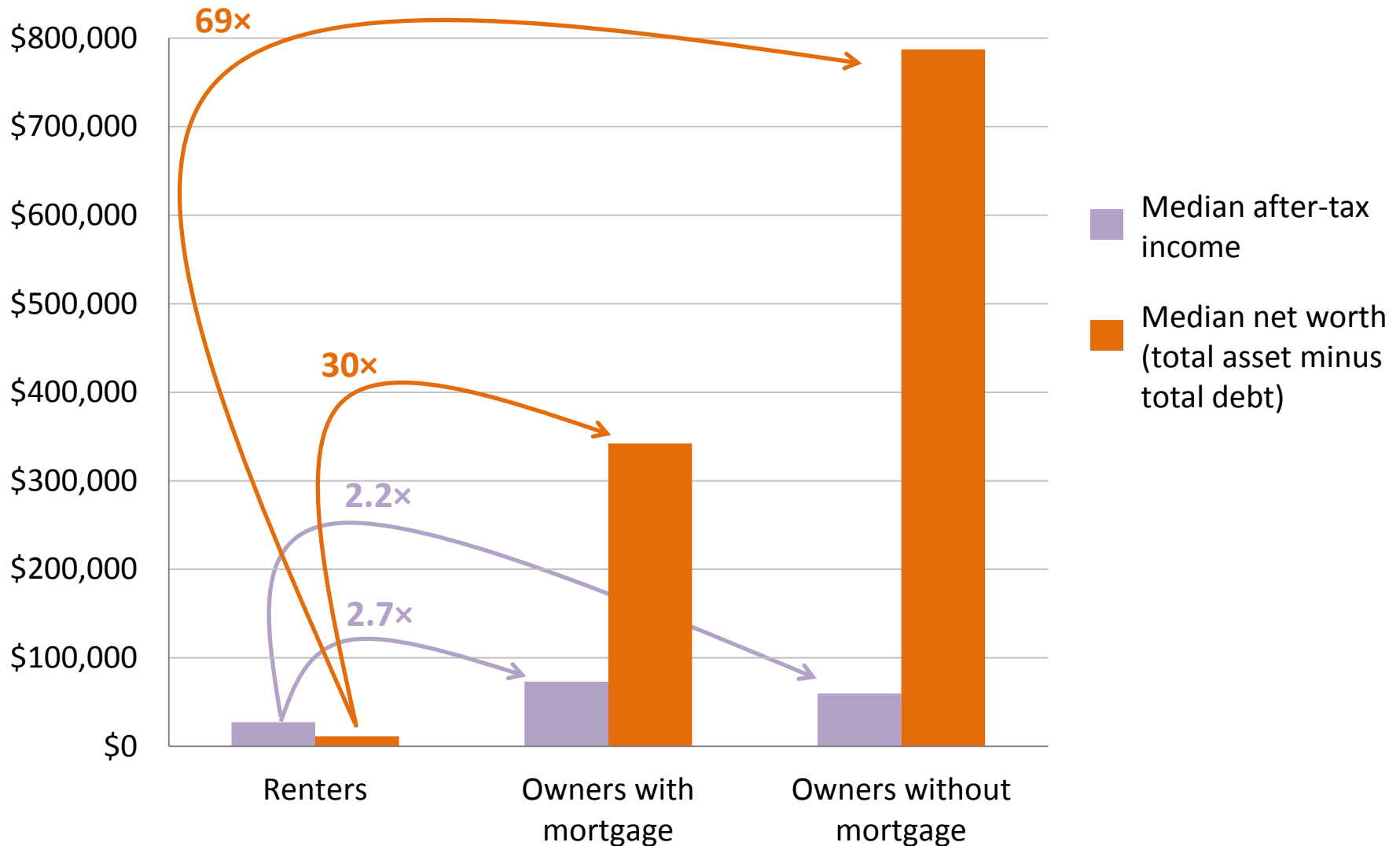
- Different household composition
- Lower income
- Lower education
- Higher % receive social assistance
- Higher % are visible minority

29% of the gap in prevalence remained unexplained.

(Adapted from Tarasuk et al., *Household Food Insecurity*, 2012, 2014)

(McIntyre et al. *J Hous and the Built Environ* 2015)

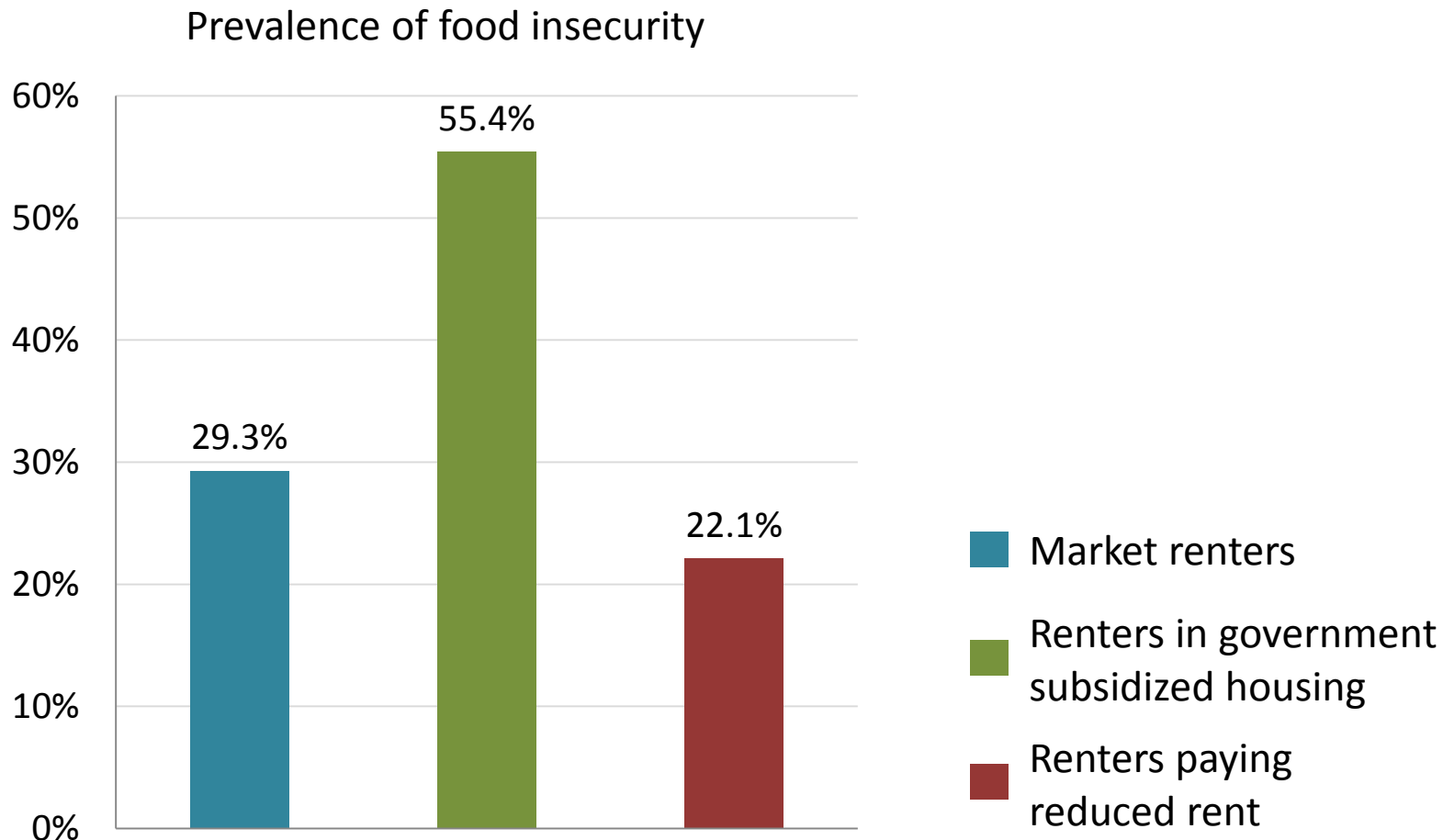
# Not all differences between renters & homeowners are measured



(Data source: Statistics Canada, Survey of Financial Security, 2012.)

# Not all renters are equally vulnerable to food insecurity

(2010 Survey of Household Spending)



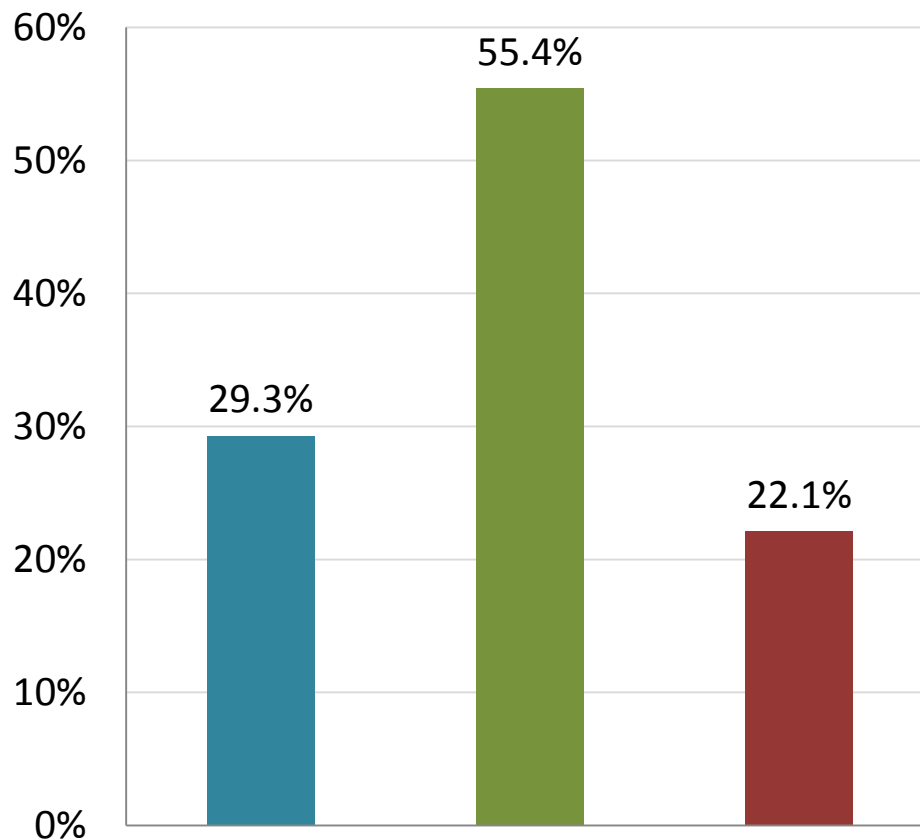
(n=3,771)

(Kirkpatrick & Tarasuk J Urban Health 2011)

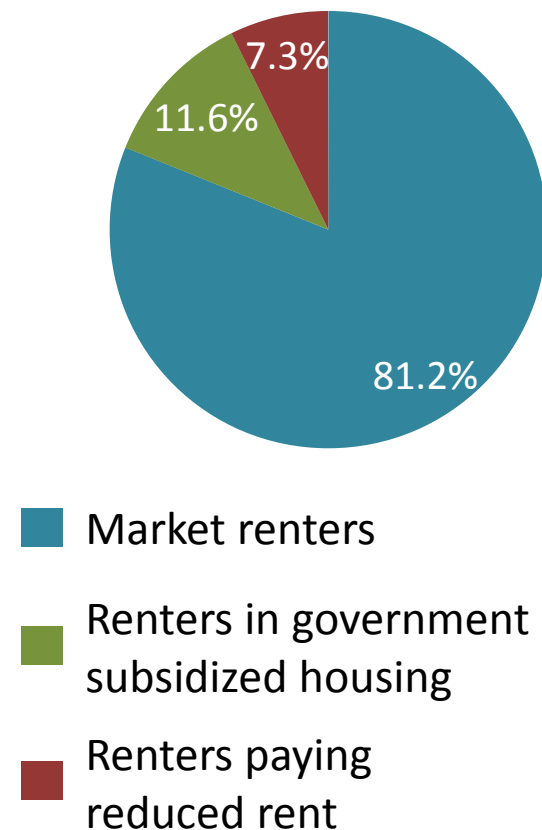
# Not all renters are equally vulnerable to food insecurity

(2010 Survey of Household Spending)

Prevalence of food insecurity



Type of renters

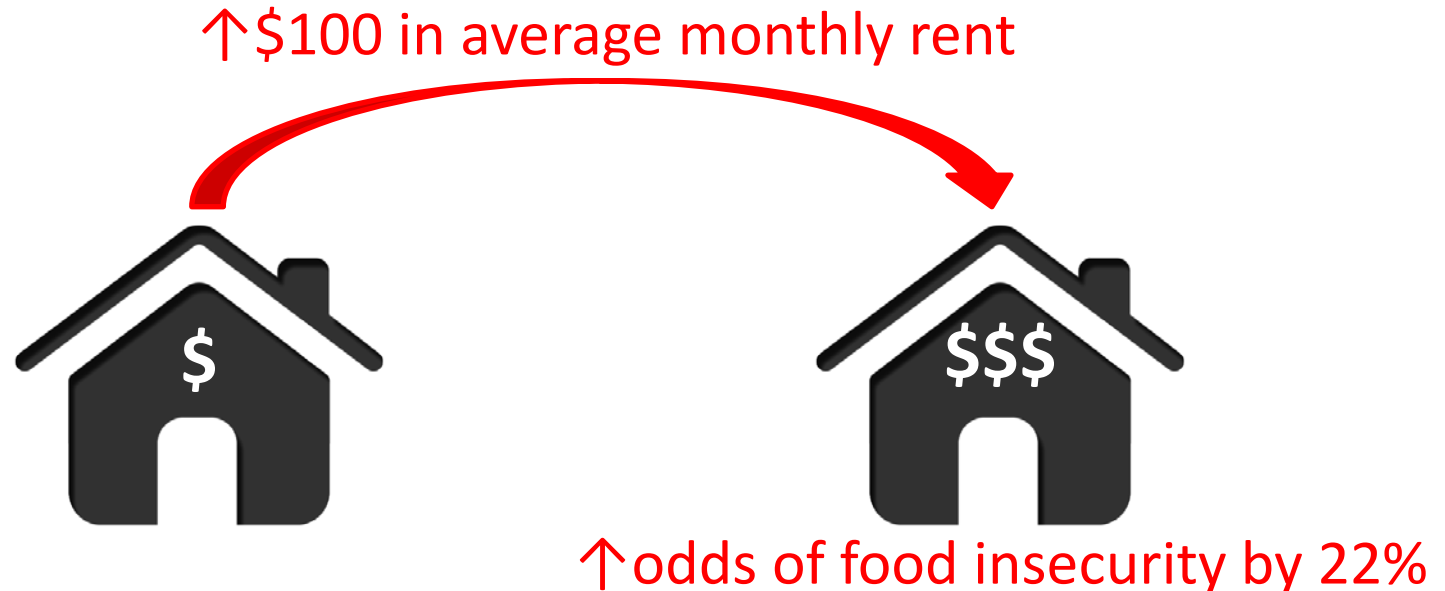


(n=3,771)

(Kirkpatrick & Tarasuk J Urban Health 2011)

# Area-level rental cost is positively associated with risk of food insecurity

- Multi-level analyses examining the association between economic characteristics of census metropolitan areas and food insecurity (2011-2012 CCHS).

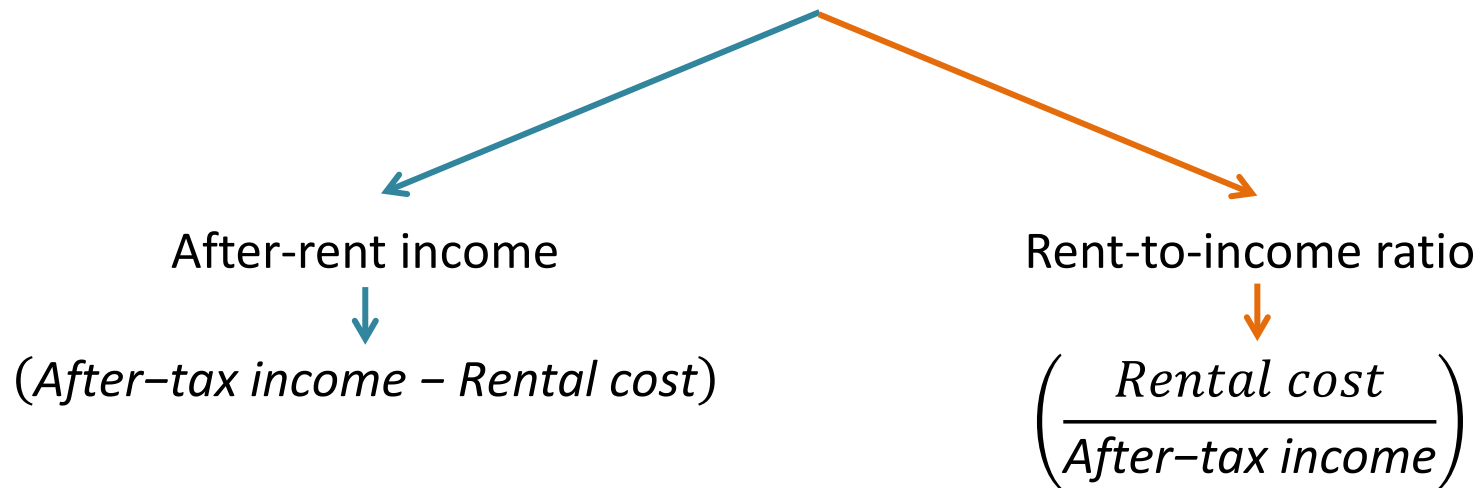


(Sriram & Tarasuk J Hunger Environ Nutr 2016)

(Bartfeld & Dunifon JPAM 2005; Bartfeld et al. J Hunger Environ Nutr 2010; Fletcher et al. J Child Poverty)

# What is the relationship between rental cost and household food insecurity?

2 common conceptualizations



# What is the relationship between rental cost and household food insecurity?

2 common conceptualizations

If rental cost has an independent effect on food insecurity then after-rent income and the rent-to-income ratio should be stronger predictors than after-tax income.

# 2010 Survey of Household Spending

- Cross-sectional – stratified, multistage sampling design
- 13,075 households representing 98% of the population of the 10 Canadian provinces
- In-person interview
  - Sociodemographic characteristics
  - Indicators of housing quality & stability
  - Detailed expenditures
  - Detailed income information for the year 2009
  - Household Food Security Survey Module

# Methods

- Adjusted logistic regressions (weighted):
  - Outcome: Binary food security status (food insecure vs food secure)
  - Predictors of interest:
    - After-tax income adjusted for household size
    - After-rent income adjusted for household size
    - Rent-to-income ratio
  - Covariates

# Characteristics of market renters by household food security status

|                                                              | Food secure<br>(n=1,992) | Food insecure<br>(n=846) | p value |
|--------------------------------------------------------------|--------------------------|--------------------------|---------|
| After-tax income adjusted for household size, mean $\pm$ SD  | \$34,530 $\pm$ 20,393    | \$23,078 $\pm$ 13,395    | <0.0001 |
| After-rent income adjusted for household size, mean $\pm$ SD | \$26,001 $\pm$ 19,351    | \$16,142 $\pm$ 12,995    | <0.0001 |
| Rent-to-income ratio, mean $\pm$ SD                          | 29.9% $\pm$ 16.3         | 36.9% $\pm$ 19.4         | <0.0001 |

(n=2,838)

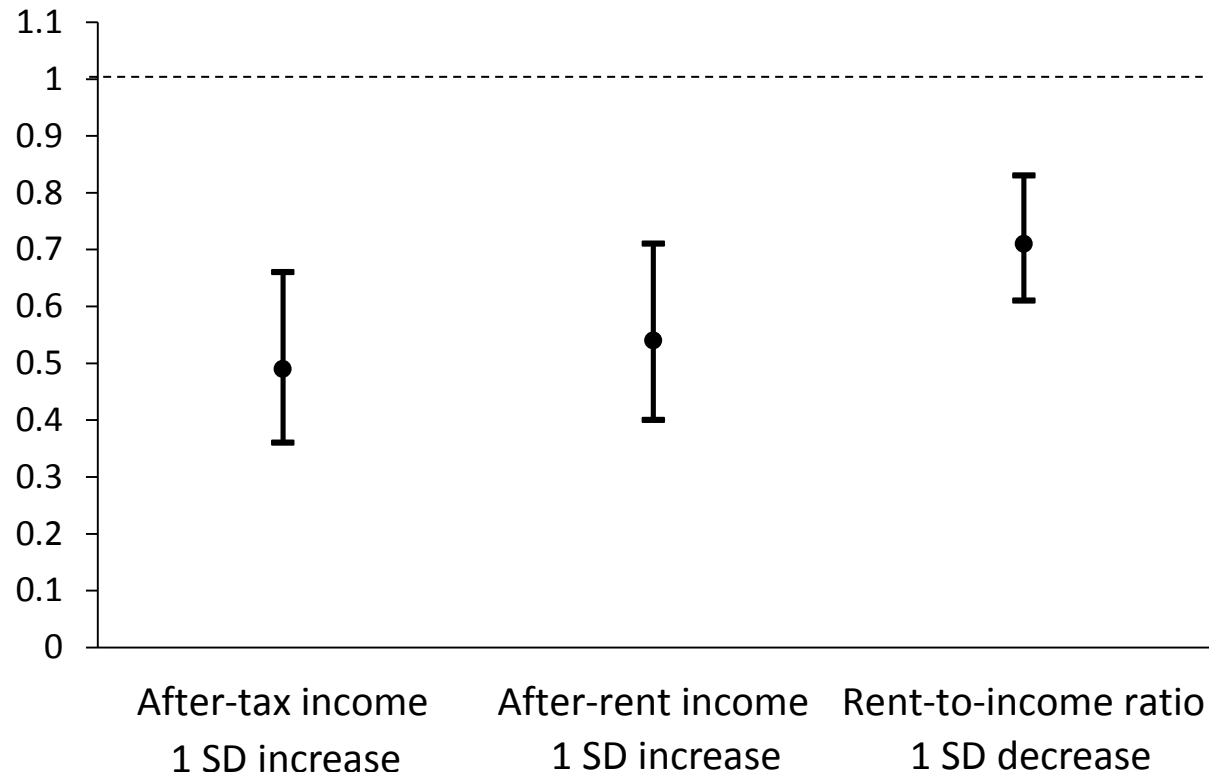
# Characteristics of market renters by household food security status

|                                                              | Food secure<br>(n=1,992) | Food insecure<br>(n=846) | p value |
|--------------------------------------------------------------|--------------------------|--------------------------|---------|
| After-tax income adjusted for household size, mean $\pm$ SD  | \$34,530 $\pm$ 20,393    | \$23,078 $\pm$ 13,395    | <0.0001 |
| After-rent income adjusted for household size, mean $\pm$ SD | \$26,001 $\pm$ 19,351    | \$16,142 $\pm$ 12,995    | <0.0001 |
| Rent-to-income ratio, mean $\pm$ SD                          | 29.9% $\pm$ 16.3         | 36.9% $\pm$ 19.4         | <0.0001 |

- Food insecure households were more likely to:
  - Live in crowded dwelling
  - Live in a dwelling requiring minor or major repairs
  - Have moved in the past 12 months
- Food secure & insecure households differed in terms of:
  - Household type
  - Education level
  - # of children <18
  - Main source of income
  - Population centre size where they resided

(n=2,838)

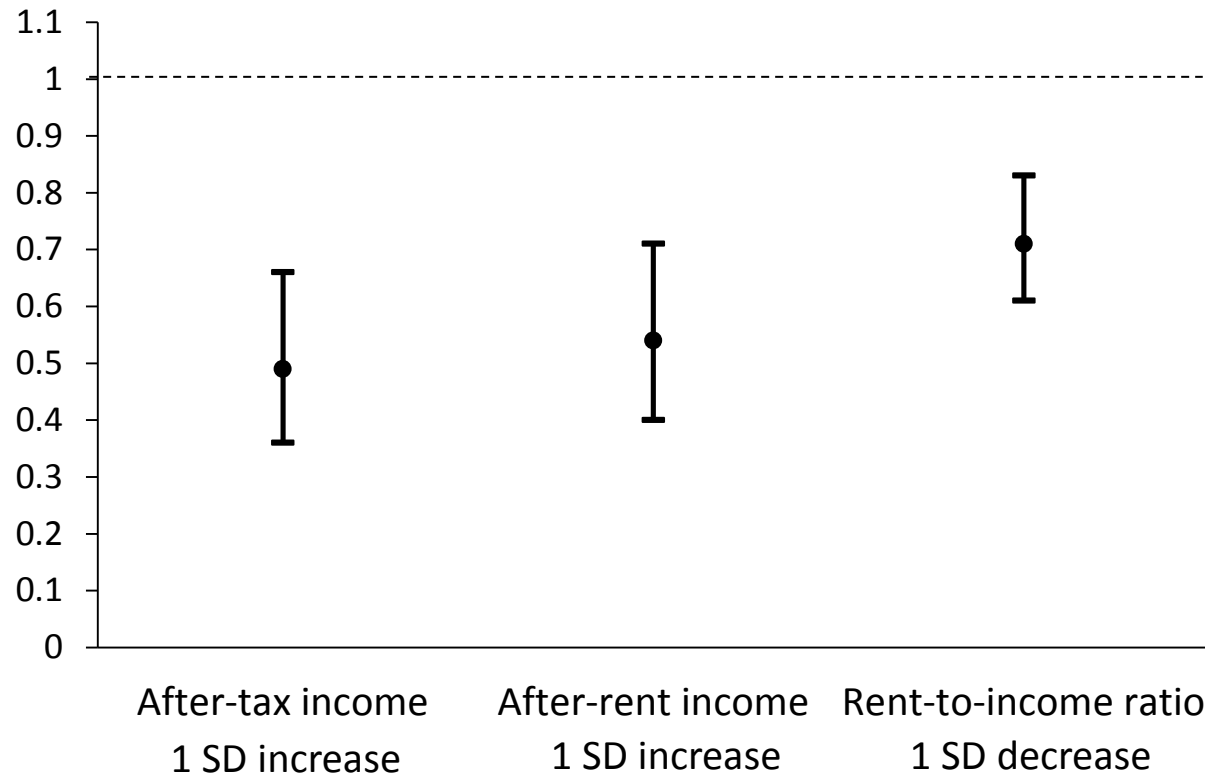
# Standardized odds ratios of household food insecurity among all market renters



Adjusted for: level of disrepair, crowding, moved in past 12 months, household type, # of children <18, education, main source of income, province, population centre size, time gap

(n=2,838)

# Standardized odds ratios of household food insecurity among all market renters



Area under the ROC curve

**0.792**  
**(0.766-0.817)**

**0.789**  
**(0.763-0.815)**

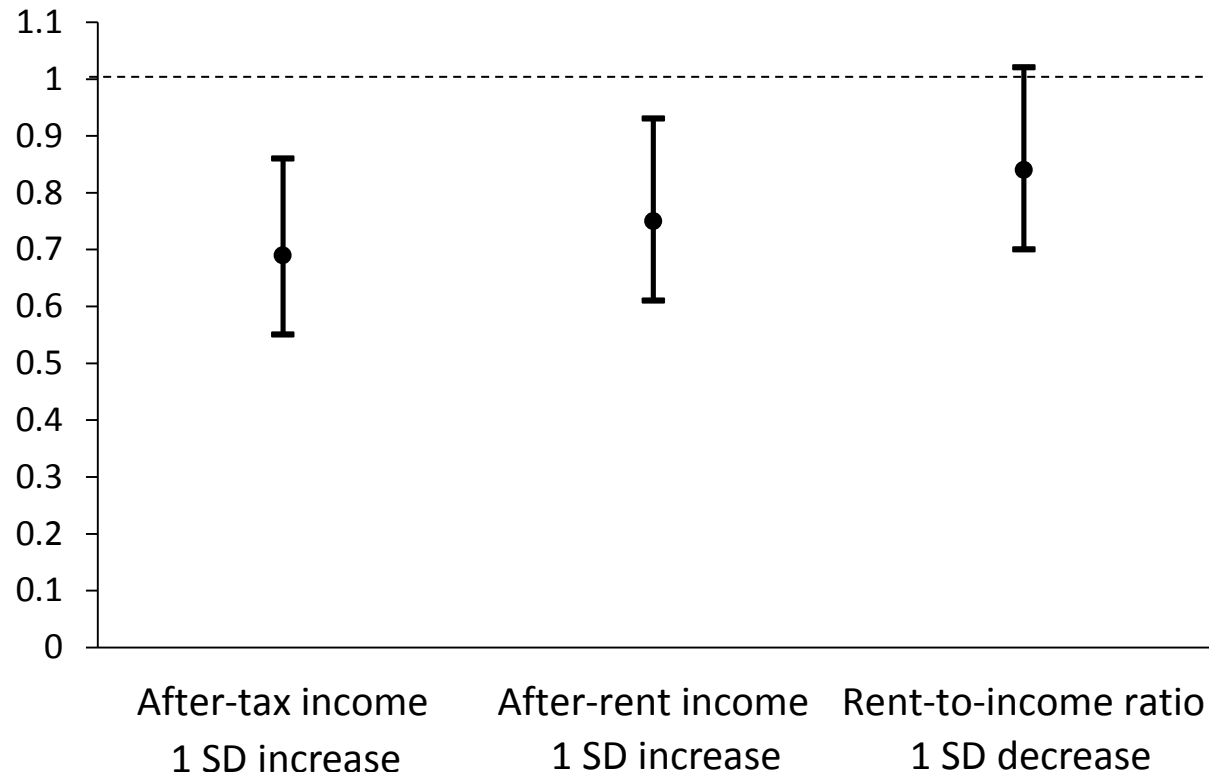
**0.783**  
**(0.757-0.809)**

Adjusted for: level of disrepair, crowding, moved in past 12 months, household type, # of children <18, education, main source of income, province, population centre size, time gap

(n=2,838)

# Standardized odds ratios of household food insecurity among lower income market renters

Market renters with household size-adjusted after-tax income below the median (\$26,969)

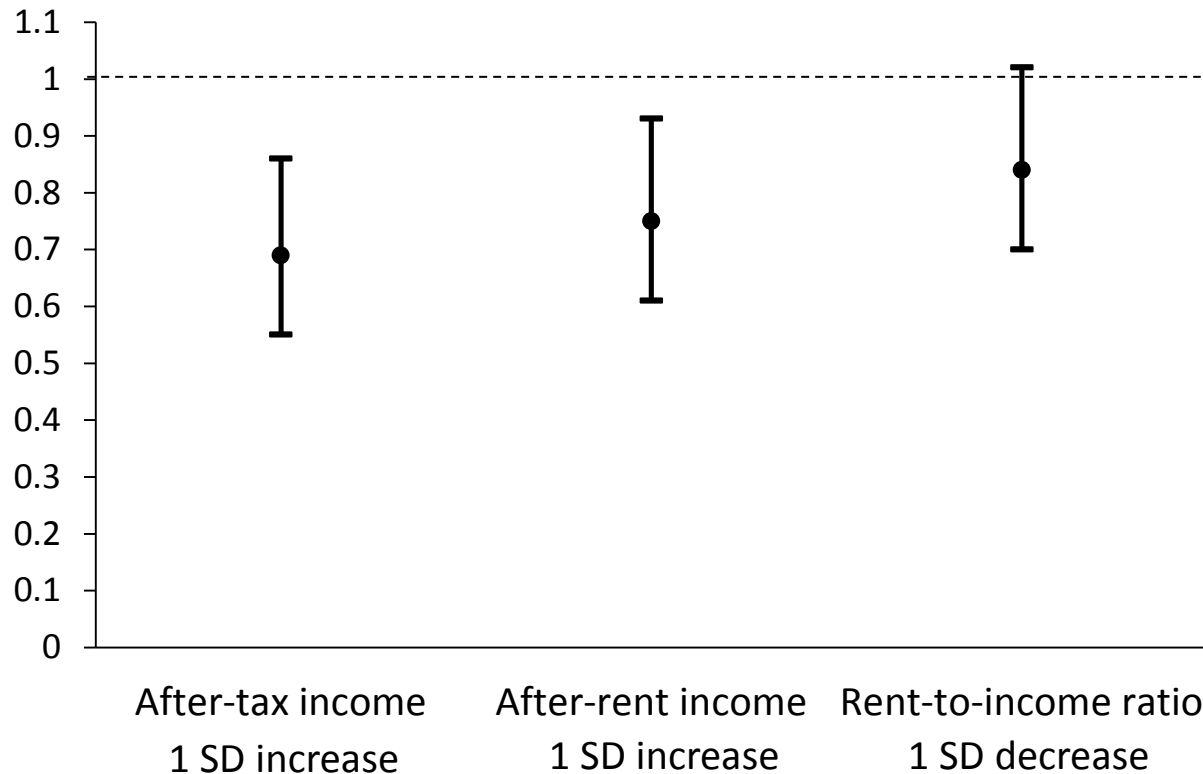


Adjusted for: level of disrepair, crowding, moved in past 12 months, household type, # of children <18, education, main source of income, province, population centre size, time gap

(n=1,495)

# Standardized odds ratios of household food insecurity among lower income market renters

Market renters with household size-adjusted after-tax income below the median (\$26,969)



Area under the ROC curve

**0.767**

**(0.732-0.802)**

**0.763**

**(0.728-0.799)**

**0.760**

**(0.724-0.795)**

Adjusted for: level of disrepair, crowding, moved in past 12 months, household type, # of children <18, education, main source of income, province, population centre size, time gap

(n=1,495)

# Is rental cost a contextual factor associated with household food insecurity?

- Ecological associations between median rental cost and food insecurity have been shown in Canada & the US.

(Bartfeld & Dunifon JPAM 2005; Bartfeld et al. J Hunger Environ Nutr 2010; Fletcher et al. J Child Poverty; Sriram & Tarasuk J Hunger Environ Nutr 2016)

# Is rental cost a contextual factor associated with household food insecurity?

- Ecological associations between median rental cost and food insecurity have been shown in Canada & the US.

(Bartfeld & Dunifon JPAM 2005; Bartfeld et al. J Hunger Environ Nutr 2010; Fletcher et al. J Child Poverty; Sriram & Tarasuk J Hunger Environ Nutr 2016)

- However,

knowing the rental cost paid by households did not provide more information on their risk of food insecurity than simply knowing their income.

# Is rental cost a contextual factor associated with household food insecurity?

- Ecological associations between median rental cost and food insecurity have been shown in Canada & the US.

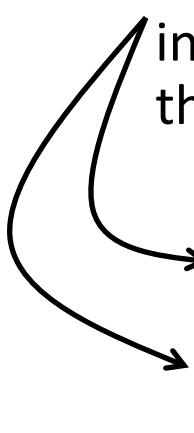
(Bartfeld & Dunifon JPAM 2005; Bartfeld et al. J Hunger Environ Nutr 2010; Fletcher et al. J Child Poverty; Sriram & Tarasuk J Hunger Environ Nutr 2016)

- However,

knowing the rental cost paid by households did not provide more information on their risk of food insecurity than simply knowing their income.



→ Is there an association between rental cost and food insecurity?



→ Is housing unaffordable because rent is too high or because income is too low?

# Policy implications

- Renters are extremely vulnerable to food insecurity & they represent the majority of food insecure households in Canada.
- No evidence that policy interventions at the level of the rental housing market would impact food insecurity (e.g. rent control or increase supply of housing).
- Growing body of evidence that food insecurity is sensitive to policy aimed at increasing income.

# Policy implications

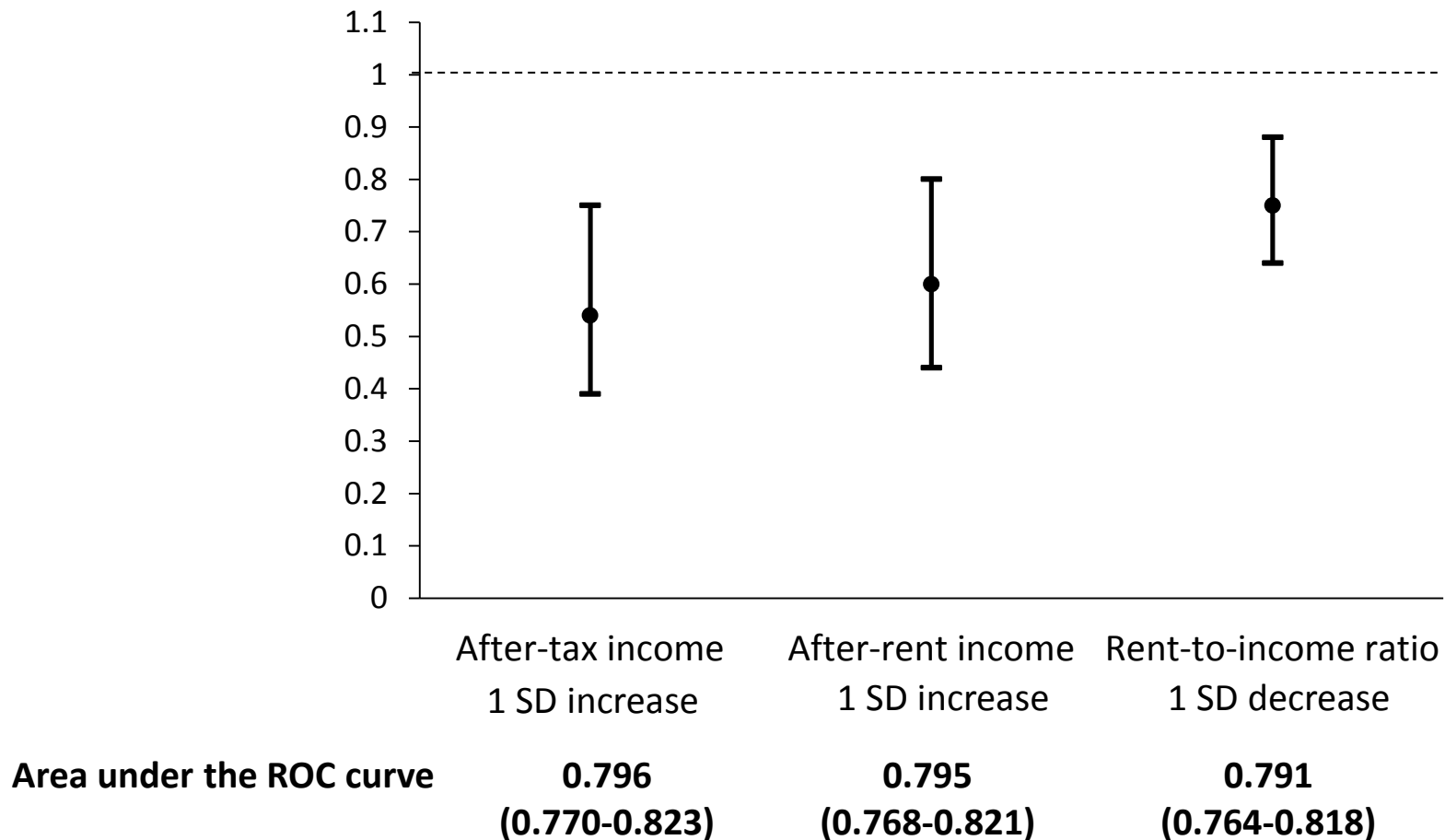
- Renters are extremely vulnerable to food insecurity & they represent the majority of food insecure households in Canada.
- No evidence that policy interventions at the level of the rental housing market would impact food insecurity (e.g. rent control or increase supply of housing).
- Growing body of evidence that food insecurity is sensitive to policy aimed at increasing income.

Income-related policy interventions  
targeted specifically at renters are needed.

# Additional slides

# Sensitivity Analyses: Food insecurity defined as 2 affirmative answers to the 10 questions

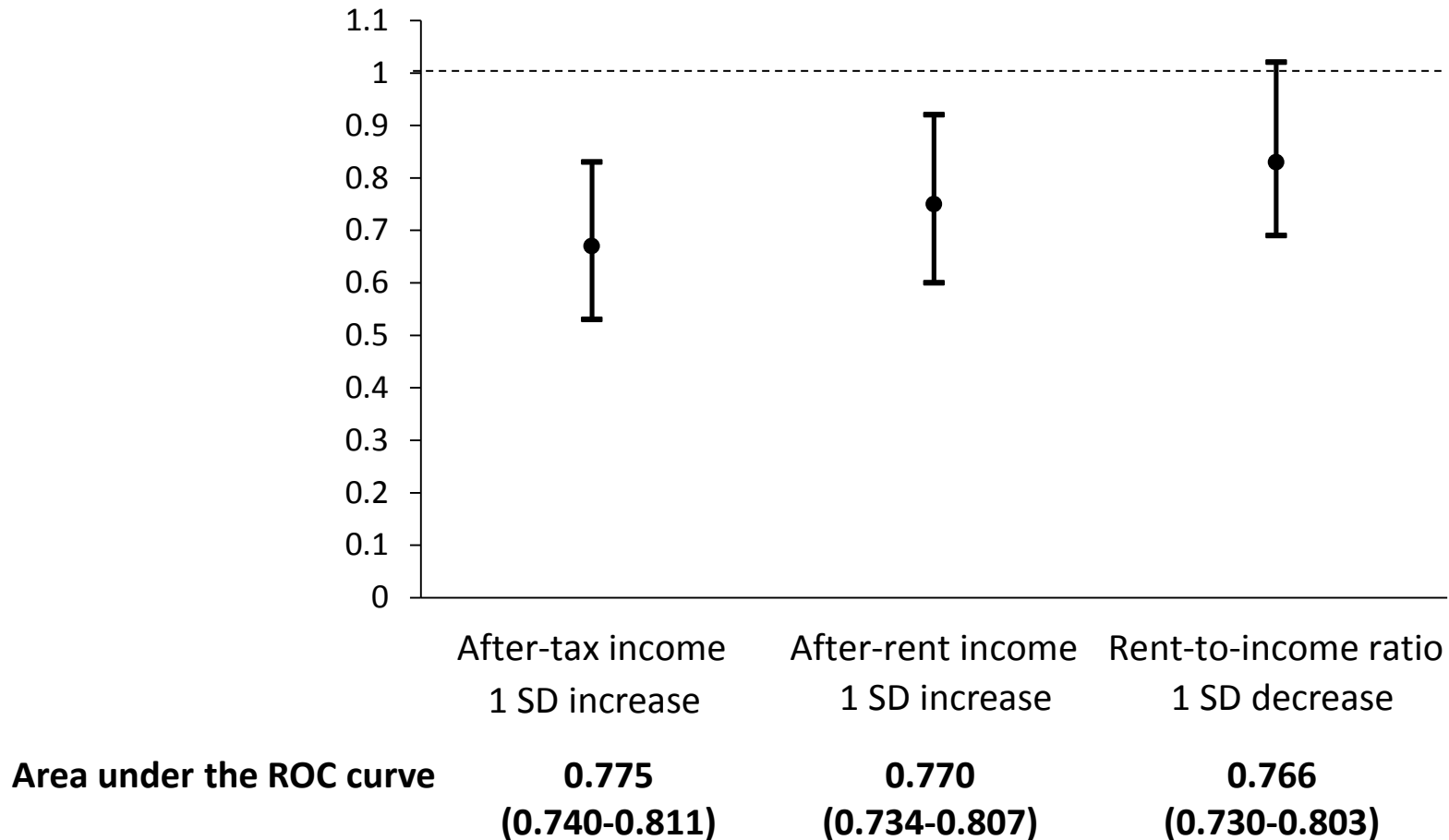
All market renters (n=2,838)



Adjusted for: level of disrepair, crowding, moved in past 12 months, household type, # of children <18, education, main source of income, province, population centre size, time gap

# Sensitivity Analyses: Food insecurity defined as 2 affirmative answers to the 10 questions

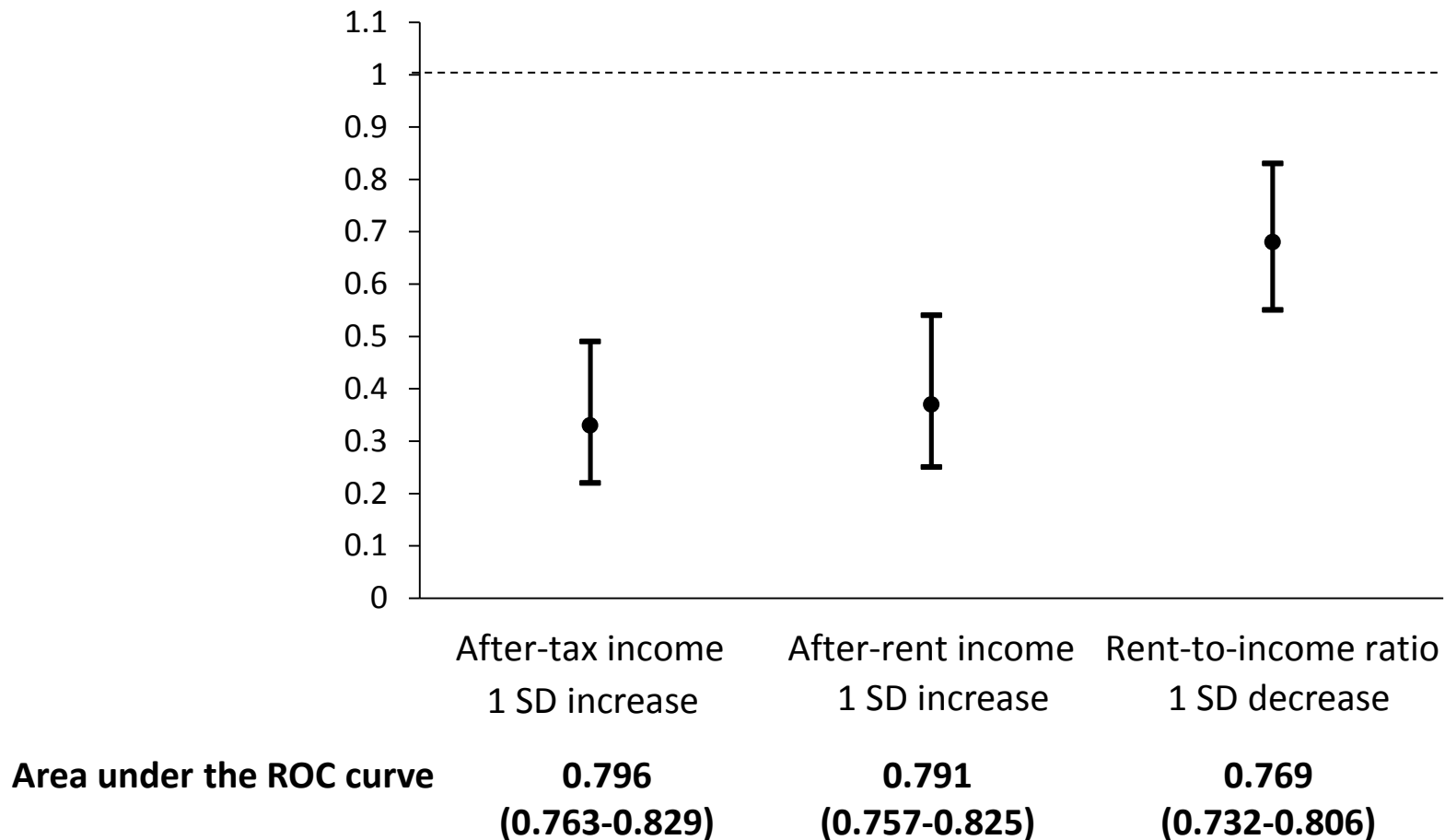
Lower income market renters (n=1,495)



Adjusted for: level of disrepair, crowding, moved in past 12 months, household type, # of children <18, education, main source of income, province, population centre size, time gap

# Sensitivity Analyses: Excluding all households living in substandard housing

Lower income market renters (n=1,865)



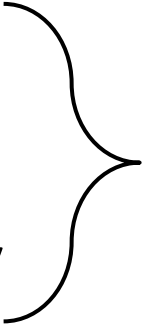
Adjusted for: moved in past 12 months, household type, # of children <18, education, main source of income, province, population centre size, time gap

# Appendix

Table 1: Food security status, based on 18 item questionnaire<sup>1</sup>

| Status                   | Interpretation                                                                                                    | 10 item adult food security scale            | 8 item child food security scale |
|--------------------------|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------|----------------------------------|
| Food secure              | No report of income-related problems of food access.                                                              | No items affirmed                            | No items affirmed                |
| Marginal food insecurity | Some indication of worry or an income-related barrier to adequate, secure food access.                            | Affirmed no more than 1 item on either scale |                                  |
| Moderate food insecurity | Compromise in quality and/or quantity of food consumed by adults and/or children due to a lack of money for food. | 2 to 5 positive responses                    | 2 to 4 positive responses        |
| Severe food insecurity   | Disrupted eating patterns and reduced food intake among adults and/or children                                    | 6 or more positive responses                 | 5 or more positive responses     |

# Household Food Security Survey Module

- 18 questions
- Differentiates the experience of children (8 questions) and adults (10 questions)
- Captures a range of experiences:
  - worry about food access
  - compromise food quality
  - compromise food quantity

because there was not enough money to buy food
- Number of affirmative answers used to determine if any food insecurity is experienced