

# **Analysis of Ontario Sample in Cycle 2.2 of the Canadian Community Health Survey (2004)**

***A report prepared by Janet Vogt and Valerie Tarasuk,  
funded by the Ministry of Health Promotion in  
Ontario.***

# Acknowledgement

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# The history of dietary intake assessment in Ontario:

1972	Nutrition Canada
1990	Ontario Health Survey
1997-98	Ontario Food Survey (adults only)
2004	Canadian Community Health Survey, 2.2

# ***Canadian Community Health Survey Cycle 2.2, Nutrition (2004)***

In-person interview with a population-based sample of 35,107 Canadians:

- 24-hr dietary intake recall
- Height and weight measurements
- Questionnaire - food security, demographics, general health

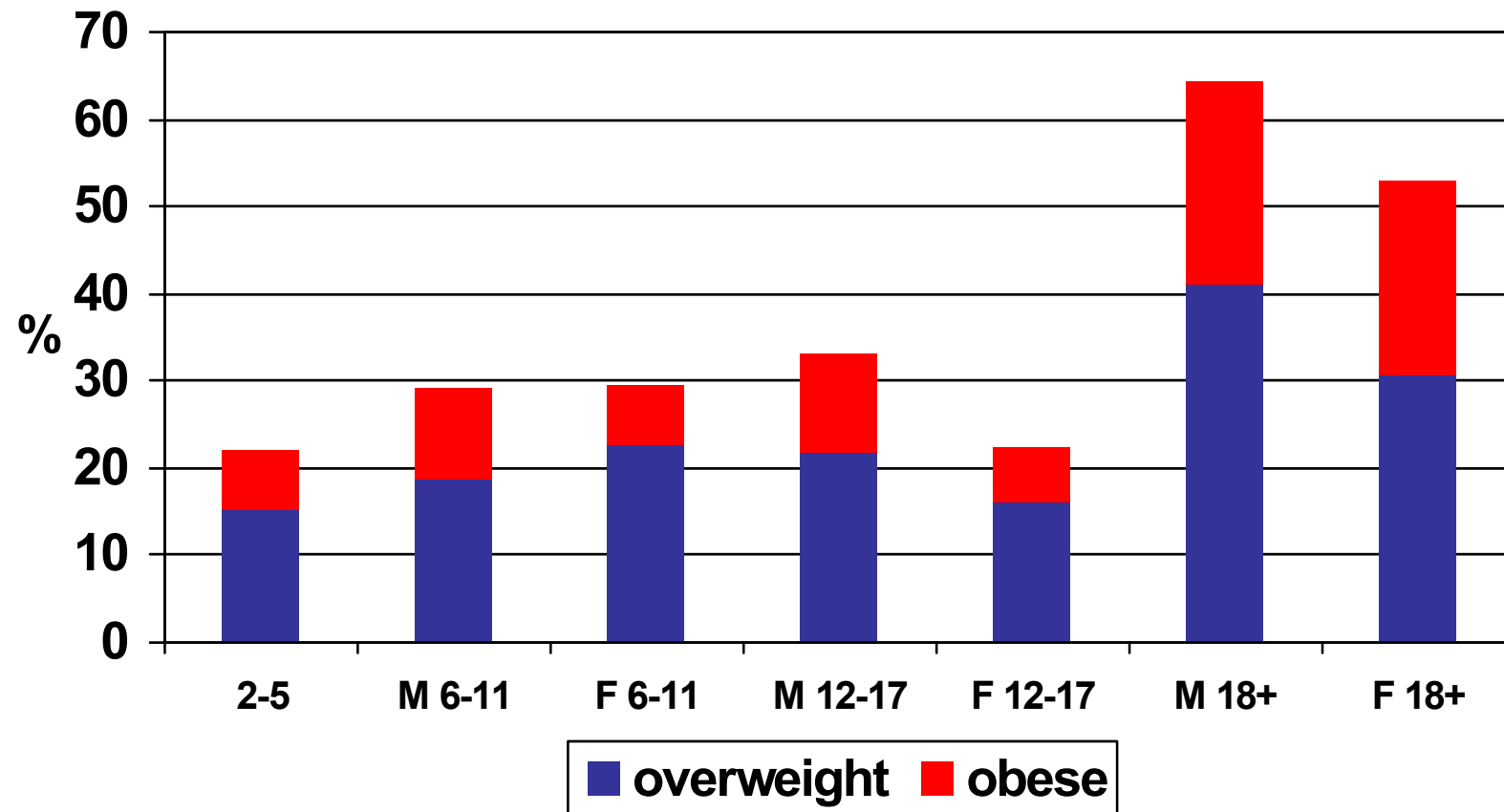
**Ontario Share File:** 10,517 individuals,  $\geq 1$  year of age, living in Ontario in 2004.

# Analyses:

1. Body weight status.
2. Assessment of energy and nutrient intakes in relation to current standards for optimal health<sup>1</sup>.
3. Examination of prevalence and socio-demographic correlates of household food insecurity.

<sup>1</sup>Institute of Medicine. Dietary Reference Intakes: Applications in Dietary Assessment. Washington DC: National Academy Press, 2000.

# Prevalence of overweight and obesity



Based on measured heights and weights, available for 54% of respondents, using Cole system of classification for 2-17 yr, and defining overweight as BMI 25.0 – 29.9 and obese: BMI $\geq$ 30.0, for 18yr +.

Results for children 2-5 years of age are not differentiated by sex.

## Conclusion:

Obesity and overweight are

- population-wide problems
- reflective of an unhealthy imbalance between food intake patterns and physical activity levels among the majority of Ontario adults and a substantial number of children and adolescents.

Appropriateness of dietary intakes in relation to estimated energy requirements?

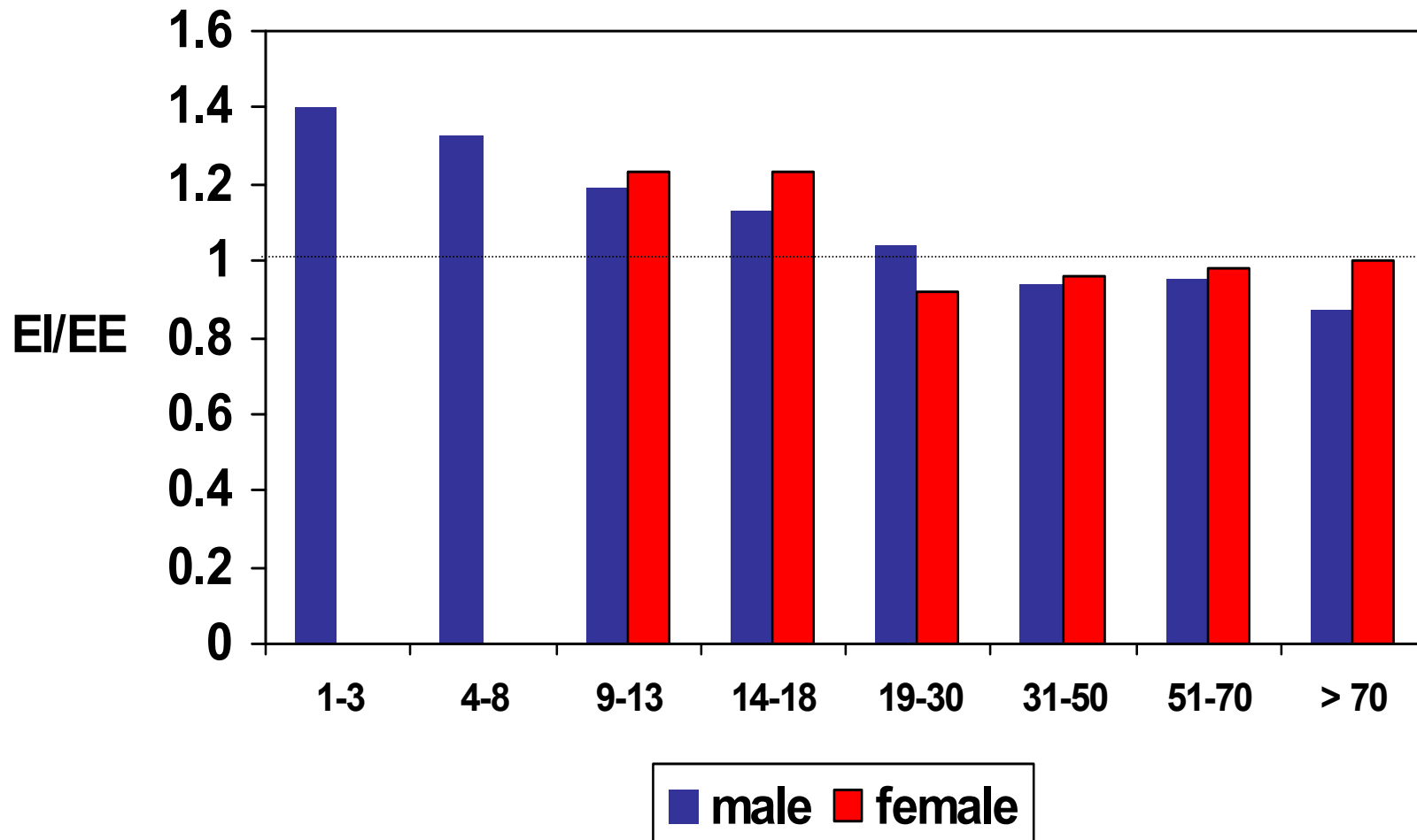
## Note on Methods:

- To assess energy intakes, we expressed individuals' estimated energy intakes (based on a single 24-hr recall) as a ratio of their individual energy requirements, estimated using standard equations, assuming sedentary levels of activity\*.
- Because individuals' energy intakes and physical activity levels naturally vary from one day to the next, we do not expect good agreement between our estimates of intake and requirements at the individual level. However, the group mean ratio of intake to requirements should be at or above 1, if, on average, the reported intakes are a good reflection of true usual intakes in the group.

\*Institute of Medicine. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. Washington DC: National Academy Press. 2005

# Energy Intake/ Estimated Energy Expenditure:

*(assuming sedentary activity levels and weight maintenance, including only respondents with measured height and weight).*



\*Males and females are grouped together for the 1-3 and 4-8 year olds.

## Interpretation:

- Mean ratios of energy intake to estimated energy expenditure fall below 1 for women > 18 yr and men > 30 yr, suggesting some underreporting of food intakes among some adults in these age groups.
- Reported food intakes of children and adolescents, on average, appear to be consistent with their estimated energy requirements.

Note: The implications of underreporting on the estimated prevalences of nutrient inadequacy for adults are discussed in the associated technical report.

# Appropriateness of % energy from fat, protein, and carbohydrate?

## *Comparison of intakes with Acceptable Macronutrient Distribution Ranges (AMDRs)\*:*

- Proportions are within recommended levels for almost all children, adolescents, and adults.
- 23-24% of adults, 31-50 yr, consumed 35-40% of energy from fat.

Recommendation: 20-35% energy from fat.

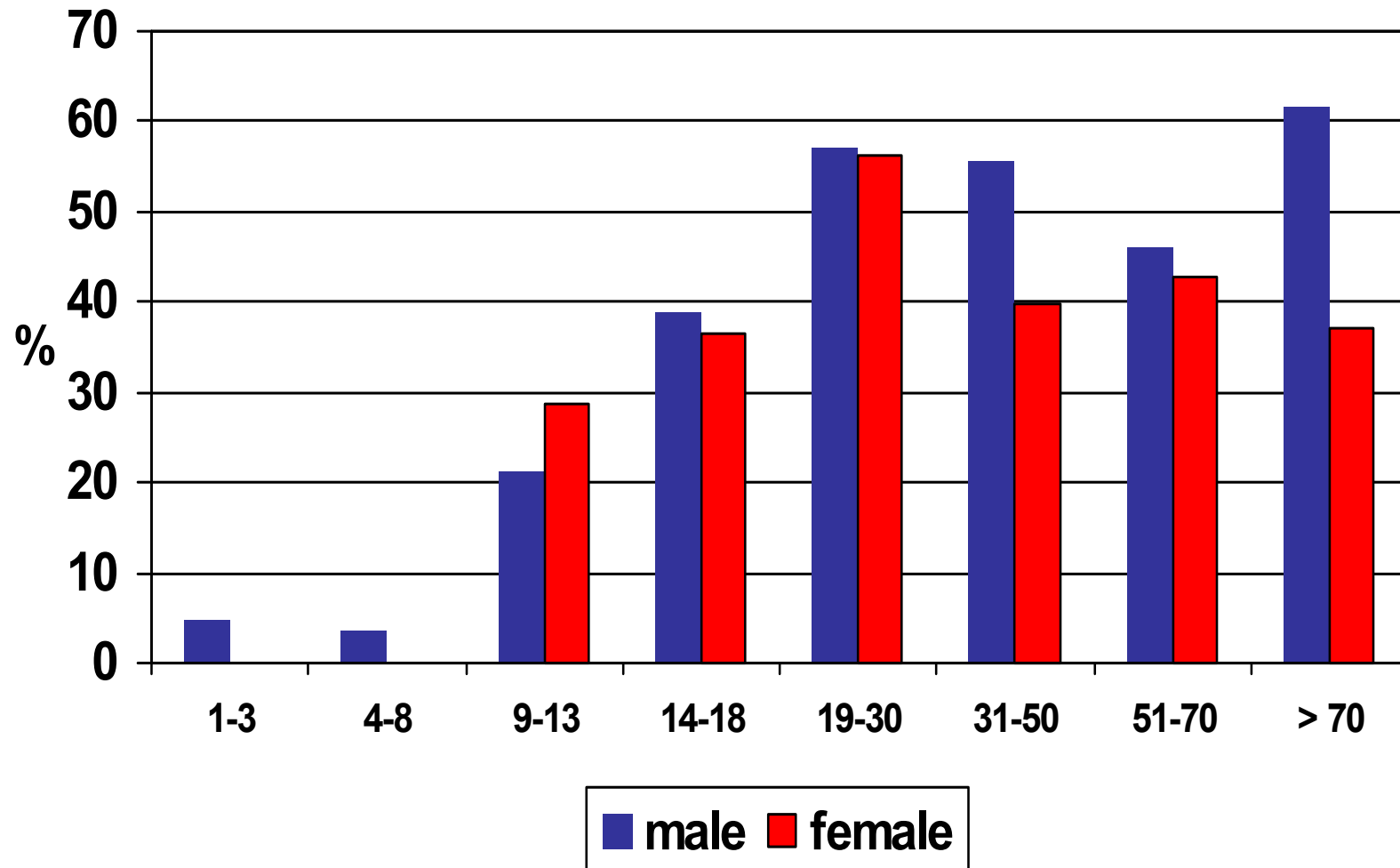
\*Institute of Medicine. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. Washington DC: National Academy Press. 2005

Adequacy of dietary intakes in relation to nutrient requirements for optimal health?

## ***Assessment of Nutrient Adequacy:***

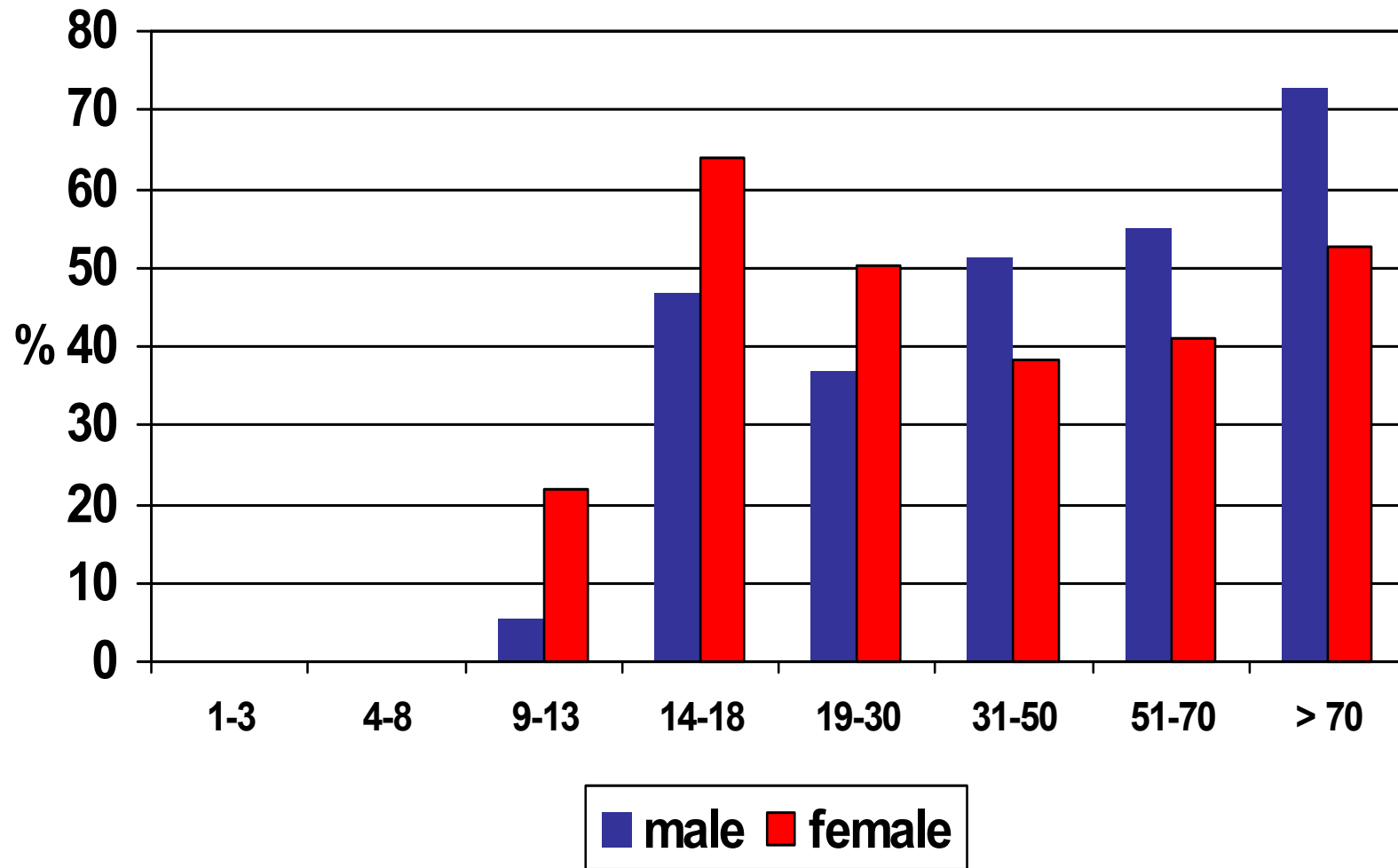
- Based on comparison of estimated distribution of usual intakes with nutrient requirement estimates from the Dietary Reference Intakes reports, published by the Institute of Medicine (1997-2005).
- Insofar as the current scientific evidence permits, these requirement estimates take into account the level of intake required to prevent nutrient deficiency and the level of intake required to optimize the nutrient's function in the body in relation to the prevention of disease and developmental disorders. Thus the prevalences of inadequacy presented here are not estimates of the prevalence of nutrient deficiency in the population.

# Prevalence of inadequate vitamin A intakes, by age and sex



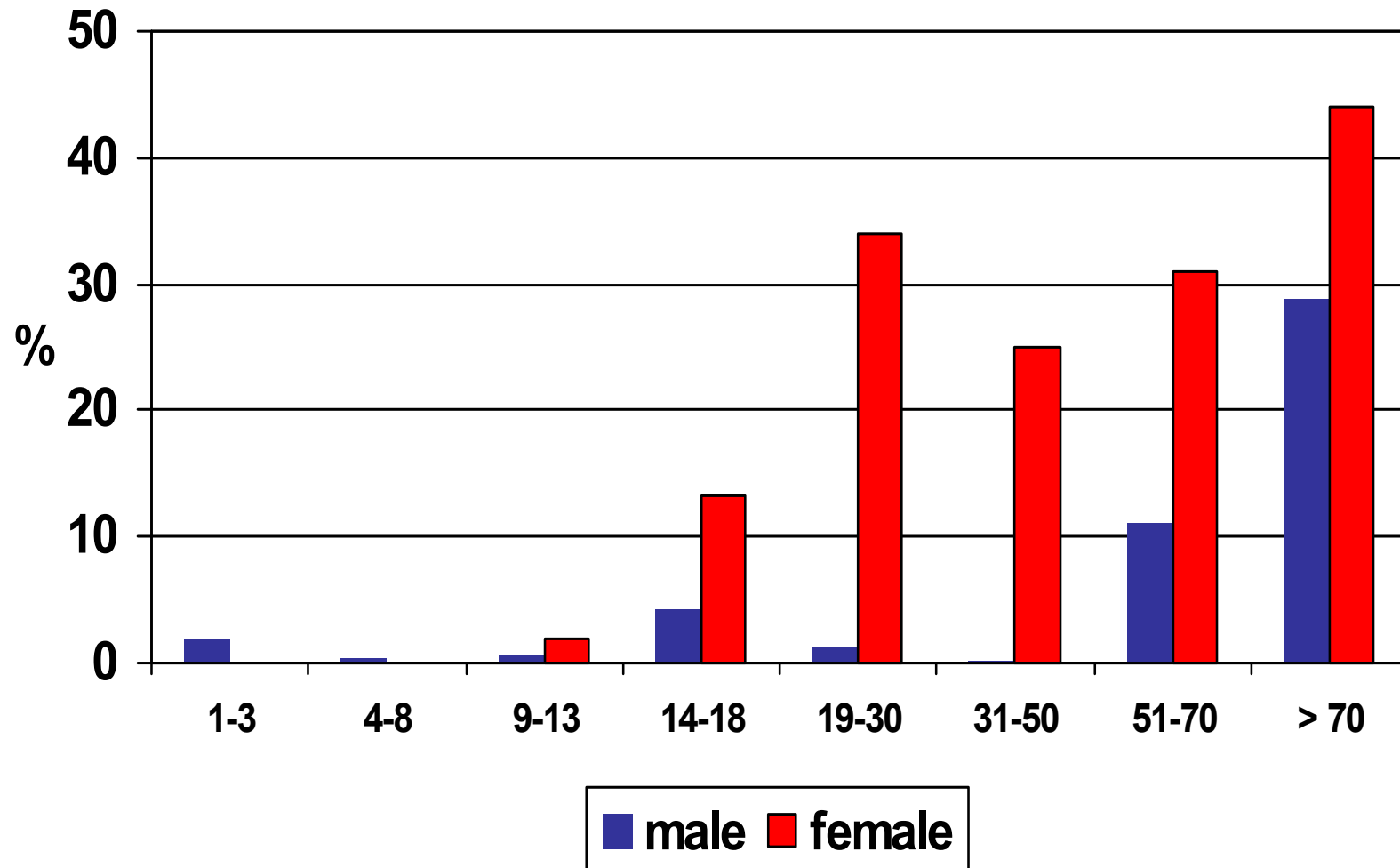
\*Males and females are grouped together for the 1-3 and 4-8 year olds.

# Prevalence of inadequate magnesium intakes, by age and sex



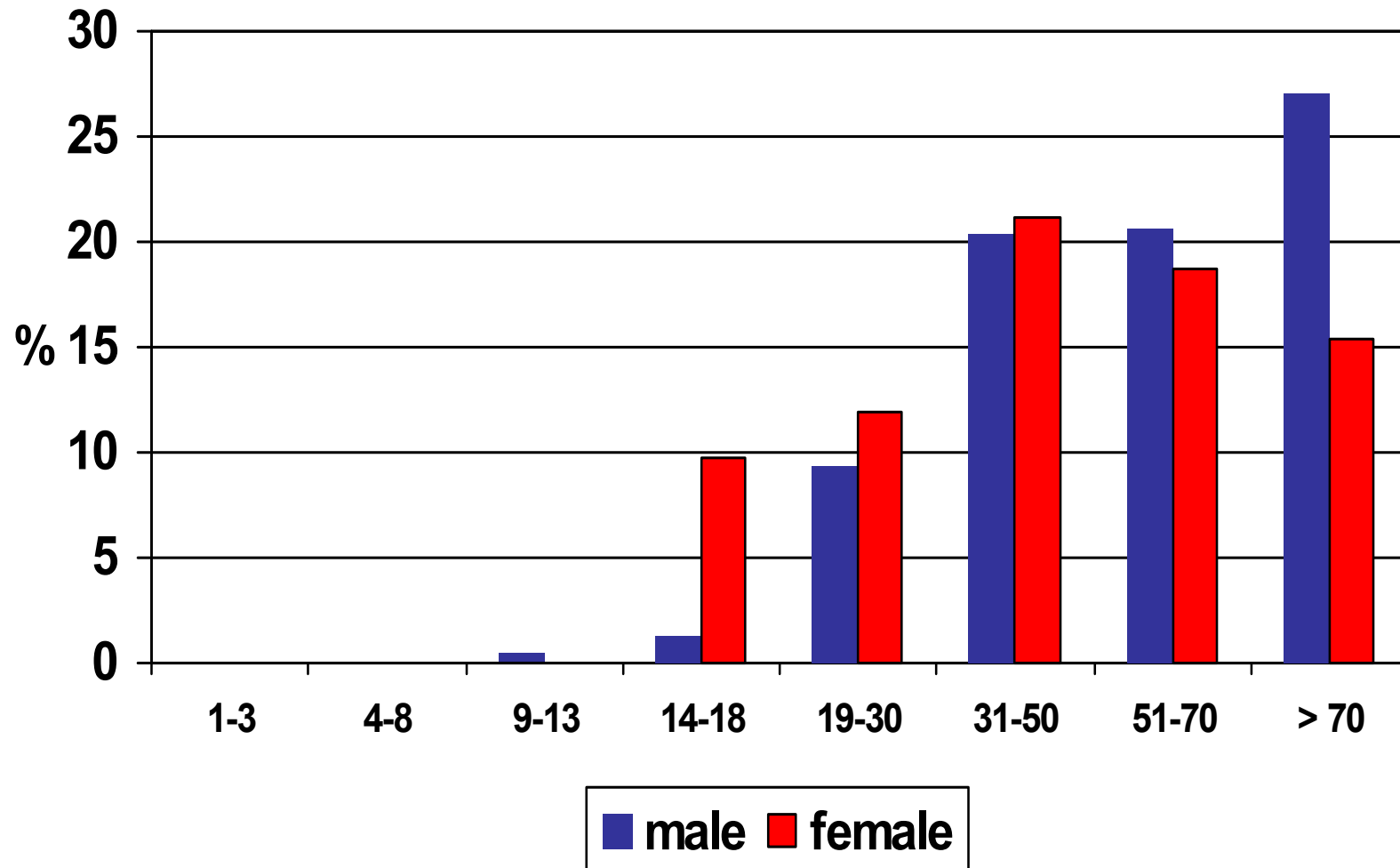
\*Males and females are grouped together for the 1-3 and 4-8 year olds.

# Prevalence of inadequate folate intakes, by age and sex



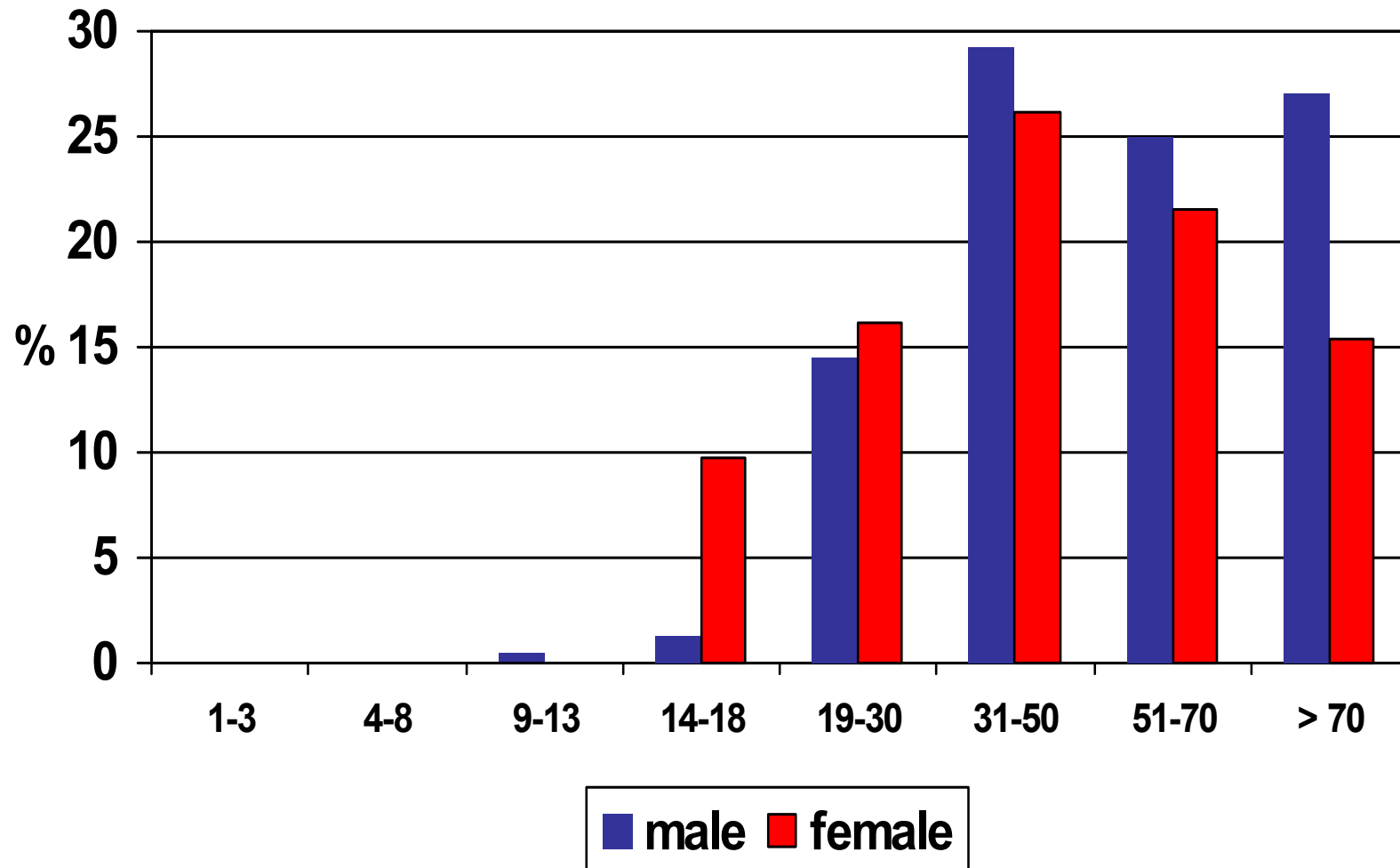
\*Males and females are grouped together for the 1-3 and 4-8 year olds.

# Prevalence of inadequate vitamin C intakes, by age and sex



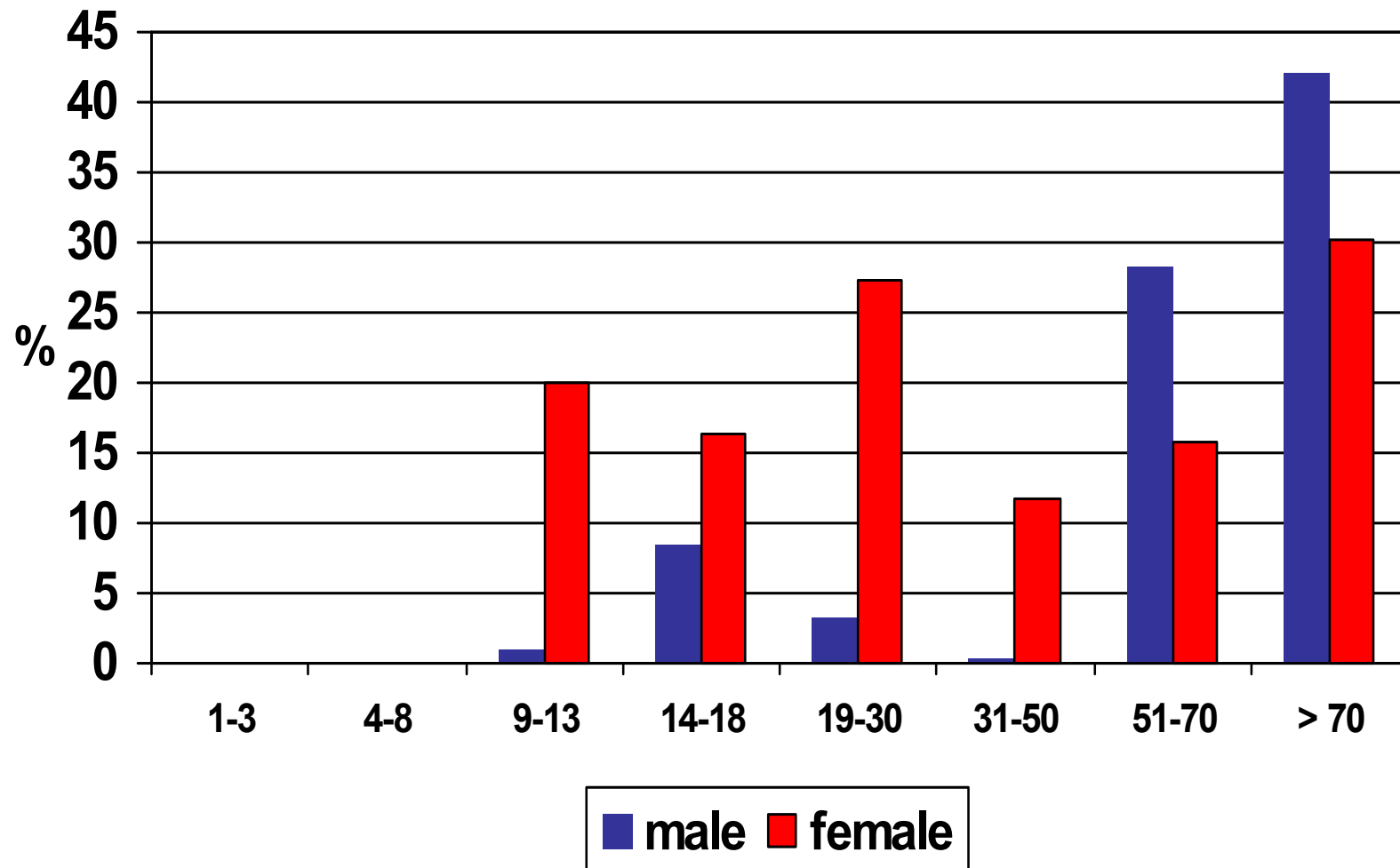
\*Males and females are grouped together for the 1-3 and 4-8 year olds.

# Prevalence of inadequate vitamin C intakes, by age and sex (adjusted for ↑ needs of smokers)



\*Males and females are grouped together for the 1-3 and 4-8 year olds.

# Prevalence of inadequate zinc intakes, by age and sex



\*Males and females are grouped together for the 1-3 and 4-8 year olds.

## Mean Usual Vitamin D Intakes vs Recommended Levels\* ( $\mu\text{g}/\text{day}$ )

<b>Age</b>	<b>Males</b>	<b>Females</b>	<b>Adequate Intake</b>
9-13	6.5	5.3	5
14-18	7.4	5.2	5
19-30	6.0	4.1	5
31-50	5.4	4.8	5
51-70	6.3	4.5	10
Over 70	5.5	5.0	15

\*Institute of Medicine. Dietary Reference Intakes for Calcium, Phosphorus, Magnesium, Vitamin D, and Fluoride. Washington DC: National Academy Press. 1997

## **Other findings of potential concern:**

- Fibre and potassium intakes well below recommendations for all age/sex groups.
- Calcium intakes well below recommendations for females > 9 yr, and males > 30 yr.
- Vitamins B6 and B12 inadequate for 15-28% of adolescent girls and women.
- Iron inadequate for 20-23% of women, 19-50 yr.
- Phosphorus intakes inadequate for 14% of boys, 9-13 yr, and 33% of girls, 9-18 yr.

## **Summary:**

- Broad spectrum of nutrient inadequacies identified among adults
- Women and the elderly at greater risk of inadequacy than men.
- Some indications of inadequacy for a few nutrients among 9-13 and 14-18 year olds
- Little evidence of problems of nutrient inadequacy among younger children.

## **Implication:**

- Need for increased consumption of vegetables, fruits, whole grains, and milk and alternatives among adults and, to a lesser extent, children and adolescents.
- Some indications of need for greater consumption of enriched breads and cereals, and meat and alternatives such as legumes and nuts, among specific subgroups.

## Caveats:

- There is likely some underreporting of dietary intakes among adults in this survey.
- The foregoing assessments of nutrient adequacy are based on nutrient intakes from food alone, but vitamin and mineral supplement use is common in the population.

**Proportion (%) of the Ontario population consuming vitamin and mineral supplements in past month (based on data from CCHS 2.2):**

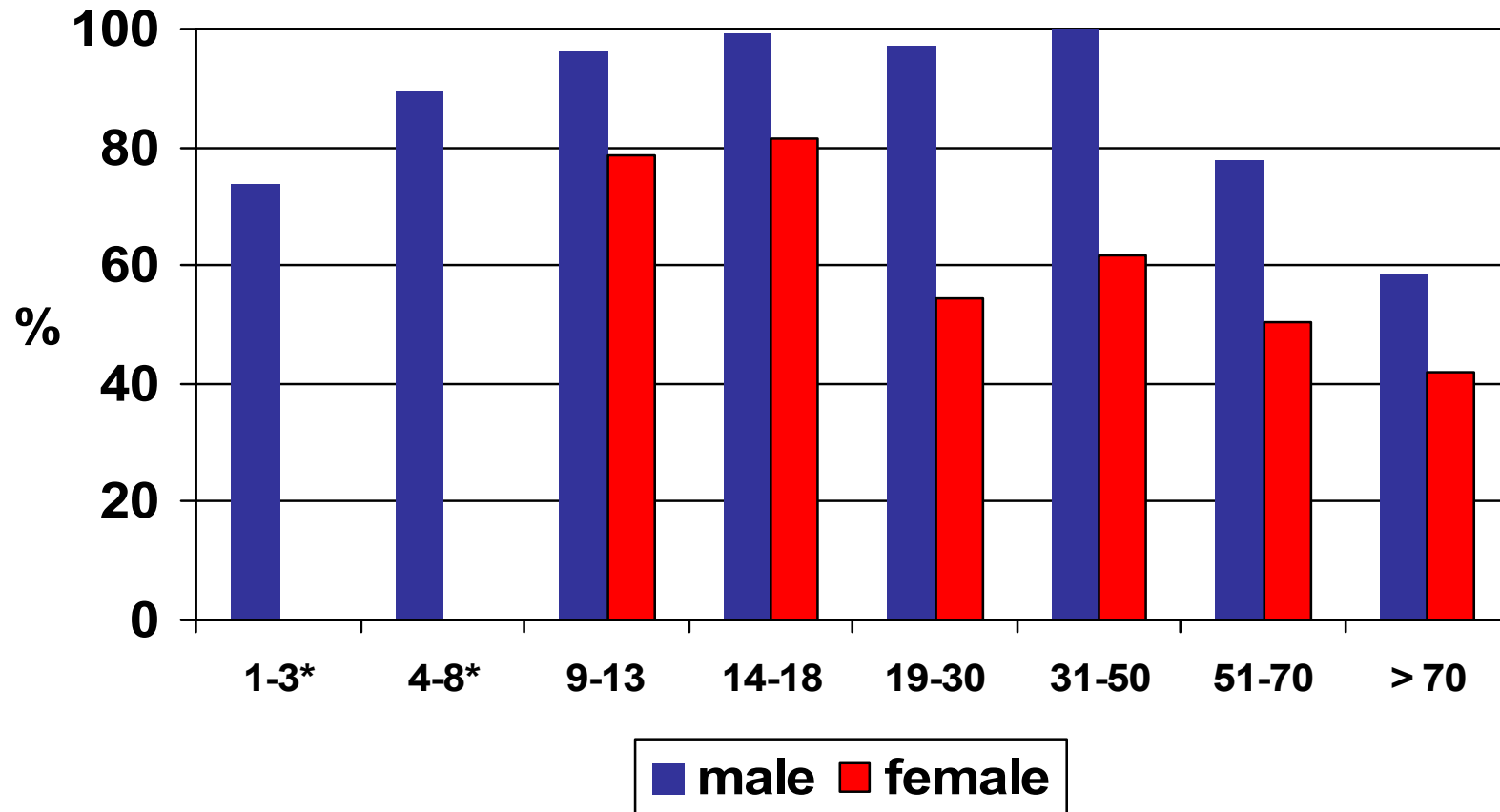
<b>Age</b>	<b>Males</b>	<b>Females</b>
1-3	----- 40 -----	-----
4-8	----- 44 -----	-----
9-13	37	32
14-18	22	30
19-30	31	39
31-50	29	50
51-70	45	61
Over 70	48	66

Source: Statistics Canada. CANSIM Table 105-2011

## **Recommendations for further analysis of CCHS 2.2:**

- Pending access to supplement data, re-assess problems of nutrient inadequacy.
- Pending access to food intake data, examine food consumption patterns that underpin problems of inadequacy and excess.

# Sodium: % with intakes above the Tolerable Upper Intake Level (Institute of Medicine, 2005)



\*Males and females are grouped together for the 1-3 and 4-8 year olds.

## Implications:

- High sodium levels across population reflect the high levels of sodium in our food supply\*.
- Need to work with representatives of the food industry (including restaurant and fast-food industries) to develop strategies to lower the sodium content of foods (i.e., Health Canada's Sodium Working Group).

\*For further analysis of this issue, see Garriguet, Health Reports 2007;18(2):47-52 and Katamay et al, Nutrition Reviews 2007;65(4):155-166.

# Household Food Insecurity:

- insecure or inadequate access to food due to financial constraints

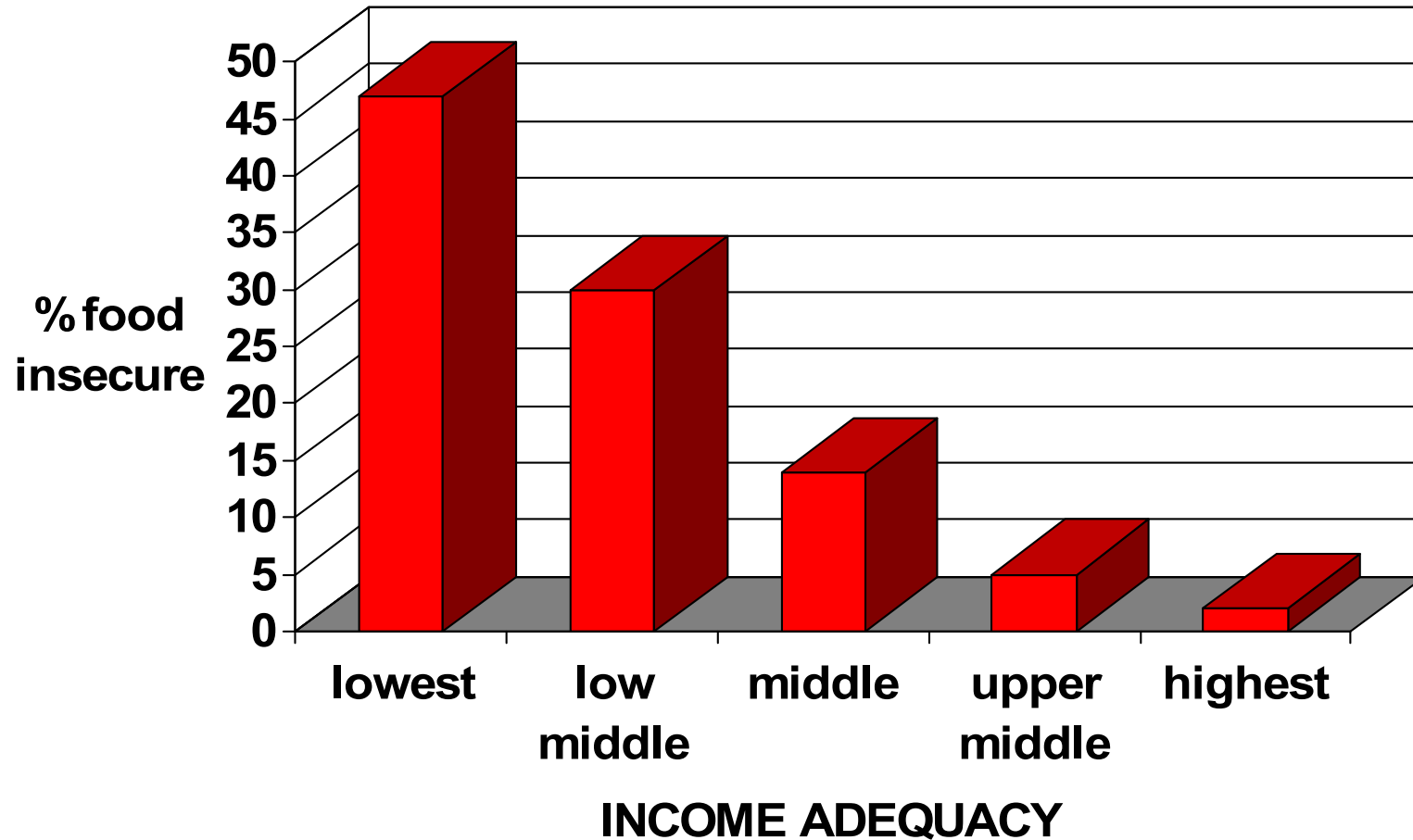
## Note:

For a complete description of the measurement of household food security in this survey, see the following report (available online): Health Canada. Canadian Community Health Survey Cycle 2.2, Nutrition (2004) – Income-Related Household Food Security in Canada. Ottawa ON: Office of Nutrition Policy and Promotion, Health Products and Food Branch, Health Canada. 2007.

## **Household Food Insecurity in Ontario:**

- 8.4% of households = 379,100 households
- Prevalence varies regionally, from 1 in 10 households in Toronto and North Ontario, to 1 in 15 households in South Western and Central East Health Regions.

**The rate of food insecurity increases as the adequacy of household income declines.**



# The adequacy of household incomes:

<i>Income adequacy</i>	<i>Household income, before taxes</i>
Lowest	< \$10,000 if 1-4 persons <\$15,000 if 5+ persons
Lower middle	\$10,000-\$14,999 if 1-2 persons \$10,000-\$19,999 if 3-4 persons \$15,000-\$29,999 if 5+ persons
Middle	\$15,000-\$29,999 if 1-2 persons \$20,000-\$39,999 if 3-4 persons \$30,000-\$59,999 if 5+persons
Upper middle	\$30,000-\$59,999 if 1-2 persons \$40,000-\$79,999 if 3-4 persons \$60,000-\$79,9999 if 5+ persons
Highest	>\$60,000 if 1-2 persons >\$80,000 if 3+ persons

↑ *food insecurity*

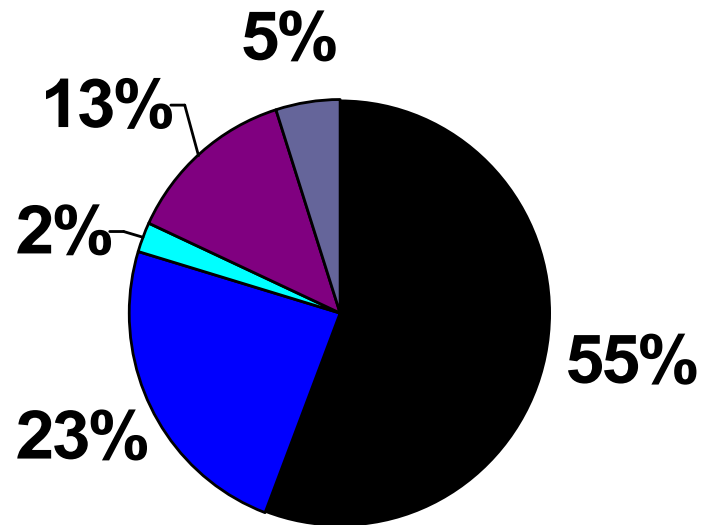
## Food insecurity is most prevalent among households on social assistance.

<i>Major source of income</i>	<i>% food insecure</i>	<i>Odds (95% CI) of reporting food insecurity*</i>
Employment	6.5	1.0
<b>Social assistance</b>	<b>61.1</b>	<b>3.69 (2.33 – 5.84)</b>
EI, Worker's Comp, CTB, child support/alimony	**	1.76 (0.63 – 4.98)
Seniors' benefits	5.1	0.44 (0.29 – 0.67)

\* Odds ratios have been adjusted for other sociodemographic variables.

\*\* Cell size too small to report results.

# Most food-insecure households in Ontario are reliant on salaries or wages.



- Salary/ Wages
- Social Assistance
- Worker's Comp, EI
- Pensions
- Other

# **Household food insecurity is associated with increased nutritional vulnerability\*.**

- Men and women in food-insecure households had significantly lower vitamin A, magnesium and calcium intakes.
- Girls, and to a lesser extent, boys 9-18 yrs had significantly lower vitamin A intakes.

\*See our Technical Report for a full description of this analysis.

## **Implications:**

### **1. more effective income-support programs:**

to ensure households reliant on social assistance or employment incomes from low-waged jobs can afford to purchase the food they need.

### **2. monitoring:**

to assess the impact of policies and programs on household food insecurity.

## **Summary of key findings:**

- Widespread nutrient inadequacies across a broad spectrum of vitamins and minerals among adults, with women and the elderly at greater risk of inadequacy than men.
- Some indications of inadequacy for a few nutrients among 9-13 and 14-18 year olds, but little evidence of nutrient inadequacies among younger children.
- Excess sodium intakes across the population.

## **Summary of key findings:**

- 60% of adults and 27% of children and adolescents were either overweight or obese.
- 8.4% of households were food insecure; this includes 61% of social assistance recipients.

## **These results suggest the need to:**

1. promote and support healthier eating patterns and more active lifestyles, especially among adults.
2. improve consumption of vegetables, fruit, whole grains, milk and alternatives, especially among adults.
3. implement more effective income-support programs to improve food security among social assistance recipients and households reliant on low-waged jobs.