

UVRA Nutrition Series

Session 4 – Dietary Choices:

How Your Food Environment Shapes Your Eating



June 22nd 2021

Greg Mulligan

mulligan@uvic.ca

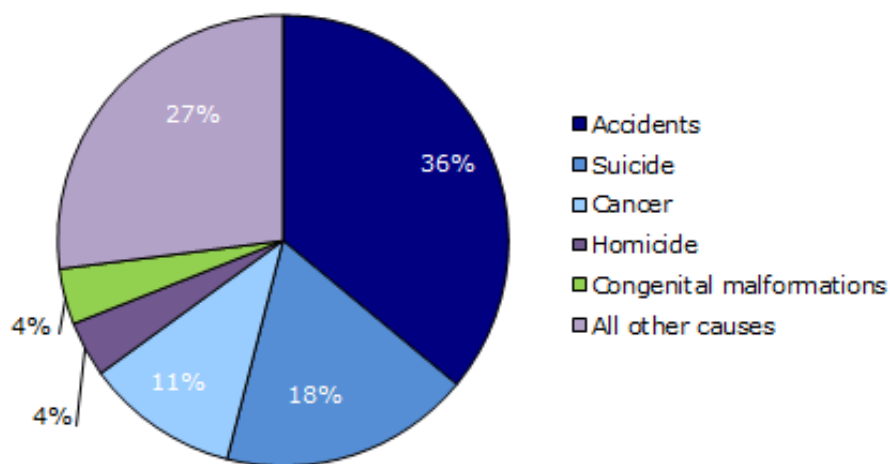
<https://onlineacademiccommunity.uvic.ca/elderacademy>

Plan for Today

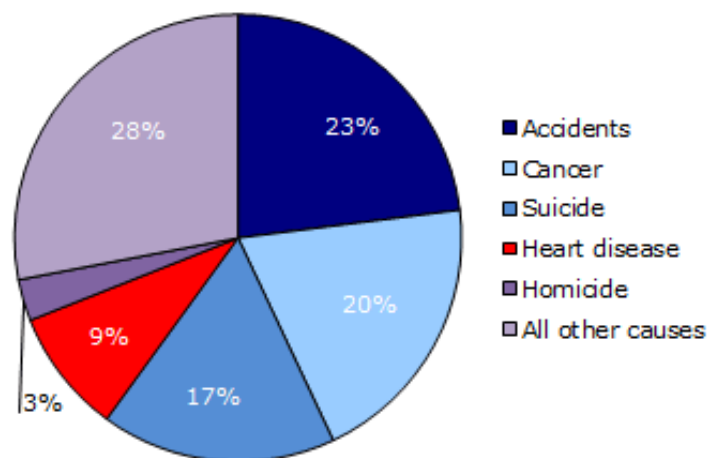
1. Is Victoria a healthful region?
2. Why do we eat unhealthy foods?
3. Why do we want people to improve their diets?
4. What factors are related to healthy food choices?
5. Food accessibility
6. Food advertizing
7. Portion distortion
8. Promoting healthful eating

Chart 1 Percentage distribution for the 5 leading causes of death in Canada, 2013

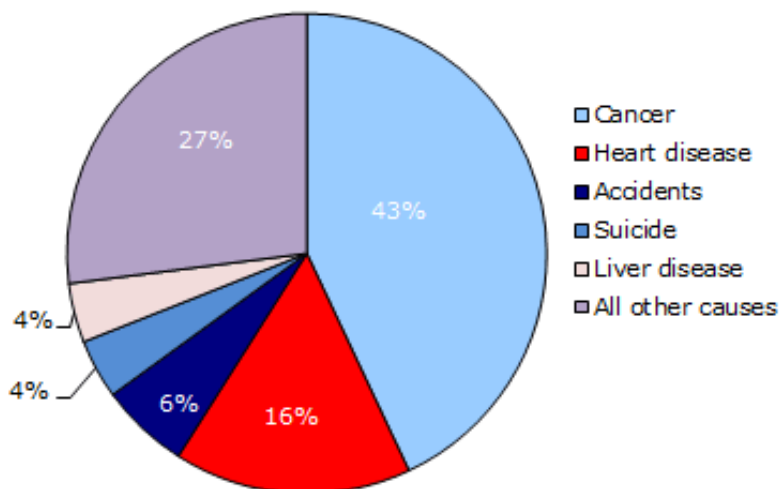
Age group: 1 to 24 years
Number of deaths = 2,622



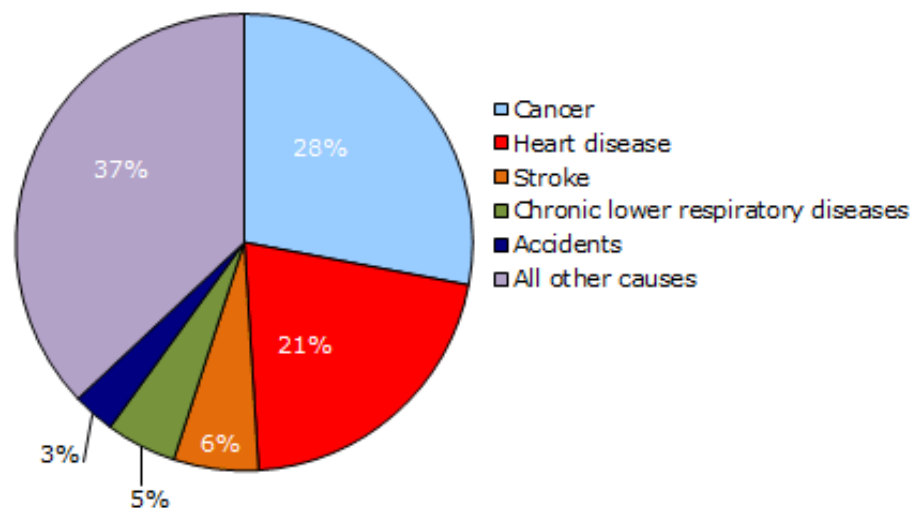
Age group: 25 to 44 years
Number of deaths = 7,409



Age group: 45 to 64 years
Number of deaths = 40,996



Age group: 65 years and over
Number of deaths = 199,427



Health in Victoria

(2013-2014) <http://www.statcan.gc.ca/pub/82-625-x/2015001/article/14197-eng.htm>

High blood pressure: 15.3%;

- similar to BC (15.6%); & similar to Canadian avg. (17.7%).

Diabetes: 4.6%;

- similar to BC (5.5%); & similar to Canadian avg. (6.6%).

Body mass index, self-reported, overweight or obese: 45.9%;

- similar to BC (47.4%); & lower than Canadian avg. (53.8%).



Health in Victoria

(2013-2014) <http://www.statcan.gc.ca/pub/82-625-x/2015001/article/14197-eng.htm>

Fruit & vegetable consumption, 5+/day: 41.5%;

- similar to British Columbia (40.2%); & Canadian avg. (40.2%).



Physical activity during leisure-time, moderately active or active: 69.4%;

- higher than BC (62.9%); & Canadian avg. (54.4%).

Heavy drinking: 20.9%;

- higher than BC (16.5%); & similar to Canadian avg. (18.4%).



Current smoker, daily or occasional: 15.6%;

- similar to BC (15.3%); & lower than Canadian avg. (18.7%).



Health in Victoria (2013-2014)

<http://www.statcan.gc.ca/pub/82-625-x/2015001/article/14197-eng.htm>

Life satisfaction, satisfied or very satisfied: 92.3%;

- similar to BC (91.6%); & to Canadian avg. (92.0%).

Sense of belonging to local community, somewhat strong or very strong: 68.7%;

- similar to BC (69.9%); & to Canadian avg. (66.2%).



Health in Victoria

(2013-2014) <http://www.statcan.gc.ca/pub/82-625-x/2015001/article/14197-eng.htm>

Perceived health, very good or excellent: 62.6%;

- higher than BC (58.0%); & similar to Canadian avg. (59.2%).

Perceived mental health, very good or excellent: 74.2%;

- higher than BC (68.4%); & similar to Canadian avg. (71.1%).

Perceived life stress, quite a lot: 20.2%;

- similar to BC (22.8%) & Canadian avg. (23.0%).





TEDMED
Talks

LAURASCHMIDT



0:28 / 13:29

Why we can't stop eating unhealthy foods

<https://www.youtube.com/watch?v=wTNIHyjip94>

Issues

How to curb the 66,000 deaths annually in Canada attributed to nutrition-related heart attacks, strokes, diabetes, & cancers?

Considerations:

- Food deserts (i.e. security/insecurity)
- Food environments: marketing & portion sizes
- Obesity
- Population Health Initiatives

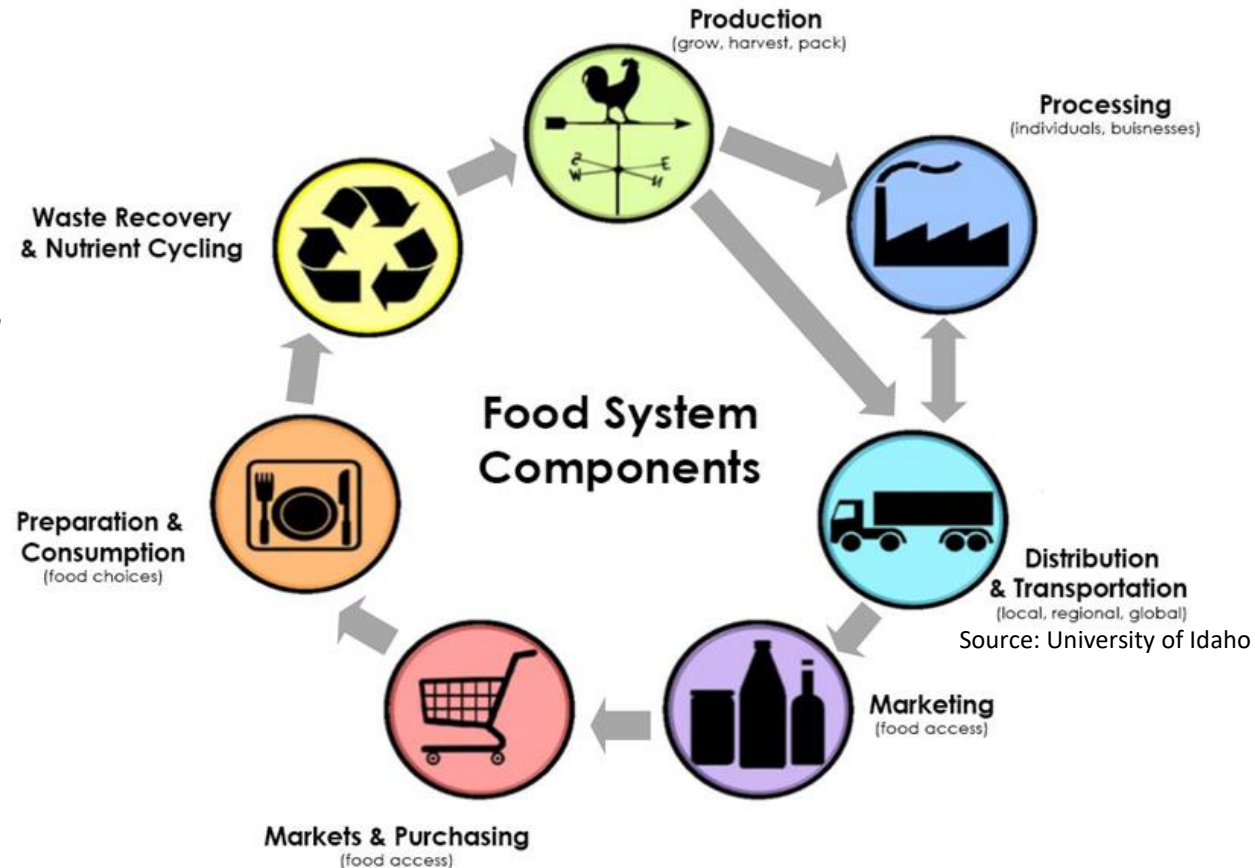


Social Determinants & Inequities Related to Healthy Eating

Direct Influences:

- Food Systems
 - Agriculture
 - Trade
 - Retail
 - Ads
 - Etc
- Social Determinants
 - Accessibility
 - Norms
 - Policies
 - Income
 - Education
 - Cultural Values

What is a community food system?



Food Security or Insecurity

Definition:

The inability to acquire or consume an adequate diet quality or sufficient quantity of food in socially acceptable ways, or the uncertainty that one will be able to do so.

Some Stats:

- **7%** of Canadians can not afford balanced (healthy) meals.
- **11.5%** either did not have enough food or not enough of the right kind of food for a healthy diet.
- Food bank reliance is on the **rise** across Canada.



FOOD BANK USE IN CANADA BY THE NUMBERS

MARCH, 2016

CANADA	
863,492	people assisted
35.6%	are children
+1.3%	change, 2015-2016
+27.8%	change, 2008-2016

YUKON, NORTHWEST TERRITORIES, NUNAVUT	
6,337	people assisted
38.2%	are children
+24.9%	change, 2015-2016
n/a	change, 2008-2016

NEWFOUNDLAND & LABRADOR	
26,366	people assisted
37.3%	are children
+5.3%	change, 2015-2016
-3.3%	change, 2008-2016

PRINCE EDWARD ISLAND	
3,370	people assisted
35.5%	are children
+6.9%	change, 2015-2016
+16.5%	change, 2008-2016

BRITISH COLUMBIA	
103,464	people assisted
32.2%	are children
+3.4%	change, 2015-2016
+32.5%	change, 2008-2016

SASKATCHEWAN	
31,395	people assisted
45.2%	are children
+17.5%	change, 2015-2016
+76.9%	change, 2008-2016

QUEBEC	
171,800	people assisted
34.5%	are children
+5.3%	change, 2015-2016
+34.7%	change, 2008-2016

ALBERTA	
79,293	people assisted
39.4%	are children
+17.6%	change, 2015-2016
+136.1%	change, 2008-2016

MANITOBA	
61,914	people assisted
42.9%	are children
-2.9%	change, 2015-2016
+53.0%	change, 2008-2016

ONTARIO	
335,944	people assisted
33.4%	are children
-6.4%	change, 2015-2016
+6.9%	change, 2008-2016

NEW BRUNSWICK	
19,769	people assisted
32.5%	are children
+4.1%	change, 2015-2016
+26.4%	change, 2008-2016

NOVA SCOTIA	
23,840	people assisted
30.4%	are children
+20.9%	change, 2015-2016
+40.9%	change, 2008-2016

MENU

FIRST CHOICE: GO HUNGRY OR GO TO THE FOOD BANK

Each and every month, hundreds of thousands of Canadians access food banks to make ends meet

863,492

people were helped by food banks in March

36%

are children and youth

28%

higher than 2008

8 of 10

provinces saw an increase

SECOND CHOICE: LOW-PAYING WORK OR INADEQUATE BENEFITS

Both working and unemployed Canadians are helped by food banks

1 in 6

households helped are currently or recently employed

18%

are on disability-related income supports

45%

are on social assistance

8%

live on a pension

THIRD CHOICE: FOOD OR RENT

The high cost of housing is a key driver of food bank use

66%

pay market-level rents

20%

live in social housing

8%

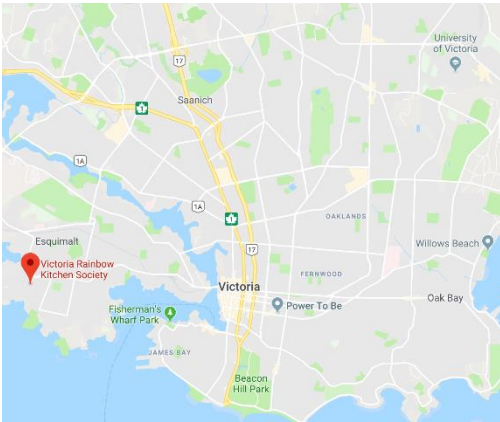
own their home

5%

are homeless

Food Banks & Community Kitchens

- Relatively new to Canada since early 1980s to address food insecurity.
- Nutritional value of products in food banks are questionable; rarely offer fresh produce.
- Community kitchens can enhance food literacy & food security, but are often limited in sustainability, scope & reach.
- <https://rainbowkitchen.ca/>



Food 'Deserts'

Walker et al., 2010. Health & Place, 16, 876-884

(<https://www.sciencedirect.com.ezproxy.library.uvic.ca/science/article/pii/S1353829210000584>)

The influence of neighbourhood (SES & physical/built environment) on food choices: *limited or no access to affordable fresh foods, produce.*

High availability & affordability of fast food, convenience, tobacco & alcohol outlet products.

WHAT IS A FOOD DESERT?

A food desert is an **urban or rural area** where the availability of **affordable, healthy, fresh food** is limited.

ACCORDING TO THE U.S. DEPARTMENT OF AGRICULTURE 25-30 MILLION AMERICANS LIVE IN FOOD DESERTS

FOOD DESERTS LEAD TO POOR DIETS, WHICH CAN CONTRIBUTE TO OBESITY, TYPE-2 DIABETES AND HEART DISEASE

SOUTHERN STATES LIKE ALABAMA, LOUISIANA AND NORTH CAROLINA ARE MOST AFFECTED DUE TO POVERTY, HEALTH AND FOOD ACCESS

IN NORTH CAROLINA 1.5 MILLION PEOPLE LIVE IN 349 FEDERALLY RECOGNIZED FOOD DESERTS

EVERY COUNTY IN ALABAMA HAS 1 NEIGHBORHOOD WITH LIMITED ACCESS TO FRESH FOODS, AFFECTING 1.8 MILLION PEOPLE

70% OF NORTH CAROLINA RESIDENTS FAVORED THE CREATION OF A HEALTHY CORNER STORE INITIATIVE

BUT THESE THREE STATES ARE MAKING PROGRESS ON LAWS THAT COULD HELP CLOSE THE GAP ON THE LACK OF ACCESS THAT MILLIONS OF THEIR RESIDENTS HAVE TO HEALTHY, FRESH FOOD.

ALABAMA
GOVERNOR SIGNED A HEALTHY FOOD FINANCING ACT GIVING INCENTIVES TO GROCERS AND RETAILERS TO EXPAND INTO FOOD DESERTS. FUNDING IS THE NEXT STEP

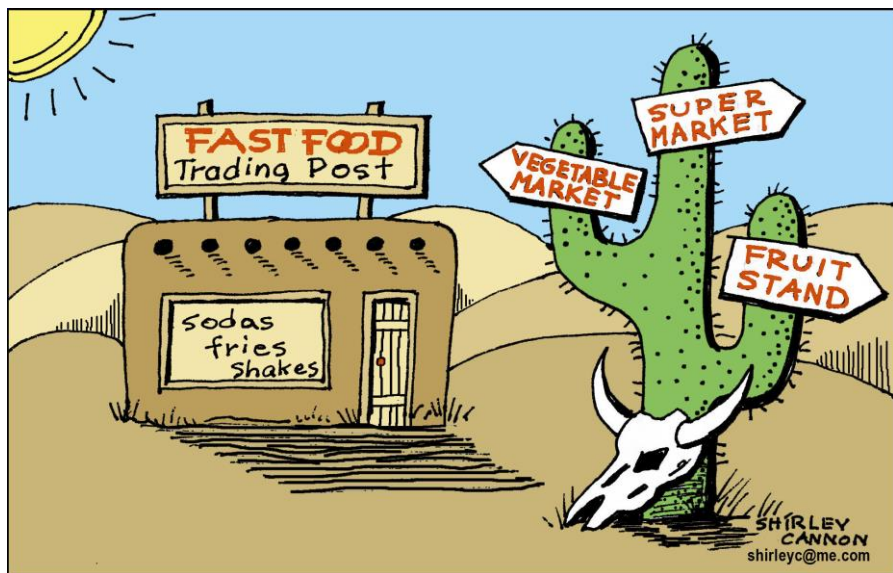
LOUISIANA
FUNDING IS CRITICAL FOR A 6-YEAR-OLD HEALTHY FOOD RETAIL ACT AIMED AT HELPING GROCERS AND FARMERS' MARKETS EXPAND INTO NEEDY AREAS

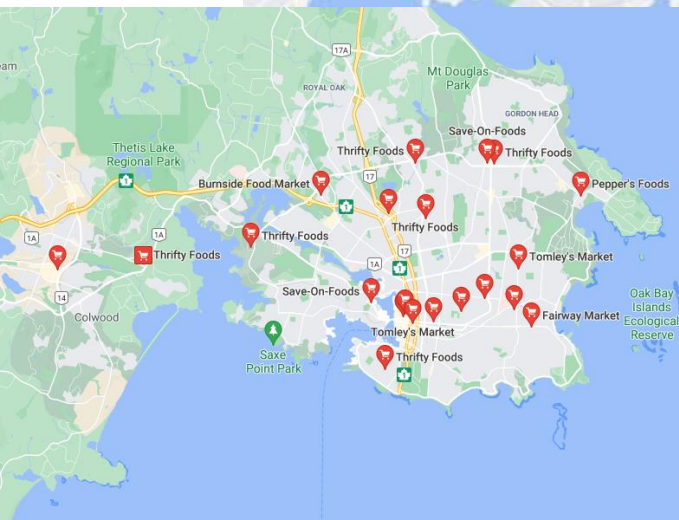
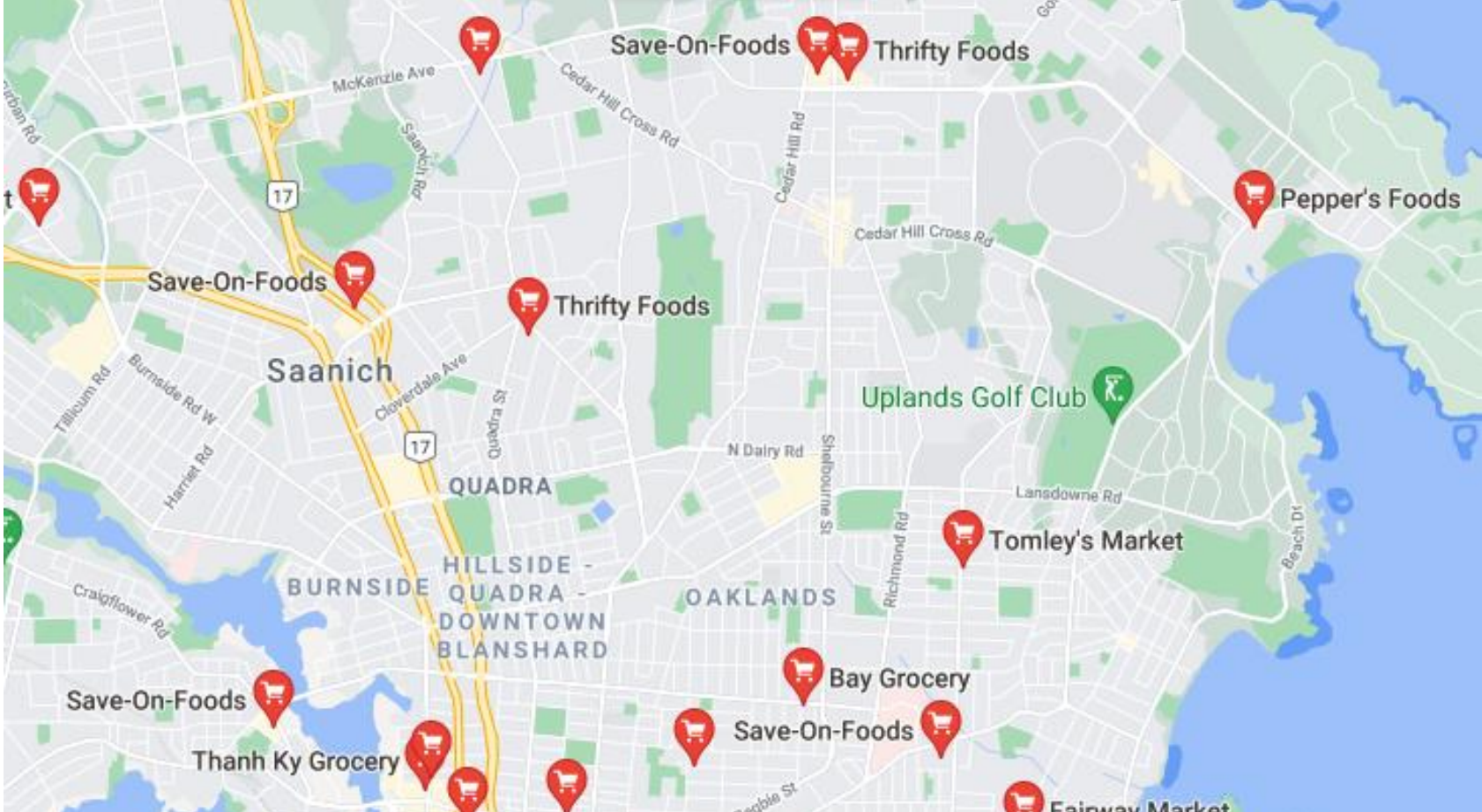
NORTH CAROLINA
LAWMAKERS ARE MULLING OVER THE HEALTHY CORNER STORE INITIATIVE - INCLUDING \$1 MILLION FOR GRANTS TO STORE OWNERS IN AREAS WITH LOW ACCESS TO HEALTHY FOODS

FOR MORE SMART EATING AND ACTIVE LIFESTYLE TIPS, VISIT HEART.ORG

Food deserts result from

- Unsafe neighbourhoods & lack of public transit/walking routes to travel to supermarkets.
- Non-chain stores, food theft, sale of brand products & smaller packaging drives up food costs.
- Sense of loyalty to small businesses in the community.





Food Environments

Influence 'choice' through price, marketing & built environment:

- <http://cerealfacts.org/>

Unhealthy checkouts: A field study in Washington DC of 30 checkout aisles – grocery, hardware, toy, electronic, convenience retailers

<https://cspinet.org/resource/fact-sheet-sugar-overload>

- 86% of non food stores offer food at check out
 - 90% of which are unhealthy: candy, gum, energy bars, chips & cookies
 - 2% are considered healthy



At the 'local' hardware store checkout line



Measured 65 cereal boxes with 86 different spokes-characters:

- 57 of the characters were directed at children, 29 toward adults.

Using trigonometry, angle & height of characters' eye gaze was measured to determine the necessary height of the consumer for he/she to make eye contact with the cereal box character.

Musicus, Tal, & Wansink (2014). Eyes in the Aisles: Why is Cap'n Crunch Looking Down at My Child? *Environment & Behavior*. doi: [10.1177/0013916514528793](https://doi.org/10.1177/0013916514528793)

Results

Inflection angle of spokes-characters' gaze on children's cereal boxes was slightly downward (-9.67°)

On adult cereal boxes was "straight ahead" (0.43°).

Children's cereals tended to be placed on the bottom two shelves of a display, while adult-oriented cereals were placed on the top two shelves.

Eye-contact is used as an advertising technique to help companies improve consumer feelings of connection to a brand.





Integrated Marketing



School Promos



Sales Points



Packaging



TV



Sporting Events



Web



Portion Size

Wansink & Van Ittersum, 2007. Journal of the American Dietetic Association, 107(7), 1103-1106. (<https://www.sciencedirect.com/science/article/pii/S000282230700747X>)

Portion size influences:

- Weight
- SES
- Profession*
- Package size
- Serving size
- Dishware size



*Even dietitians have been found to inaccurately estimate calories from large portions!

Portion Size

Wansink & Van Ittersum, 2007. Journal of the American Dietetic Association, 107(7), 1103-1106.

Portion size may also influence consumption regardless of hunger:

- Moviegoers having just finished lunch were randomly given a free medium or large size bucket of *stale* popcorn.
- Despite not being hungry & having stale popcorn, those with the large bucket ate 51% more than those with the medium buckets.

Portion size creates '*consumption norms*' & affects ability to accurately estimate calories.



Medium



Large

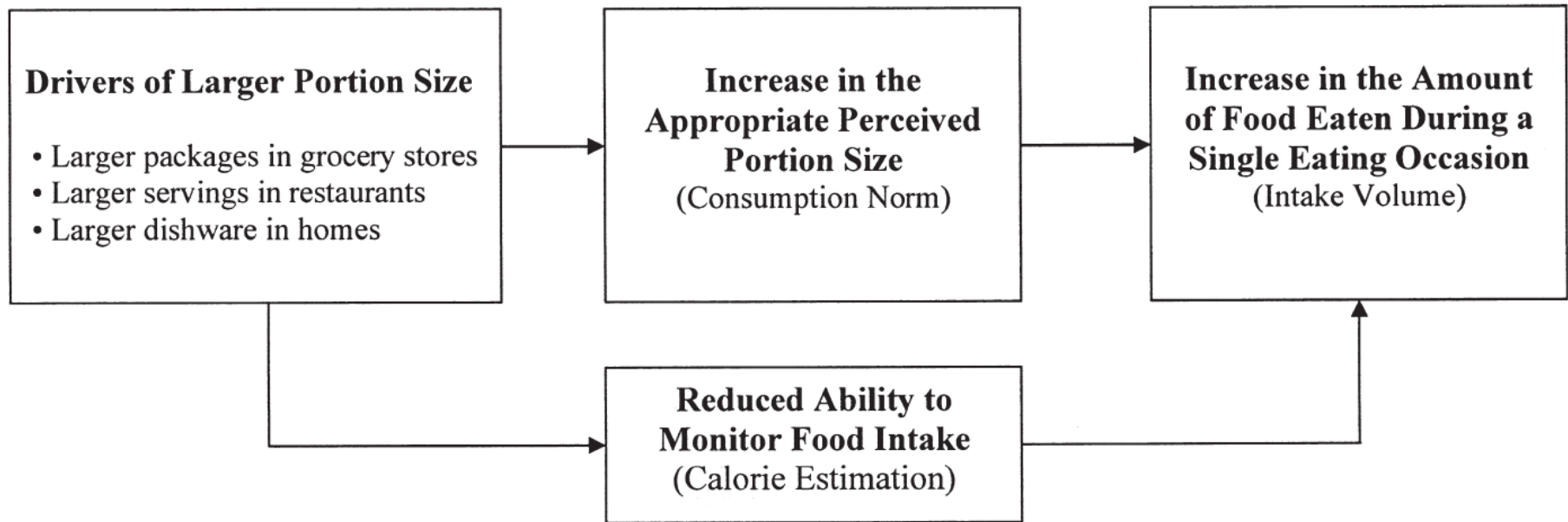


Figure. Why portion sizes lead us to overeat.

People sent home with a video

- 1 or 2 pound bag of M&M's

AND

- A medium or jumbo tub of popcorn for EACH member of the family

• Results:

- 1 pound M&M's: ate 112
- VS.
- 2 pound M&M's: ate 156
- Both ate $\frac{1}{2}$ tub of popcorn
 - medium or jumbo



or



and



or



Accessibility & Appearance Wansink et al.

Hershey Kisses Eaten By Office Staff

	Clear Bowl	Opaque Bowl
On Desk	12	8
6ft. Away	6	3

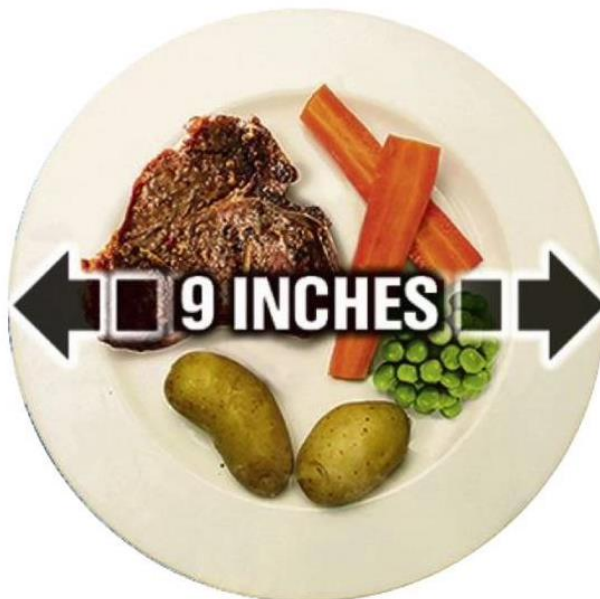
Baby Carrots in a Waiting Room (# eaten over 15 minutes)

	Large Bowl	Small Bowl
Given to Customer	12	8
Placed in Corner	6	3

Appearance Matters

- Larger portion = 30% more consumption
- Portion size is habit
- Portion size can be decreased by 25% with same satiety
- Decreasing caloric density by adding water e.g. stews, soups, etc.
- Adding fruit and Vegetables decreases caloric density but maintains volume

Rolls, B.J., Ello-Martin, J.A., Tohill, B.C. 2004
Rolls 2



1950'S



2016

Portion Distortion

<https://www.nytimes.com/interactive/2014/12/22/upshot/what-2000-calories-looks-like.html>

Quiz time!

How many servings of grain products are in a foot-long submarine sandwich bun?



Quiz time!

How many servings of grain products are in a foot-long submarine sandwich bun?

SIX! (5-12 servings/day recommended)



Portion Distortion

How many servings of meat in a ¼ pounder hamburger patty?



Portion Distortion

How many servings of meat in a ¼ pounder hamburger patty?

TWO! (2 servings per day recommended)



Portion Distortion

How many grain servings are in a spaghetti dinner at a typical 'family-style' restaurant?



Portion Distortion

How many grain servings are in a spaghetti dinner at a typical ‘family-style’ restaurant?

SIX! (5-12 servings/day recommended)

→ approximately 2000 Calories or one day worth for an average adult



Portion Sizes Change with Time

1990



5 cups or ~1.25 Liters

2020



11 cups or ~2.75 Liters

Serving Sizes in 1955 & 2020



1990



85 Calories
6.5 ounces or ~195 mL

2020



250 Calories
20 ounces or ~600 mL

Calorie Difference: 165 Calories
Typical Daily Caloric Requirement ~2000 Calories

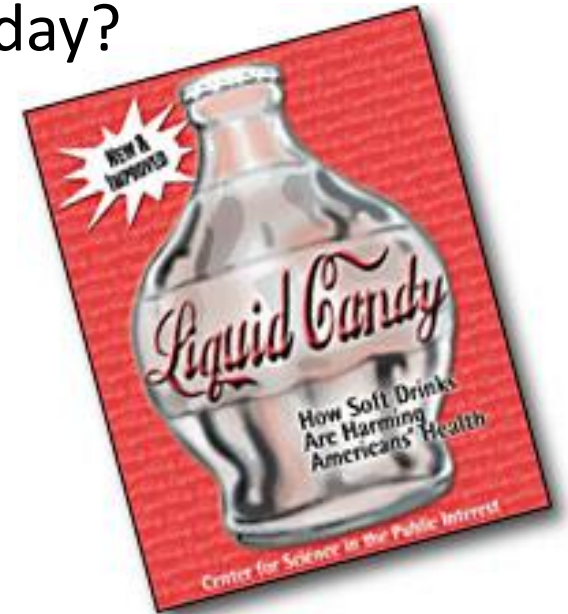
Liquid Candy

How much sugar are teens consuming in a day?

15 - 20 tsp

How about in a year?

22 - 29 kg

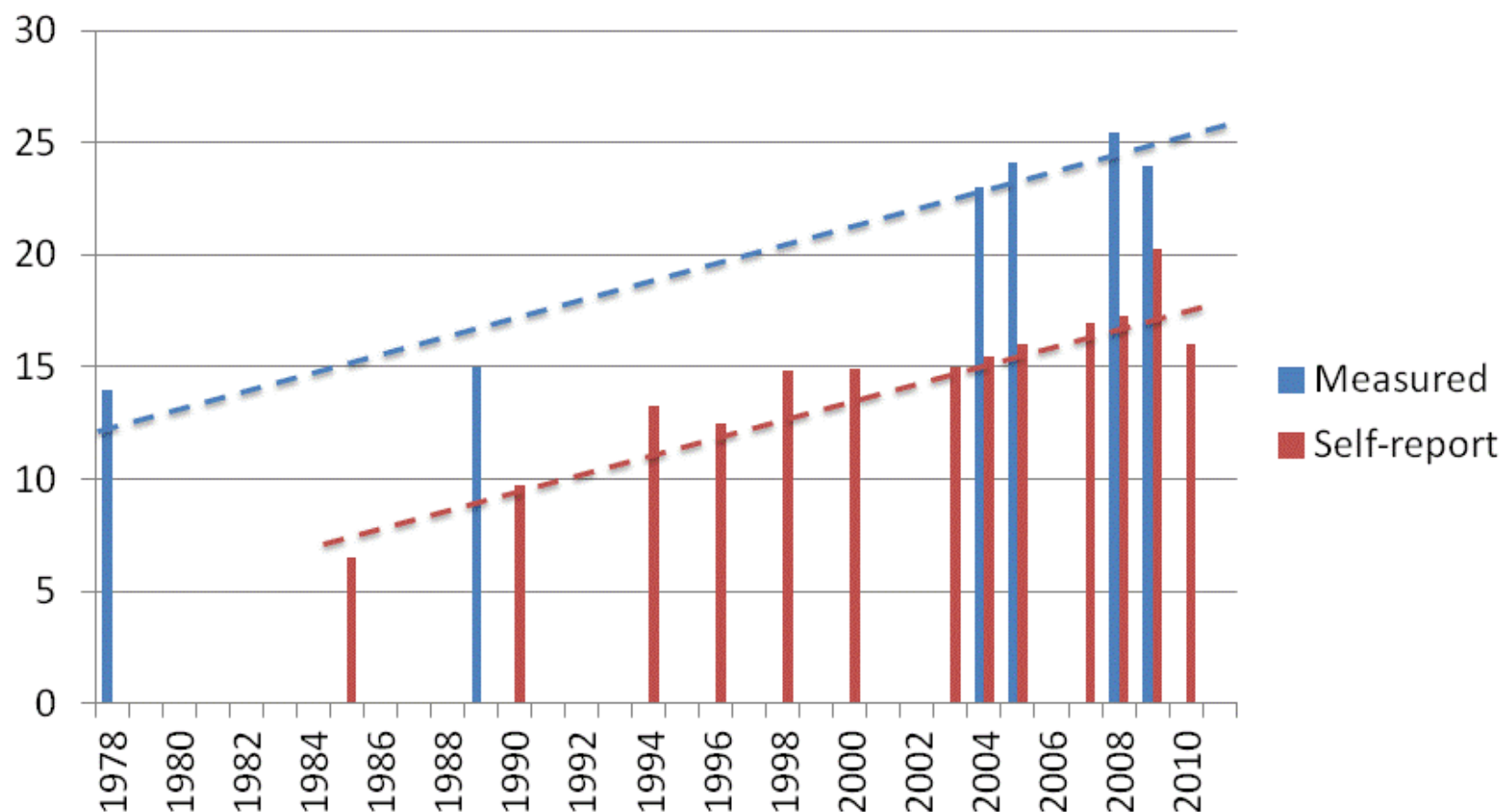


Enough calories to gain 30 pounds of body fat per year

Typical is ~22 lbs from age 20-40 years

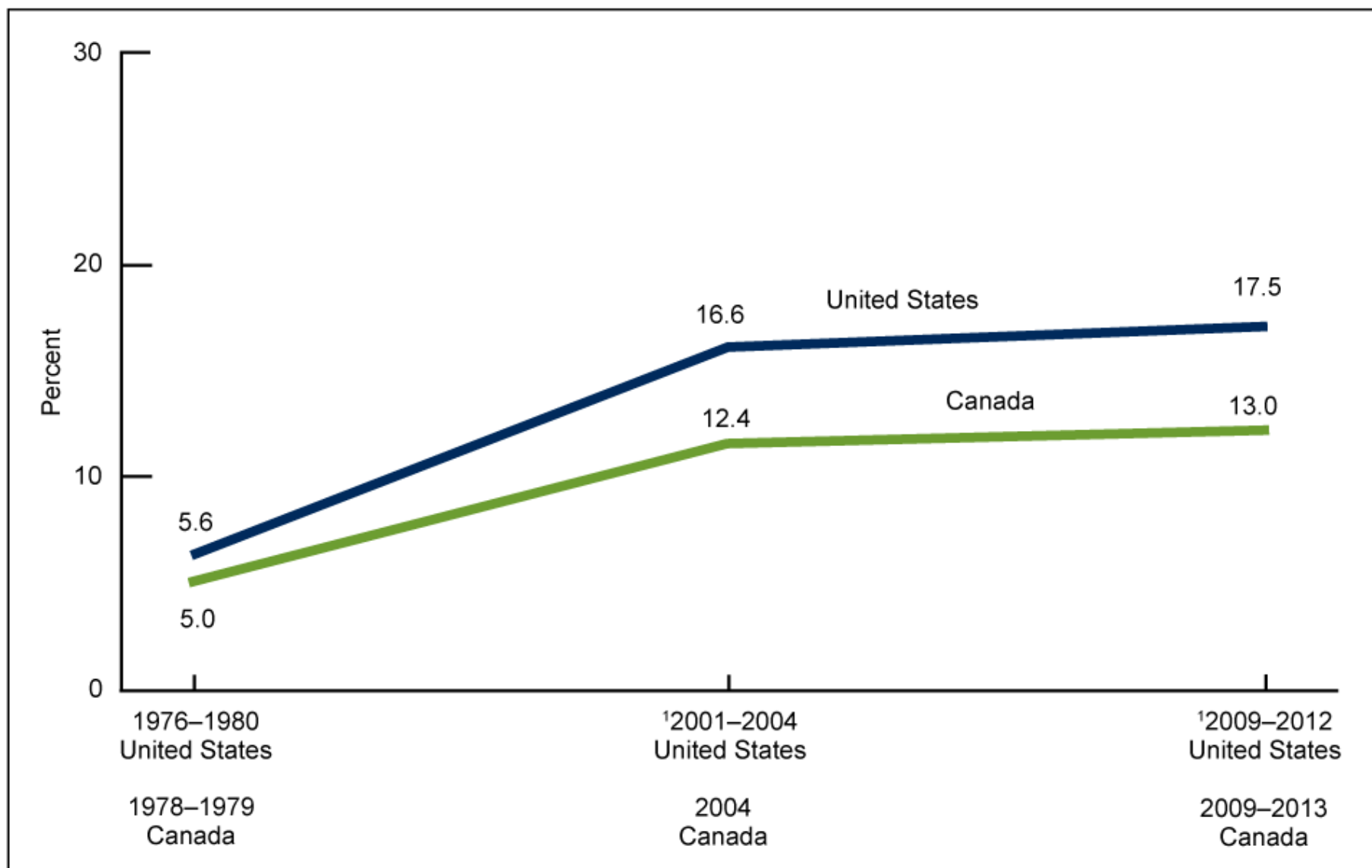
Jacobson MF, Liquid Candy CSPI, 1989

Prevalence of BMI of 30+. Canada, 1978-2010



Source: Diabetes in Canada 2011: [PHAC](#), Figure 4-3.

Figure 1. Trends in childhood obesity among children and adolescents aged 3–19 in Canada and the United States



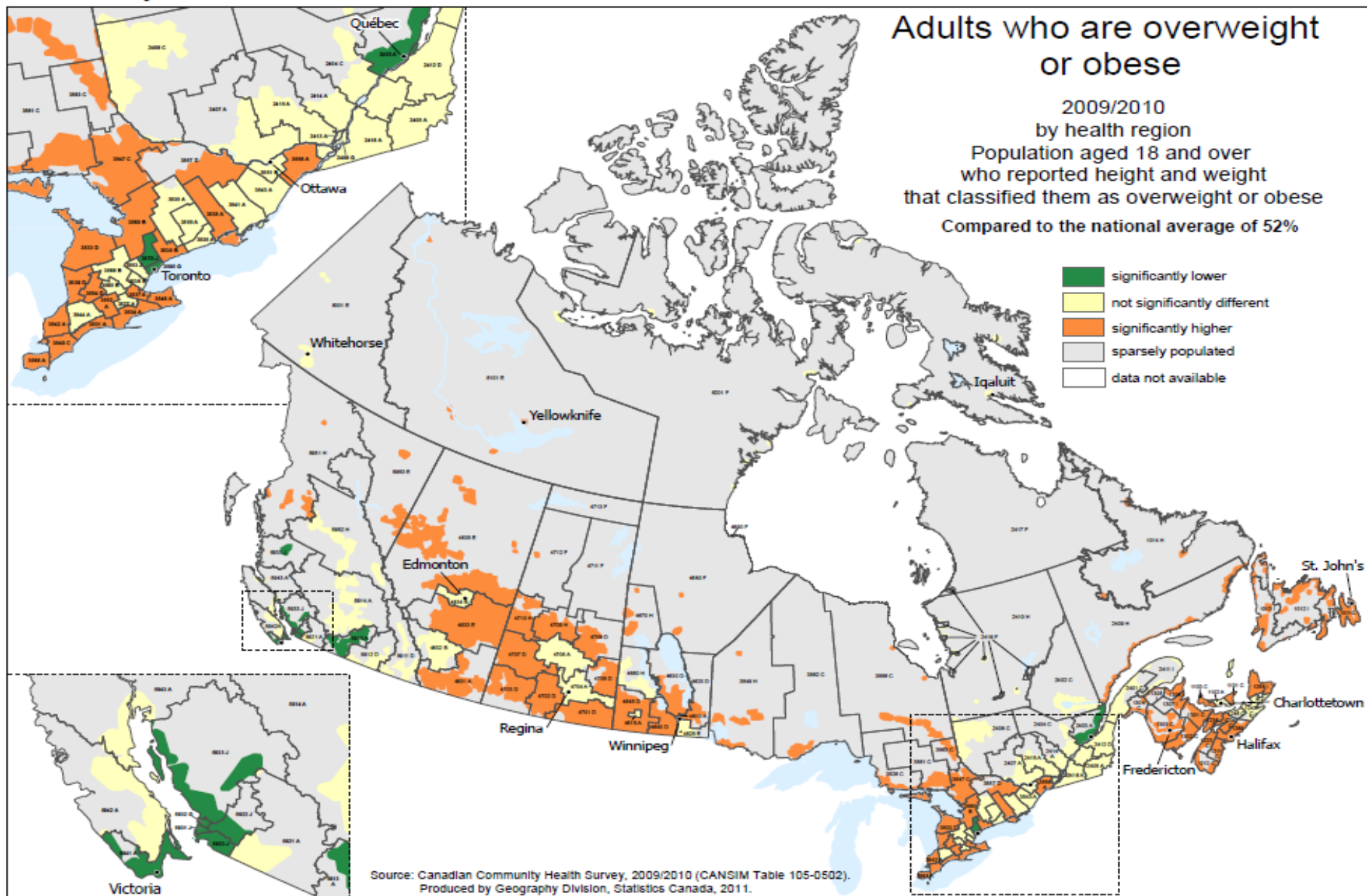
¹Statistically significant difference compared with Canada, $p < 0.001$.

NOTE: Pregnant girls are excluded.

SOURCES: CDC/NCHS, National Health and Nutrition Examination Surveys, 1976–1980, 2001–2004, and 2009–2012; Canada Health, 1978–1979; Canadian Community Health Survey—Nutrition 2004; and Canadian Health Measures Survey, 2009–2013.

Obesity: The largest observable effect

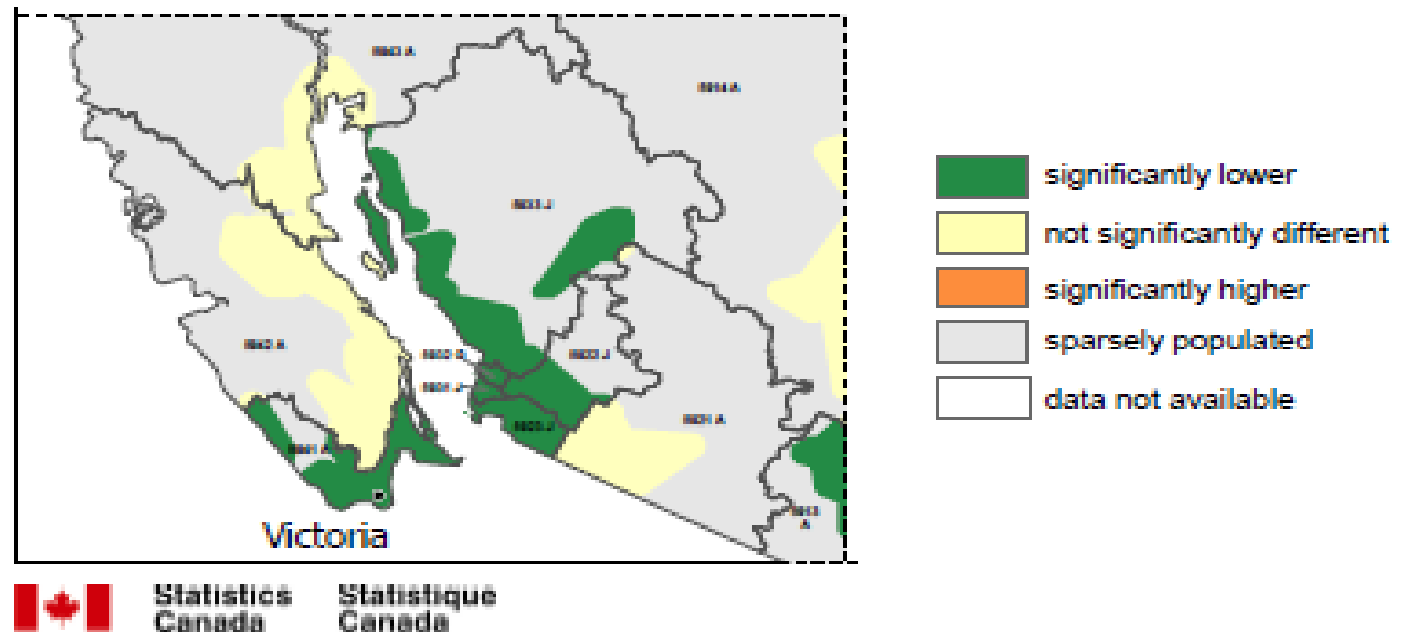
Health Indicators, catalogue no. 82-221-XWE, Vol. 2011, No.2.



Obesity & SES

Rates of obesity are higher among lower SES citizens globally than those of higher SES

- Especially more pronounced among women & children.
- Observations hold across different measures of SES: education, occupation, area of residence, income.





JAMIE OLIVER

Teach every child about food | Jamie Oliver

https://www.youtube.com/watch?v=go_QOzc79Uc

Population Health Initiatives

“Fat taxes”

The Danish experiment ([Bødker et al., 2015](#)): introduced the world's first tax on saturated fat in 2011;

- Repealed 15 months later for political more than public health concerns
 - Negative media coverage; increase in price of foods or shrinking of sizes to cover tax; industry claimed loss of jobs; intense lobbying by industry & little involvement of public health experts.

Removal of trans-fats

- June 2015 - US federal regulations have set a compliance period of 3 years to allow food manufacturers to reformulate products.
<https://www.federalregister.gov/articles/2015/06/17/2015-14883/final-determination-regarding-partially-hydrogenated-oils>



Nutrition & Menu Labelling

Until 2002, no requirement to list ingredients or nutritional information
- *optional for marketing purposes*

Issues related to health literacy;

1. Complicated
2. Back of package
3. Hard to read & decipher.

Health Canada Food Label Quiz

- <http://www.healthycanadians.gc.ca/eating-nutrition/label-etiquetage/understanding-comprendre/interactive-tools-outils-interactifs/quiz1-eng.php>

Nutrition Facts		
Per 1 cup (34 g) cereal		
Amount	Cereal	With 1/2 cup 1 % milk
% Daily Value		
Calories	110	170
Fat 0.5 g	1 %	3 %
Saturated 0 g + Trans 0 g	0 %	4 %
Cholesterol 0 mg		
Sodium 290 mg	12 %	15 %
Potassium 180 mg	5 %	11 %
Carbohydrate 27 g	9 %	11 %
Fibre 5 g	20 %	20 %
Sugars 4 g		
Starch 17 g		
Protein 4 g		
Vitamin A	0 %	8 %
Vitamin C	0 %	0 %
Calcium	2 %	15 %
Iron	30 %	30 %

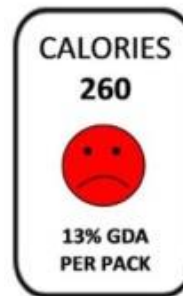
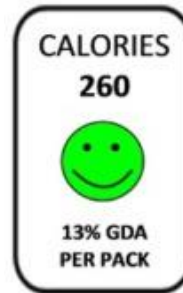
*If you were in charge of changing nutrition labels, what would you change?
What is still missing from the labels?*

How to optimize health labeling?

British Study looking at colour of labels & emoticons/emojis

Frowning emoticons had a greater impact than smiling emoticons at signalling the healthiness & tastiness of cereal bars

- A snack food often incorrectly thought to be healthier than it is.



[Vasiljevic, M., Pechey, R. & Marteau, T. M. \(2015\). Making food labels social: The impact of colour of nutritional labels and injunctive norms on perceptions and choice of snack foods.](#)

How to address inequity in healthy eating?

I. Socio-political and cultural factors:

1. Nutrition Specific Policies
2. Economic Instruments
3. Food Labelling
4. Food reformulations
5. Food relief and aid focused on healthy options
6. Societal norms (celebrity, ads, social marketing?)

Addressing inequities in healthy eating

Sharon Friel , Libby Hattersley, Laura Ford, Kerry O'Rourke

[Author Notes](#)

Health Promotion International, Volume 30, Issue suppl_2, 1 September 2015,
Pages ii77–ii88, <https://doi.org/10.1093/heapro/dav073>

Published: 28 September 2015

How to address inequity in healthy eating?

II. Daily Living

1. Physical Environment
2. Employee control
3. Information via health care providers
4. Early Childhood Education

II. Individual

1. Skill building and nutrition education
2. Public awareness campaigns

Addressing inequities in healthy eating

Sharon Friel , Libby Hattersley, Laura Ford, Kerry O'Rourke

[Author Notes](#)

Health Promotion International, Volume 30, Issue suppl_2, 1 September 2015,
Pages ii77–ii88, <https://doi.org/10.1093/heapro/dav073>

Published: 28 September 2015

Promoting Healthy Eating

Review of 112 studies that collected information about healthy eating behaviours & found that most healthy eaters did so because:

1. *A restaurant, grocery store, school cafeteria, or spouse made foods like fruits & vegetables visible & easy to reach (convenient);*
2. *Enticingly displayed (attractive);*
3. *Appears to be an obvious choice (normal).*

“It is much easier for a person to change his or her environment than to change his or her thinking”, in reference to portion size & overeating.



[Wansink, Brian \(2015\). Change Their Choice! Changing Behavior Using the CAN Approach and Activism Research. *Psychology & Marketing*, 32\(5\), 486-500. DOI: 10.1002/mar.20794](#)

USE THE C.A.N. APPROACH TO BECOME SLIM BY DESIGN



CONVENIENT

- TO SEE
- TO ORDER
- TO PICK UP
- TO CONSUME

ATTRACTIVE

- NAME
- APPEARANCE
- PRICE
- EXPECTATIONS

NORMAL

- TO ORDER
- TO PURCHASE
- TO EAT

