

# **Integrating food insecurity measurement in nutrition and health research: Key considerations and best practices**

**November 5, 2025. Canadian Nutrition Society Webinar Series**

Available at: <https://cns-scn.ca/education-portal/view/integrating-food-insecurity-measurement-in-nutrition-and-health-research-key-considerations-and-best-practices>

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# Household Food Security Survey Module

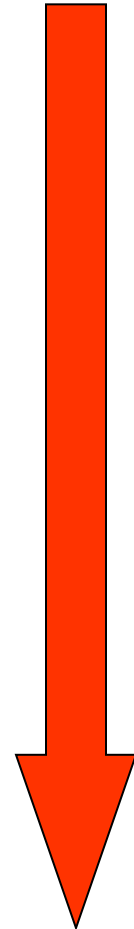
18 questions, differentiating adults' and children's experiences over last 12 months:

- Worry about not having enough food
- Reliance on low-cost foods
- Not able to afford balanced meals
- Adults/children skip meals
- Adults/children cut size of meals
- Adults/children not having enough to eat
- Adult/children going hungry
- Adult lost weight
- Adults/children not eating for whole day



“because there  
wasn’t enough money  
to buy food?”

## Conceptualization of household food insecurity as a managed process:



Anxiety

Qualitative compromises  
in food selection

Quantitative compromises  
in food intake, hunger

# HFSSM Adult Scale Questions (10)

Respondents are asked whether the following experiences were true for themselves or other adults in their household in the last year because there wasn't enough money for food:

- You and other household members worried food would run out before you got money to buy more
- Food you and other household members bought didn't last and there wasn't any money to get more
- You and other household members couldn't afford to eat balanced meals
- You or other adults in your household ever cut size of meals or skipped meals
- You (personally) ever ate less than you felt you should
- You (personally) were ever hungry but did not eat
- You (personally) lost weight
- You or other adults in your household ever did not eat for whole day

# HFSSM Child Scale Questions (8)

In households with children, adult respondents are asked whether the following experiences were true for their household in the last year because there wasn't enough money for food :

- You or other adults in your household relied on only a few kinds of low-cost food to feed child(ren)
- You or other adults in your household couldn't feed child(ren) a balanced meal
- Child(ren) were not eating enough
- You or other adults in your household ever cut size of any of the child(ren)'s meals
- Any of the child(ren) were ever hungry
- Any of the child(ren) ever skipped meals,
- Any of the child(ren) ever did not eat for whole day

# Classifying household food insecurity status in Canada

## - the old way (Health Canada, 2007)

**Food  
insecure**

Status	Interpretation	10 item adult food security scale	8 item child food security scale
<b>Food secure</b>	No report of income-related problems of food access.	0 or 1 item affirmed	0 or 1 item affirmed
<b>Moderately food insecure</b>	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 affirmative responses	2 to 4 affirmative responses
<b>Severely food insecure</b>	Disrupted eating patterns and reduced food intake among adults and/or children	6 or more affirmative responses	5 or more affirmative responses

In cases where a household meets the condition of two different classifications (that is, different status on the child and adult scales), the household is given the more severe classification).

Source: [Health Canada, 2007. Income-Related Household Food Insecurity in Canada.](#)

# Classifying household food insecurity status in Canada

## - Health Canada's 2020 update

**Food  
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Status	Interpretation	10 item adult food security scale	8 item child food security scale
<b>Food secure</b>	No report of income-related problems of food access.	No items affirmed	No items affirmed
<b>Marginally food insecure</b>	Some indication of worry or an income-related barrier to adequate, secure food access	Affirmed no more than 1 item on either scale	
<b>Moderately food insecure</b>	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 affirmative responses	2 to 4 affirmative responses
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**In cases where a household meets the condition of two different classifications (that is, different status on the child and adult scales), the household is given the more severe classification).**

## Terminology:

**“Food security exists when** all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.” (1996 World Food Summit, Canada’s Action Plan on Food Security, 1998)

### *What is captured in the measure of household food insecurity?*

**“Food security exists when** all people, at all times, have physical and economic access to sufficient, ~~safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.~~”



## Terminology:

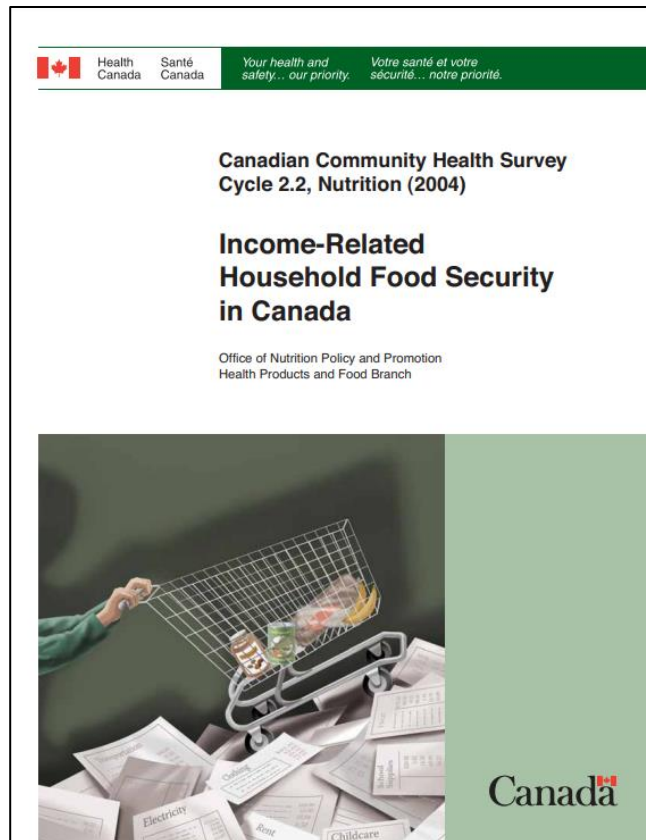
Household food insecurity is not simply the absence of 'food security' as defined by the FAO.

**Household food insecurity is :**

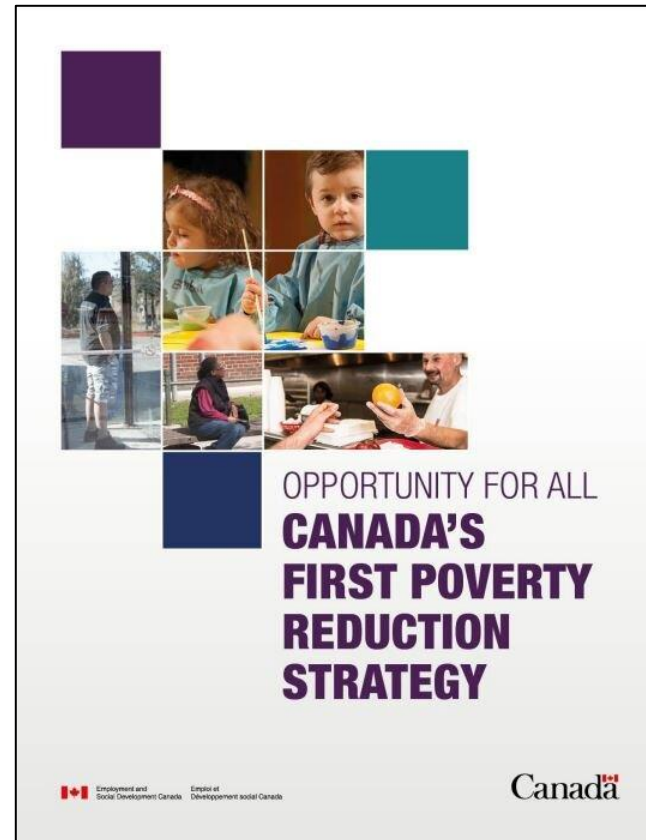
**inadequate or insecure access to food due to financial constraints.**

# Population monitoring by Statistics Canada

## Canadian Community Health Survey (CCHS) – since 2004/2005



## Canadian Income Survey (CIS) – since 2019

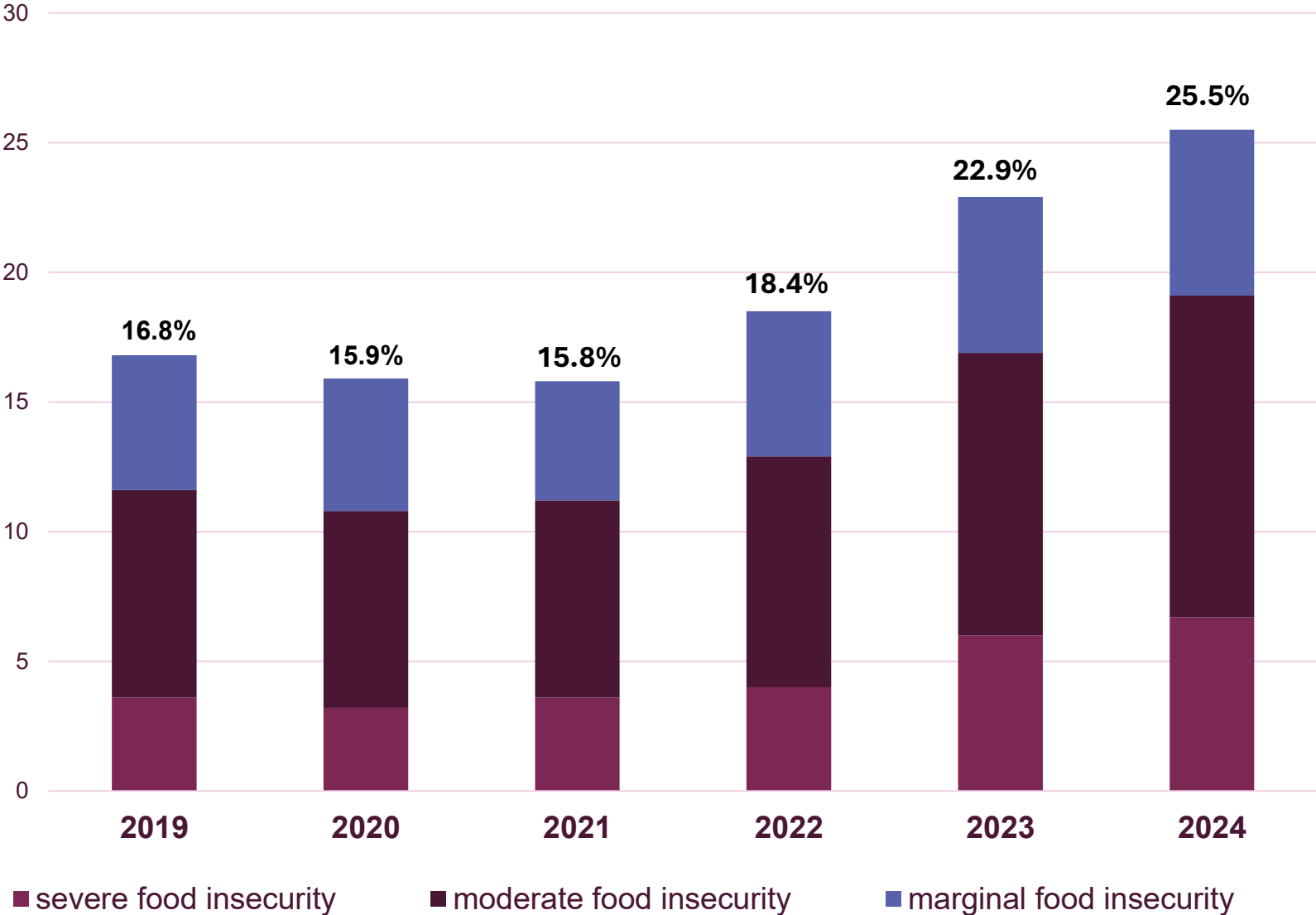


# Canadian Income Survey: the gold standard for population prevalence estimates

- Annual population-representative measurement
  - excludes people living on reserves and other Indigenous settlements in the provinces, people in prisons or care facilities, people in extremely remote areas with very low population density, and the unhoused (altogether < 2% of the population).
  - Response rates of  $\geq 70\%$ ; samples ~60,000 households/year
  - Household Food Security Survey Module added in 2019 (CIS 2018)
- Timely release of prevalence estimates by Statistics Canada
- Not directly comparable to the Canadian Community Health Survey (see [Caron & Plunkett-Latimer, 2022](#) for analysis of survey differences).

Percentage of people living in food-insecure households in the 10 provinces, results from the Canadian Income Survey

Canadian Income Survey (CIS), 2018-2023. Data on food insecurity are collected in the year following the survey reference year, so we have labelled the data with the year of data collection. Chart: PROOF. Source: [Statistics Canada, Table 13-10-0834-01: Food insecurity by economic family type.](#)



# Inclusion of food insecurity measures on large, recent surveys of Indigenous groups

## **Indigenous-led**

- Qanuippitaa? National Inuit Health Survey, 2021- (ITK)
- First Nations Food, Nutrition and Environment Study, 2008-2018 (Assembly of First Nations)
- First Nations Regional Health Survey, 2015/2016 (First Nations Information Governance Centre)

## **Statistics Canada (Indigenous living off-reserve)**

- Indigenous Peoples Survey, 2022 (Statistics Canada)
- Aboriginal Peoples Survey, 2012, 2017 (Statistics Canada)

# Statistics Canada Surveys with HFSSM

Survey	Notes
Canadian Income Survey (CIS)	Gold standard for population prevalence estimates reported by Statistics Canada and ESDC
Canadian Community Health Survey (CCHS)	Primary population health survey, food insecurity measurement optional in some cycles, age 18+ in 2023 onward
Canadian Health Survey on Children and Youth (CHSCY)	Primary population health survey for children 1-17 in 2023 onward
Canadian survey on Disability (CSD)	Primary survey on disability in Canada, uses 6-item short form HFSSM, food insecurity included starting in 2022, collected every 5 years
Indigenous Peoples Survey (IPS)	Successor of the APS, survey of Indigenous peoples living off reserve, collected every 5 years starting in 2022
Aboriginal Peoples Survey (APS)	Survey of Indigenous peoples living off reserve, collected in 2012 and 2017, uses 6-item short form HFSSM
Canadian Perspectives Survey Series 2 (CPSS-2)	6-item short form HFSS on one-time survey during pandemic
Longitudinal and International Study of Adults (LISA)	Inactive, food insecurity only measured in wave 4 out of 5 (2018)

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Canadian Health Survey on Children (CHSCY)	<div> <p>These surveys can differ considerably due to differences in:</p> <ul style="list-style-type: none"> <li>• Target population</li> <li>• Survey methodology (e.g. sampling, timing, imputation, etc.)</li> <li>• Food insecurity measurement instrument</li> </ul> </div>
Canadian Health Survey on Women (CHSW)	
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# Comparing food insecurity in the US and Canada

**TORONTO SUN**

Columnists

## CHARLEBOIS: These are Canada's 'Hunger Games'

In 2023, while 13.5% of Americans households grappled with food insecurity— characterized by low or very low food security (USDA-ERS, 2024) — the rate in Canada was significantly higher at 22.9% (Proof Toronto, 2024). This suggests that food insecurity in Canada is a staggering 69.6% more prevalent than in the United States — a deeply unsettling statistic.

(Charlesbois, Toronto Sun, 2024: <https://torontosun.com/opinion/columnists/charlebois-these-are-canadas-hunger-games>)



# Comparing food insecurity in the US and Canada

## Canada's coding and classifications:

Status	10 item adult scale	8 item child scale
Food secure	0 affirmatives	
Marginal food insecurity	Affirmed no more than 1 item on either scale	
Moderate food insecurity	2 - 5 affirmatives	2 - 4 affirmatives
Severe food insecurity	≥ 6 affirmatives	≥ 5 affirmatives

## USDA's coding and classifications:

Status	Households without children	Households with children
Food secure	0-2 affirmatives	
Food insecure	≥ 3 affirmatives on 10 item scale	≥ 3 affirmatives on 18 item scale
Very low food security	≥ 6 affirmatives on 10 item scale	≥ 8 affirmatives on 18 item scale

For more on the differences between US and Canadian classification, see [Men and Tarasuk \(2022\)](#)

# Comparing food insecurity in the US and Canada

**Percentage of people living in food-insecure households in Canada and the US in 2023, using Canadian classification scheme for household food insecurity**

	Canada	US
Food insecure, marginal	6.0%	6.2%
Food insecure, moderate	10.9%	12.1%
Food insecure, severe	6.0%	5.4%
Food insecure (all 3 levels)	<b>22.9%</b>	<b>23.7%</b>

**Data sources:**

Statistics Canada. 2022 Canadian Income Survey. [Table: 13-10-0834-01 Food insecurity by economic family type](#)  
United States Census Bureau. 2023 CPS Food Security Supplement. Author's calculations  
(PROOF). <https://www.census.gov/data/datasets/2023/demo/cps/cps-food-security.html>

For more read: [Responding to comparisons of food insecurity statistics in Canada and the US](#)

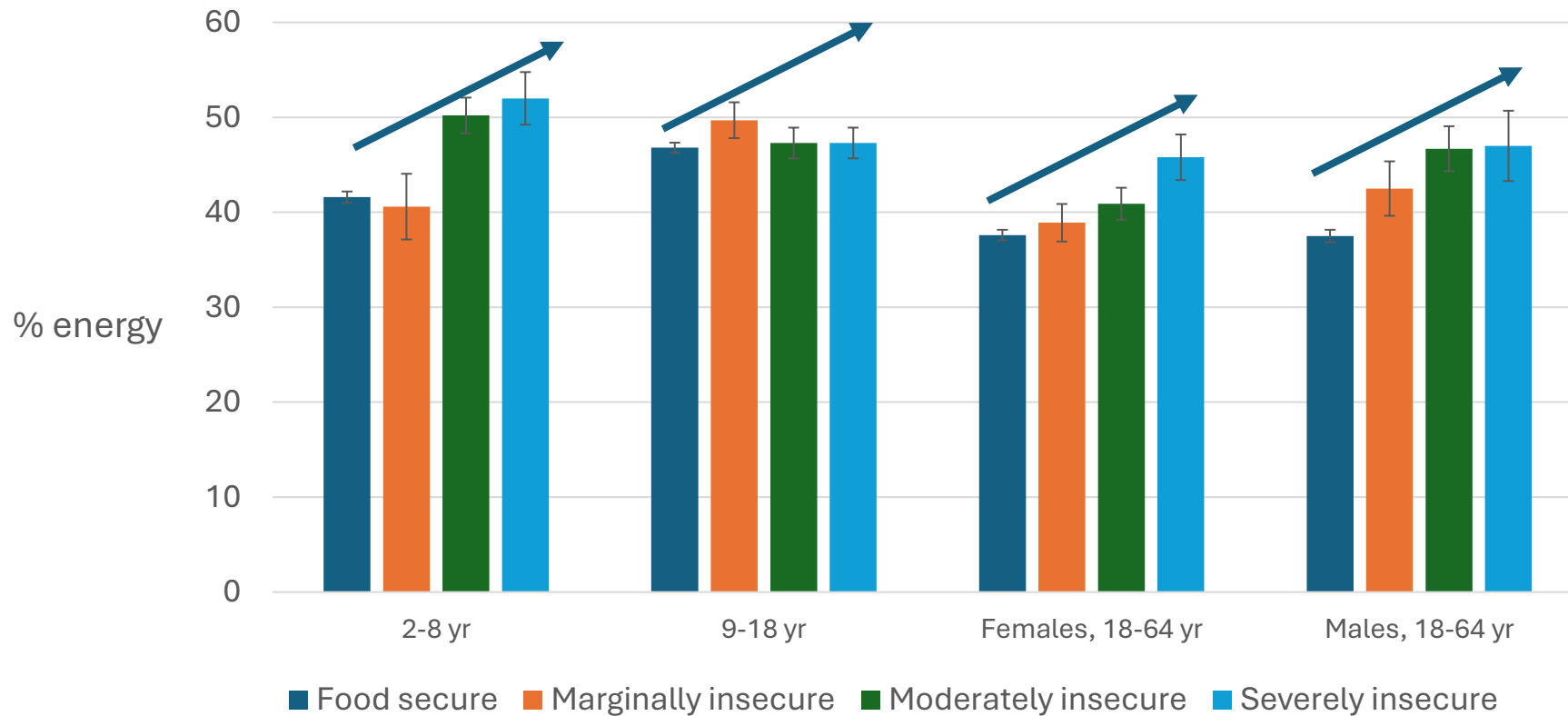
# Why measure food insecurity in nutrition/health research studies?

- Household food insecurity is pervasive in Canada now and it is a potent social determinant of health.
  - strongly associated with poorer quality dietary intakes and adverse health outcomes.
  - observed effects are typically independent of income and other sociodemographic characteristics.



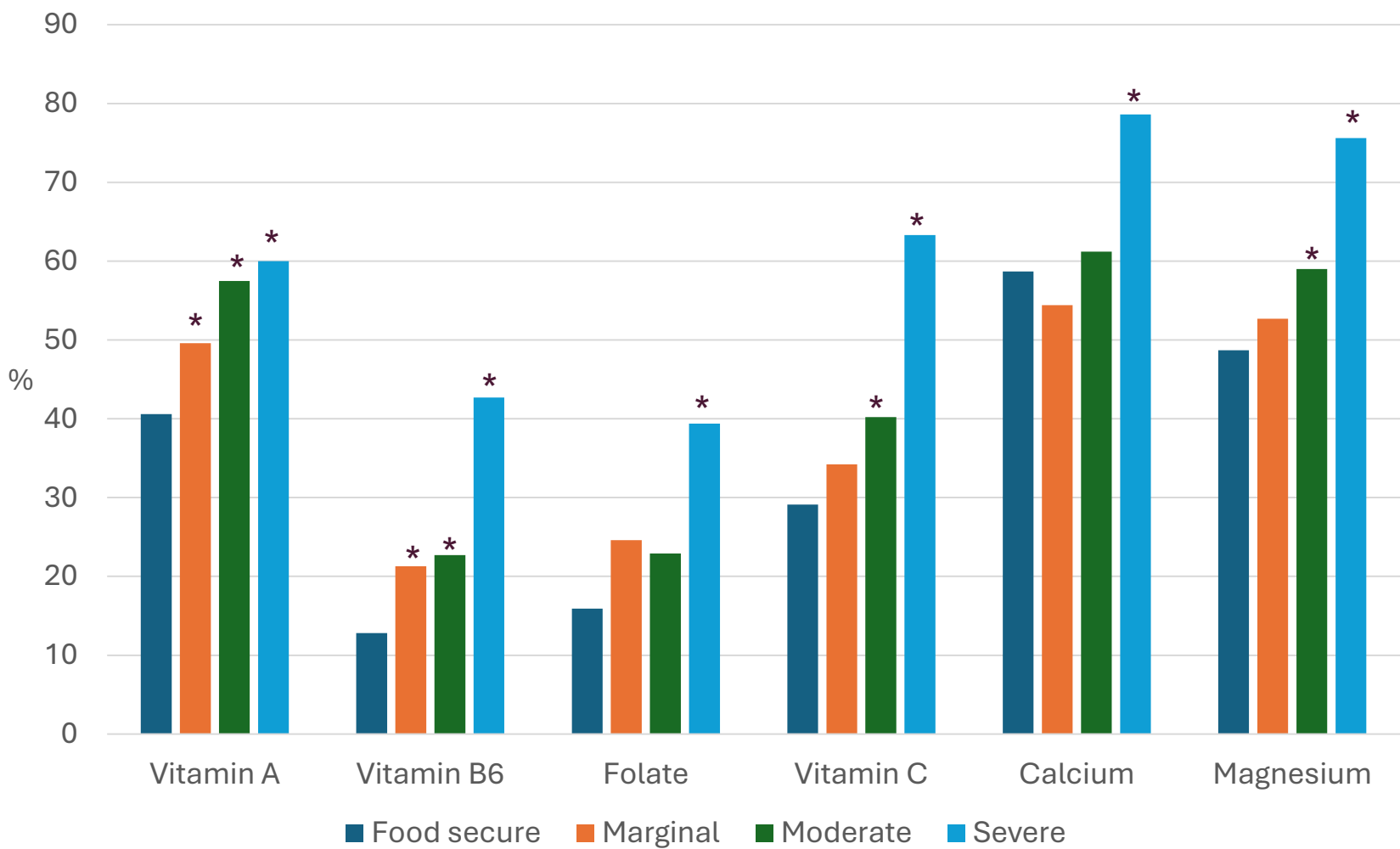
**Household food insecurity isn't one state. Severity matters.**

## Average % total energy (kcal) from ultra-processed foods per day, by household food insecurity status (CCHS 2015)



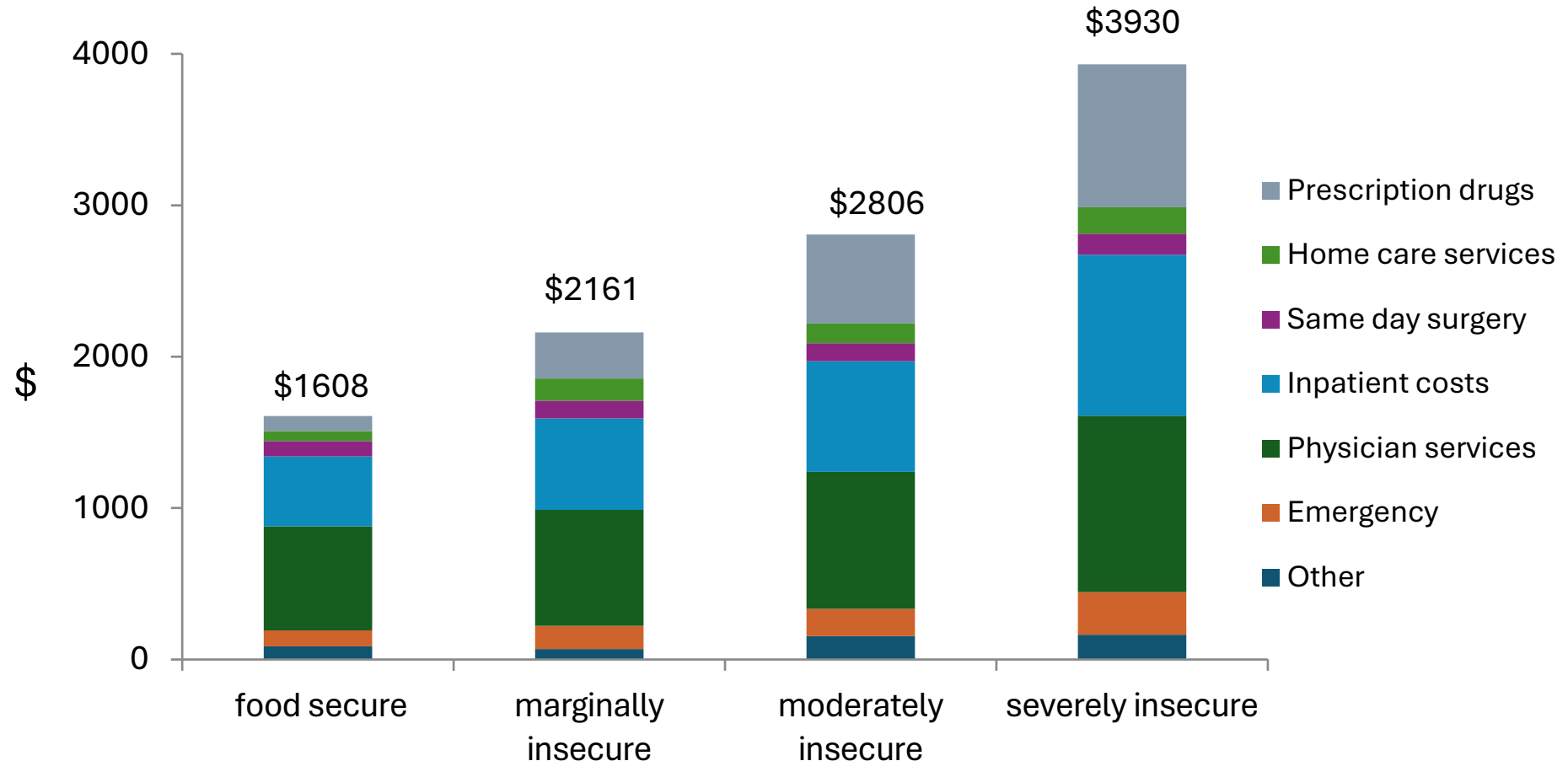
When adjusted for age, sex (children only), education, income, and region, all groups have statistically significant trends by food insecurity status and severely food insecure in all age/sex groups are significantly different from food secure.

Prevalence of nutrient inadequacy by severity of household food insecurity among adults aged 19–64 years (CCHS 2015)



\*statistically significant difference from food-secure based on Welsh’s test with Bonferroni correction,  $p < 0.0056$ .

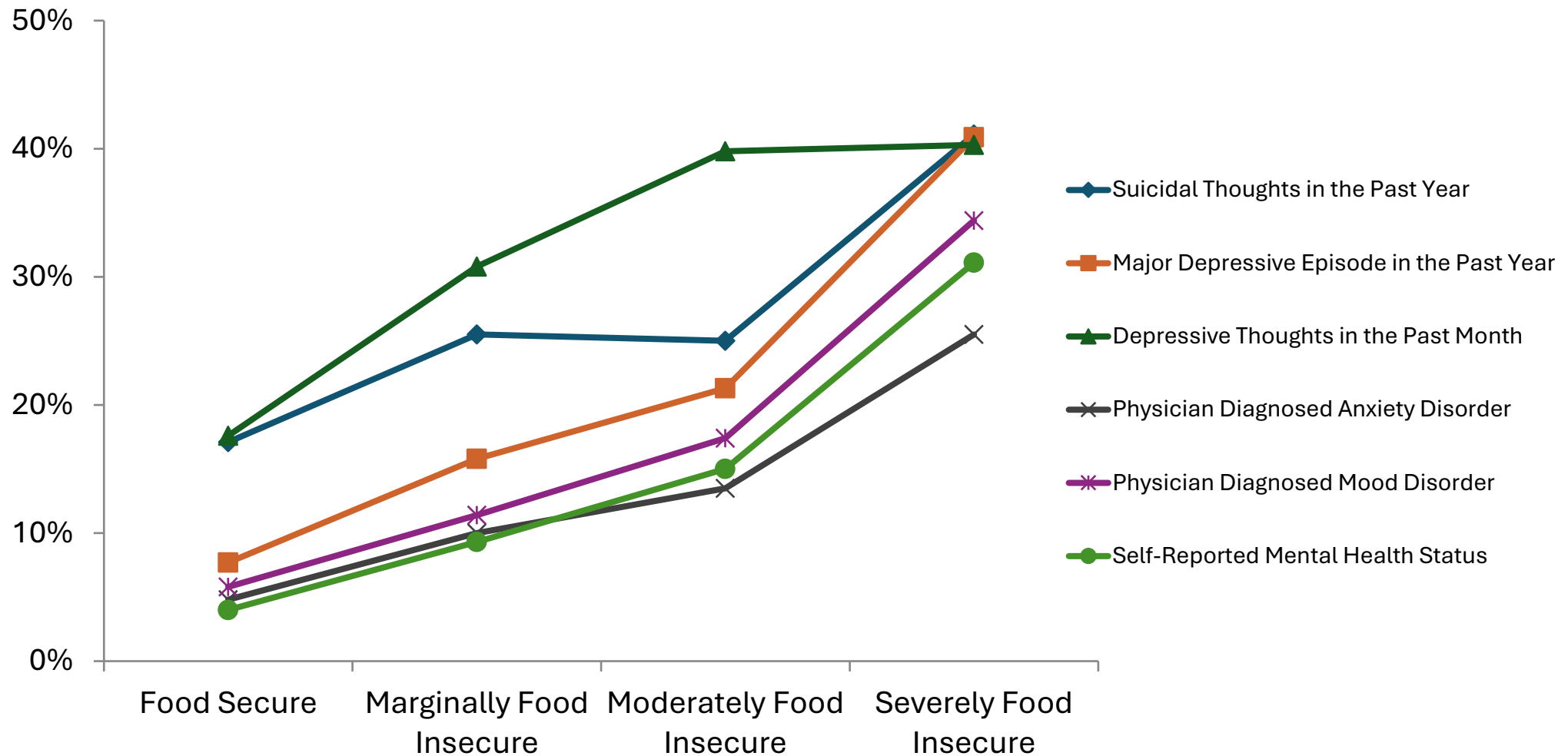
## Average health care costs per person incurred over 12 months by Ontario adults (18-64 years of age), by household food insecurity status (n=67,033):



After adjusting for socio-demographic factors, adults in severely food insecure households were 1.71 times more likely to use health care (95%CI: 1.44-2.04) and among health care users, their adjusted average costs were 76% (\$1092) higher than the food secure (95% CI 65%–88% [\$934–\$1260]).

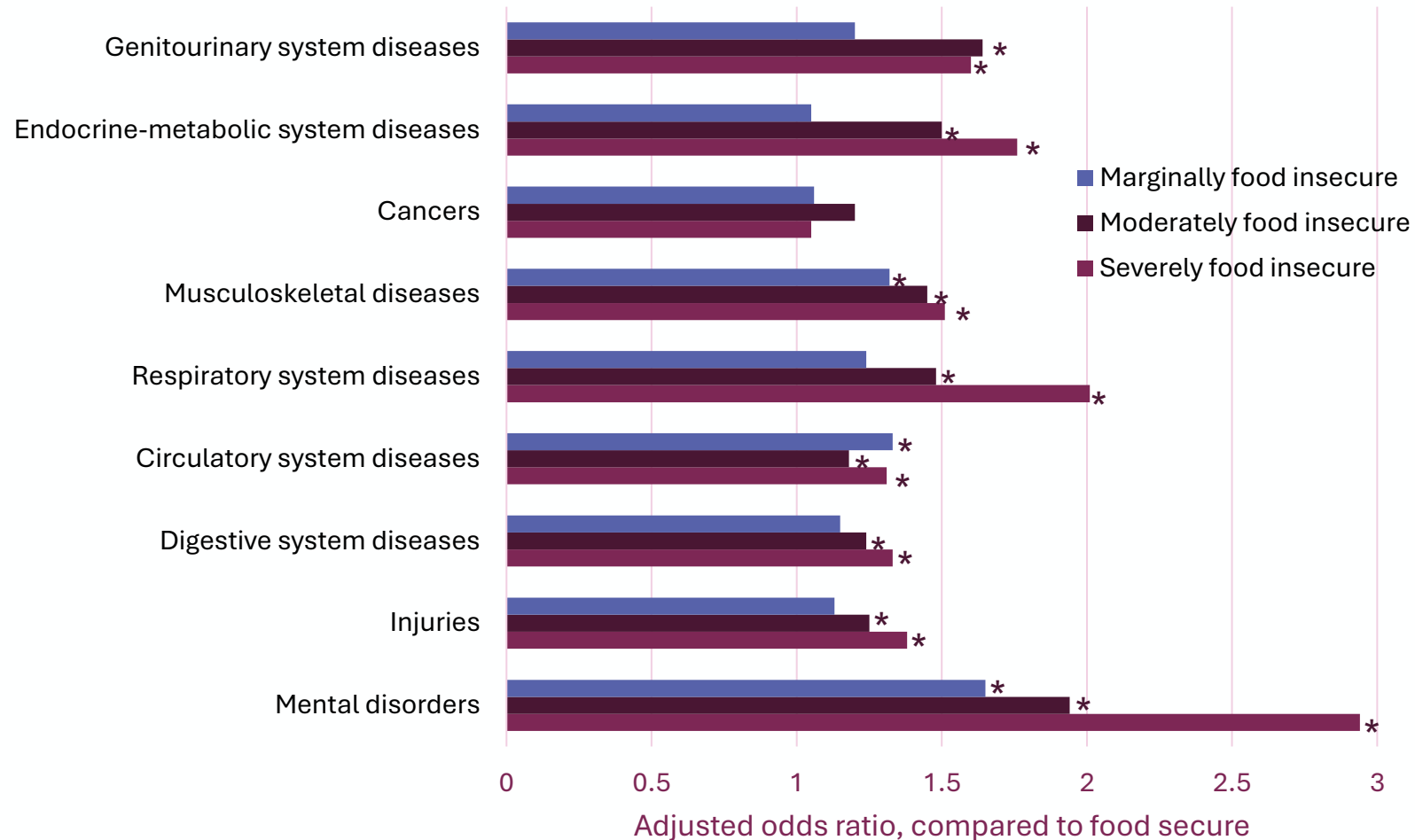


## Prevalence of adverse mental health outcomes among adults, 18-64 years, by household food insecurity status: (pooling data from CCHS 2005-2012)



## Adjusted differences in the likelihood of acute care admission among Canadian<sup>†</sup> adults by household food insecurity status

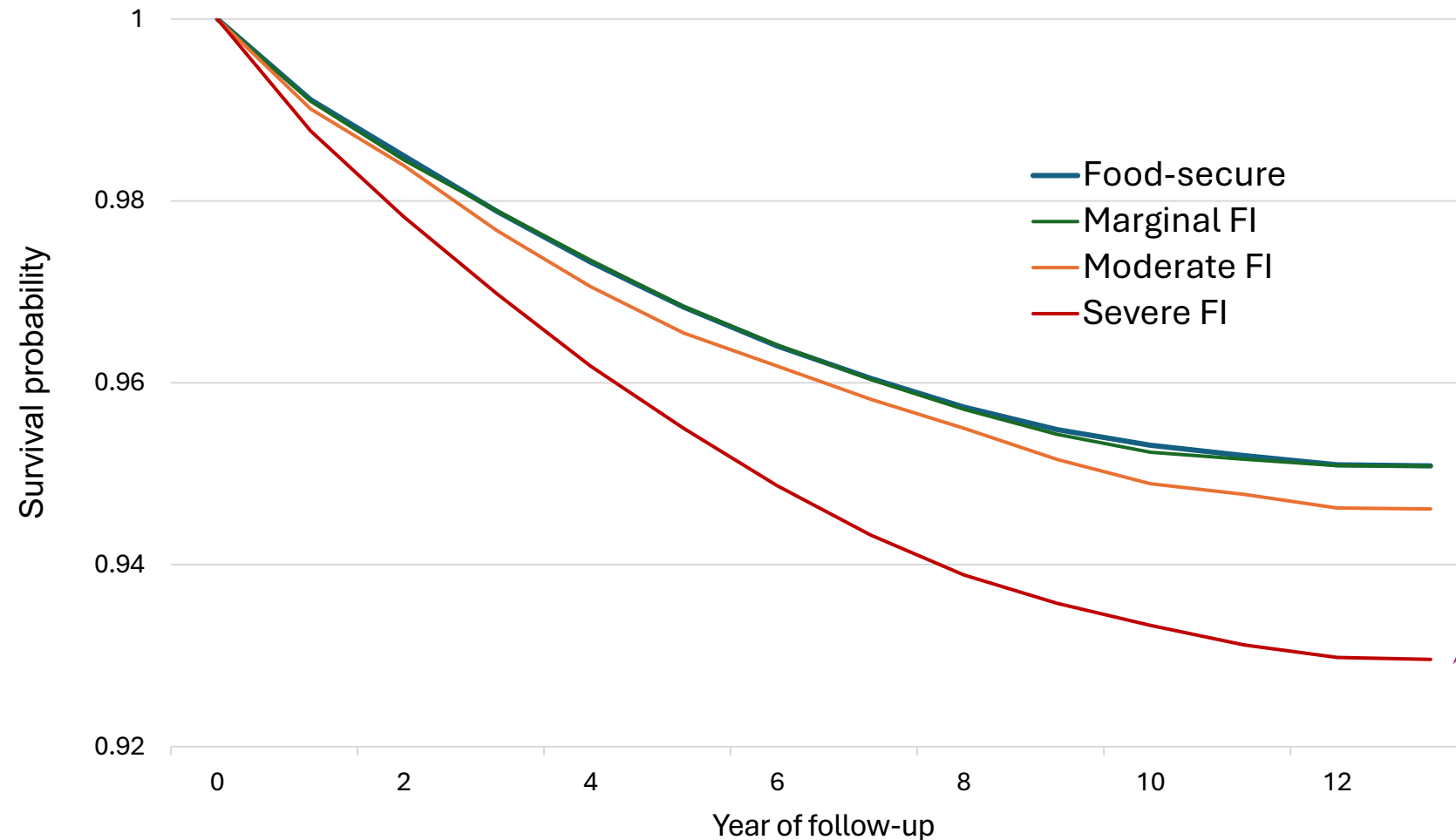
(linking data from CCHS 2005-17 to Discharge Abstract Database acute care admissions, n=403,620)



Adjusted for respondent age, sex, ethnicity, immigrant status, smoker status, alcohol consumption history and acute care admission in year prior to interview; household sociodemographic characteristics; province/territory; survey cycle.

<sup>†</sup> Includes all provinces and territories except Quebec. \* p<0.05.

## Kaplan-Meier survival curve on all-cause premature mortality by household food insecurity status among Canadian adults, 18-82 years old

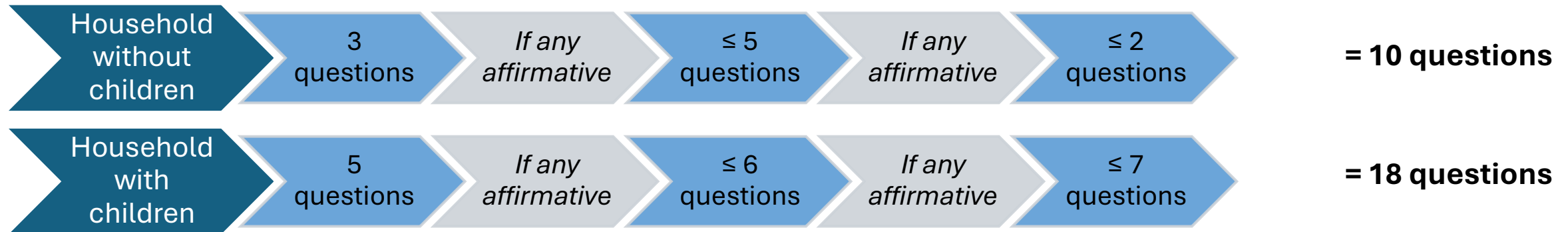


### Severe food insecurity:

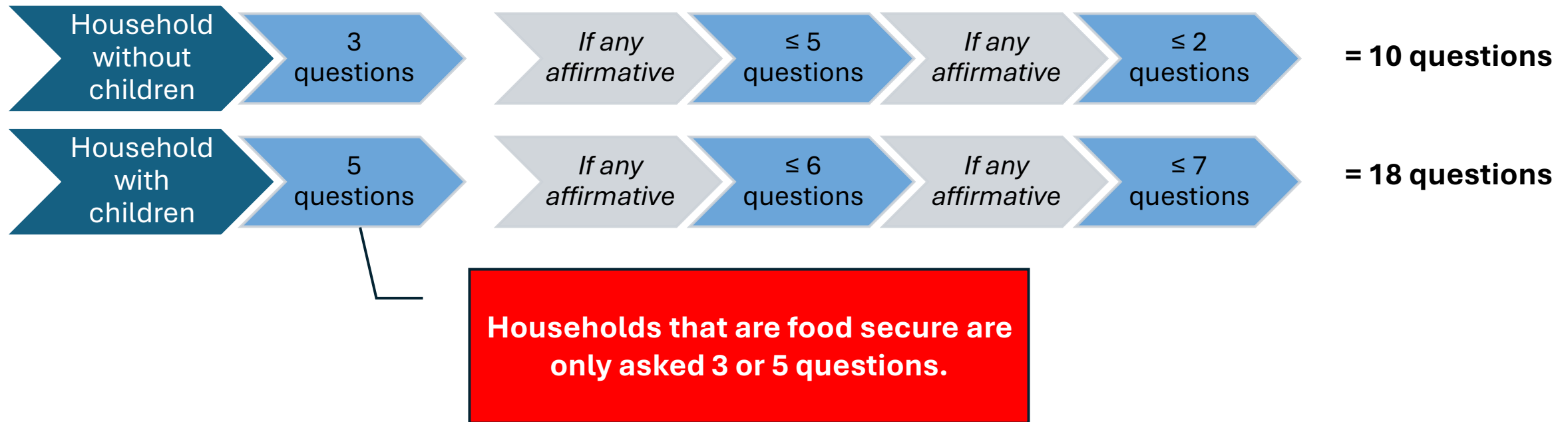
- associated with increased mortality from all causes except cancer.
- strongest associations seen for infectious/ parasitic diseases, unintentional injuries, and suicides.

**If it is worth measuring, it is  
worth measuring well.**

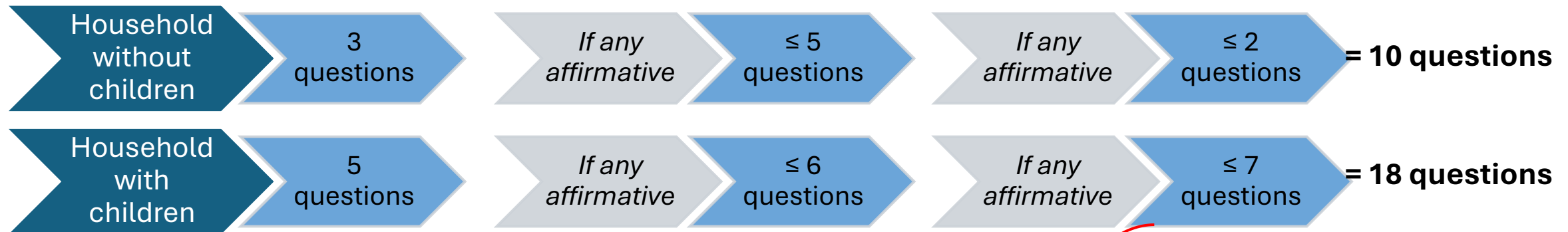
# How long does the HFSSM take?



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# How long does the HFSSM take?




**The only households asked all 18 questions are  
severely food insecure households with children.  
 $\approx$  4 minutes**

# 6-item Short Form Food Security Module

*Originally referenced to last 12 months but can also be applied to last 30 days.*

- Food didn't last and no money to buy more.
- Not able to afford balanced meals
- Adults skipped or cut size of meals
- How often adults skipped or cut size of meals
- Personally ate less than should
- Personally hungry but did not eat



“because there  
wasn't enough  
money to buy food?”

([Blumberg et al, Am J Public Health 1999](#); [USDA May 2024](#))



# 1-, 2-, and 3-item ‘screening tools’, drawing questions from HFSSM:

## e.g., **Hunger Vital Sign**

- Within the past 12 months, we worried whether our food would run out before we got money to buy more.
- Within the past 12 months, the food we bought just didn’t last and we didn’t have money to get more.
  - “Always true” or “Sometimes true” to one or both questions → food insecure.

([Gundersen et al, Public Health Nutr 2017](#); [Alberta Health Services, 2022. Identification of Food Insecurity in Health Care Settings.](#))

# Questions not specific to household food insecurity:

e.g.,

## **Nutrition Screening Tool for Every Preschooler (NutriSTEP®)**

- “I have difficulty buying food I want to feed my child because food is expensive”

## **Health Behaviour in School-aged Children Survey:**

- “Some young people go to school or to bed hungry because there is not enough food at home. How often does this happen to you?”

([Bayoumi et al, BMC Pediatr. 2021](#); [Cumiskey et al, Health Promot Chronic Dis Prev Can 2024](#))

# Using a few questions, instead of the HFSSM?

## **PROs**

- Low respondent burden.

## **CONs**

- Results are not comparable to statistics or research findings based on HFSSM.
- Little or no insight into severity.
- Possible failure to detect associations present only at moderate or severe levels of food insecurity.

# **Assessing children's vulnerability**

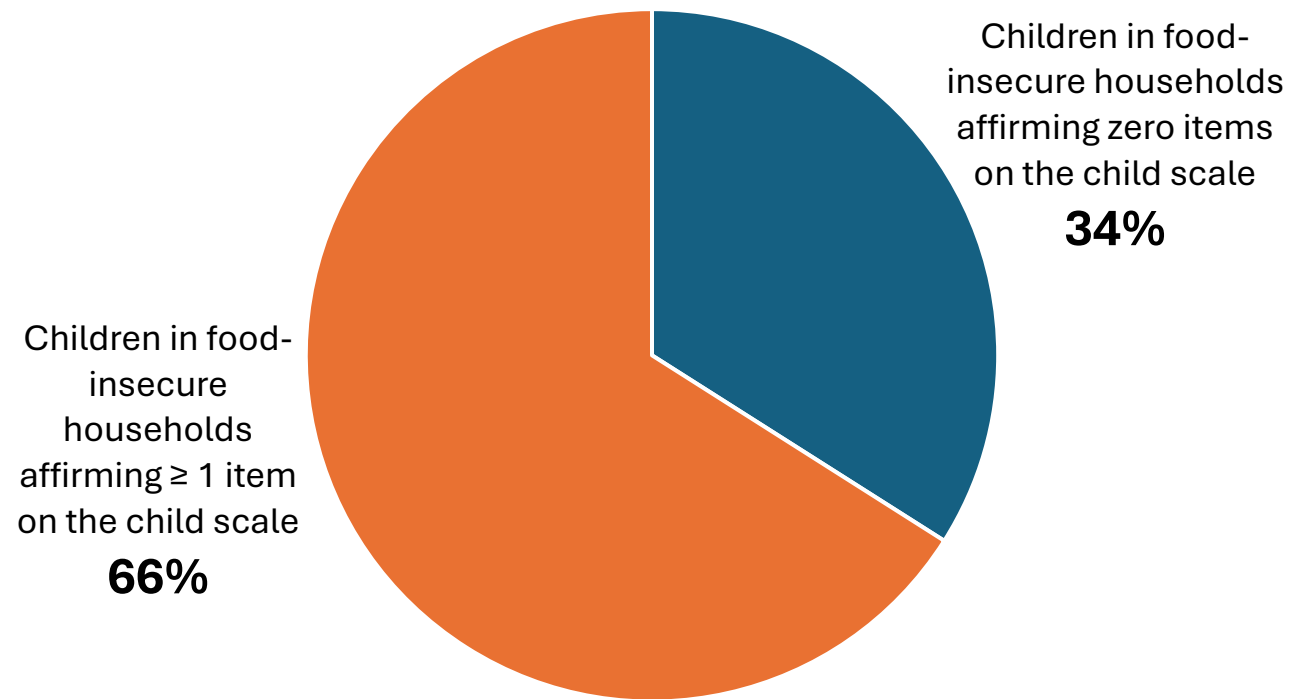
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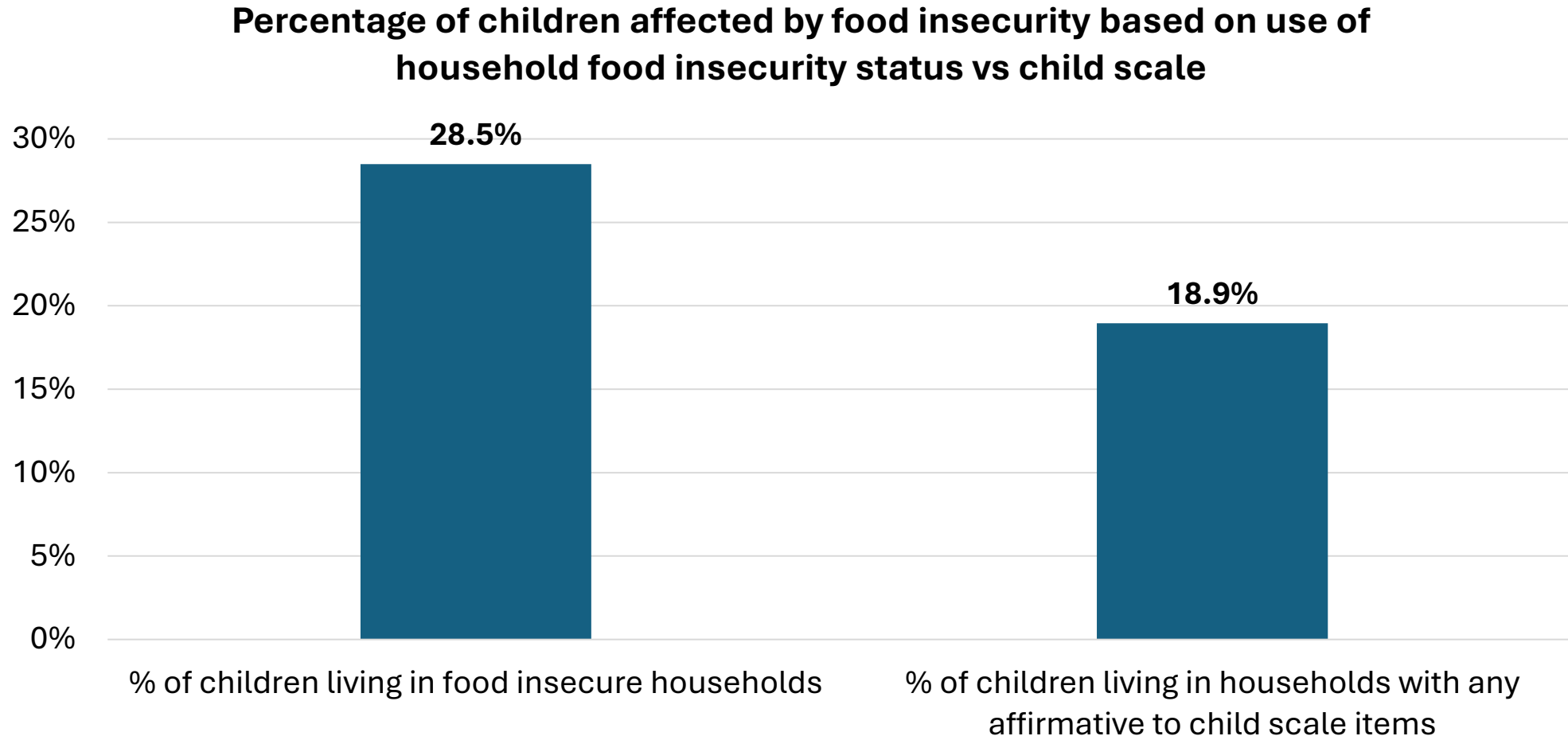
In cases where a household meets the condition of two different classifications (that is, different status on the child and adult scales), the household is given the more severe classification).

# Why not use the 8 child-referenced questions to determine children's food insecurity status?

**Proportion of children in food-insecure households by affirmation of child scale items**

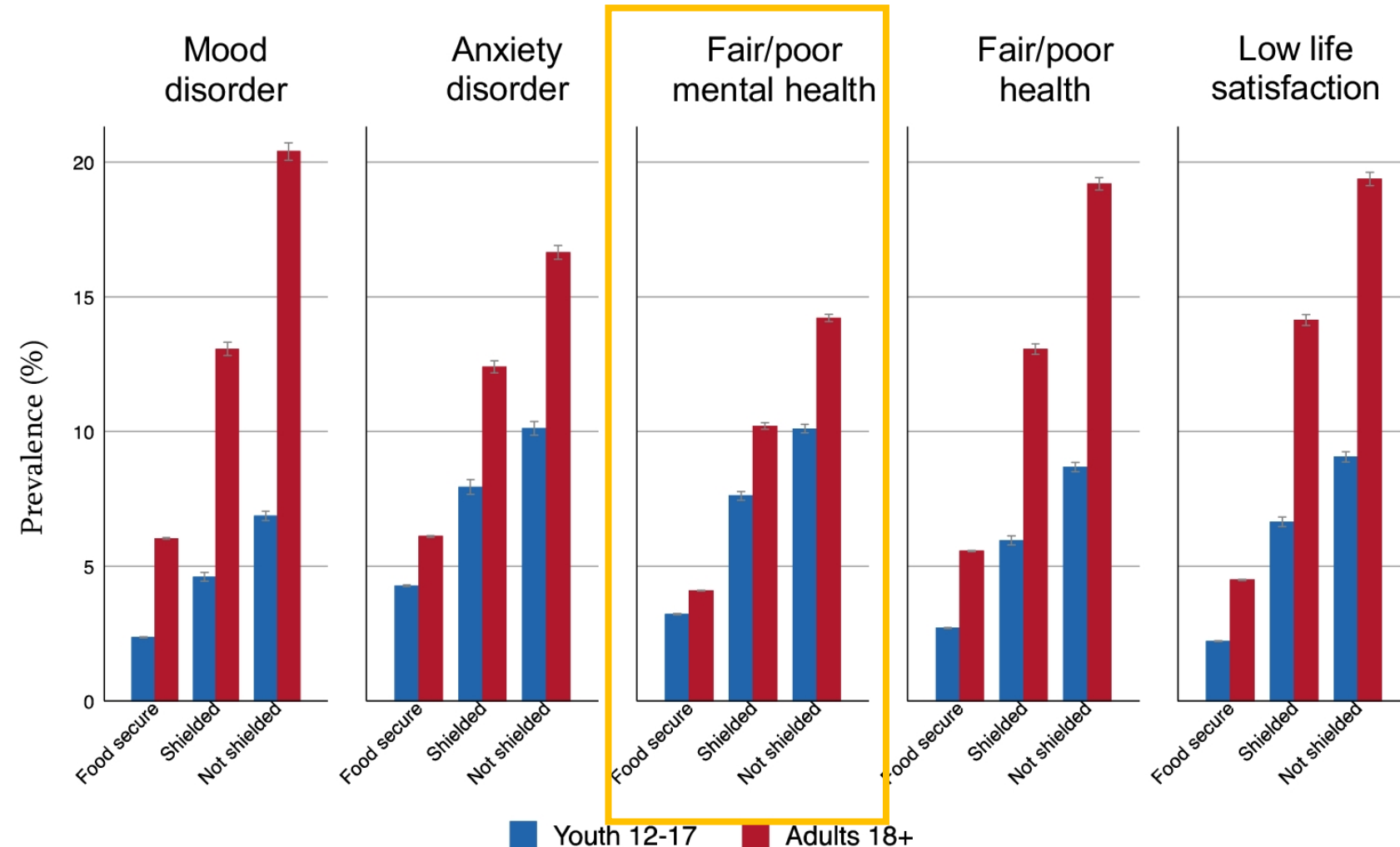


# Why not use the 8 child-referenced questions to determine children's food insecurity status?



Source: Canadian Income Survey, 2022 (PUMF). Authors' calculations.

**Predicted prevalence of mental health problems in youth and adults in food-secure and food-insecure households with zero affirmatives on child scale (“shielded”) vs  $\geq 1$  affirmative on child scale (“not shielded”):**



(Ovenell, Da Silva & Elgar, Can J Public Health, 2022)



## **Why not use the 8 child-referenced questions to determine children's food insecurity status?**

- If researchers use only the child scale, children in food-insecure households that did not affirm any questions on the child scale are classified as food-secure.
- Children in food-insecure households are at greater risk of adverse health outcomes than children in food-secure households, whether or not the household affirmed any child-referenced items on the HFSSM.

# Direct measures of children's experiences:

- **9-item Child Food Security Survey Module** ([Connell et al, J Nutr 2004](#))
  - derived from HFSSM, validated for use with children  $\leq 12$  years.
  - Used in the Food and Nutrition Security for Manitoba Youth (FANS) study.
    - [E.g. Alexiuk et al, Ecology of Food and Nutrition, 2023](#)
- **10-item Child Food Insecurity Experiences Scale** ([Frongillo et al, J Nutr 2022](#))
  - Developed for use by children 5-17 years.
  - Captures experiences of dietary compromises, hunger, food deprivation, uncertainty, emotional awareness.
  - Designed to complement the Food Insecurity Experiences Scale (FIES) used for global monitoring.

Percentage of people living in food-insecure households in the 10 provinces, results from the Canadian Income Survey

Canadian Income Survey (CIS), 2018-2023. Data on food insecurity are collected in the year following the survey reference year, so we have labelled the data with the year of data collection. Chart: PROOF. Source: [Statistics Canada, Table 13-10-0834-01: Food insecurity by economic family type.](#)

