



# Transforming Food Environments: Are You Ready for the Challenge?

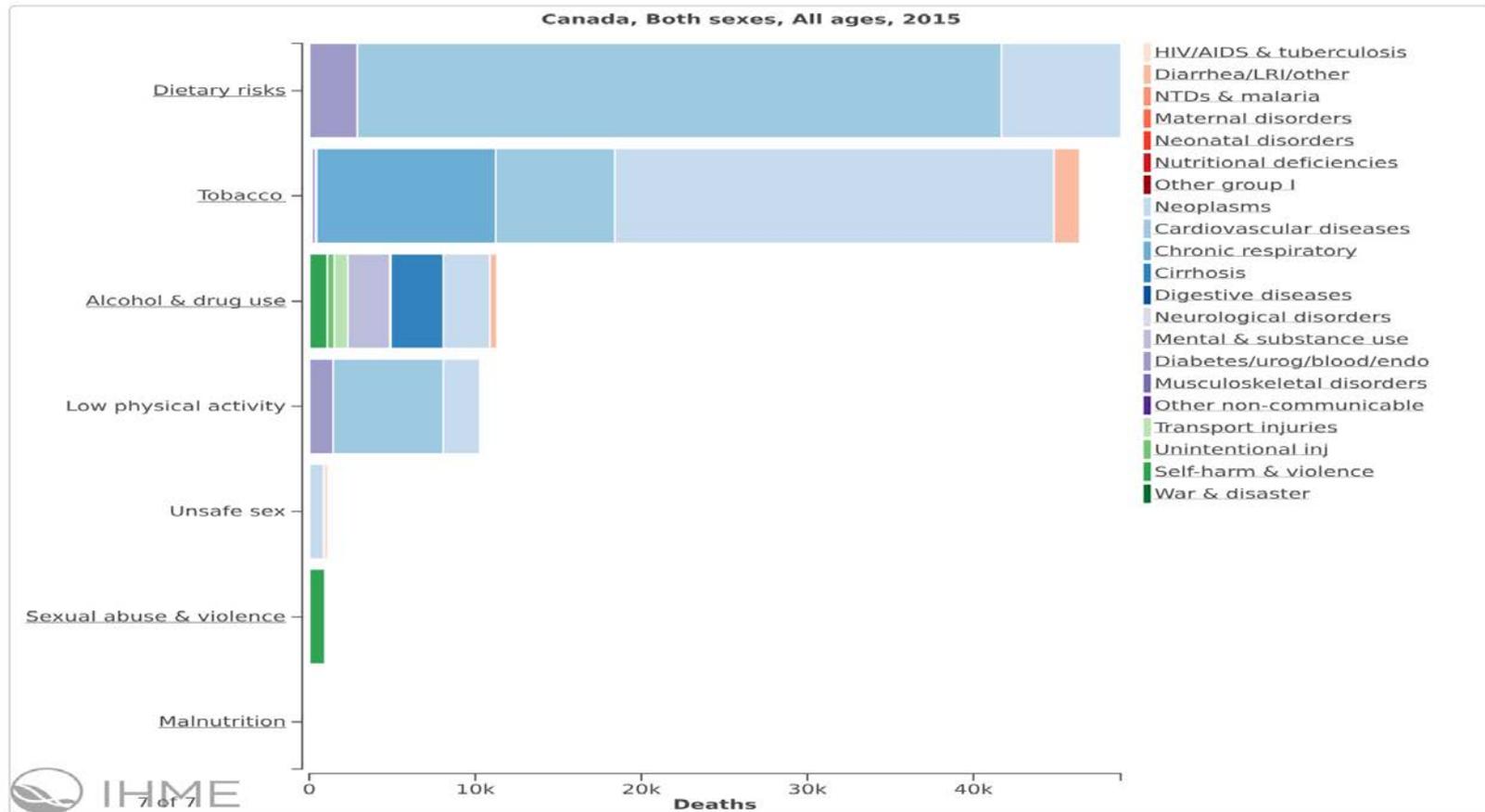
*Kim D. Raine, PhD, RD, FCAHS*

*Professor and Associate Dean  
(Research)*

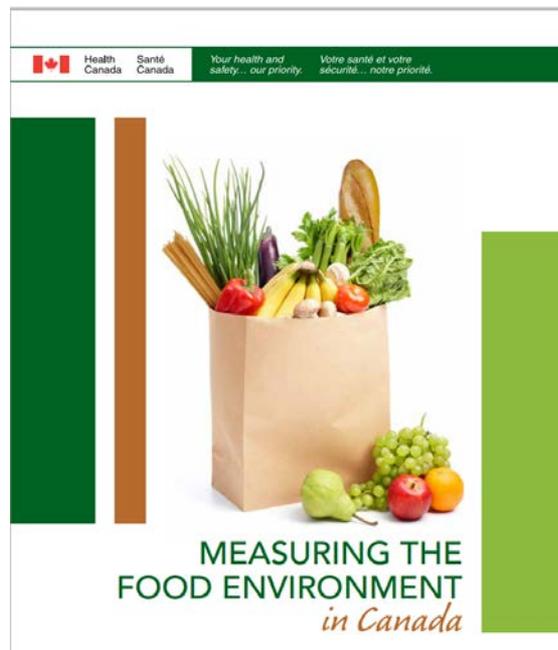
# Objectives

1. To introduce the role of food environments in shaping eating behaviour and public health status
2. To explore the potential population health impacts of a variety of interventions to change food environments at community and policy levels
3. To explore potential means of addressing healthy food options on campus

# Global Burden of Disease Study 2015: Canada, behavioural risks, deaths



# Food Environments in Canada



[www.hc-sc.gc.ca/fn-an/nutrition/pol/index-eng.php](http://www.hc-sc.gc.ca/fn-an/nutrition/pol/index-eng.php)

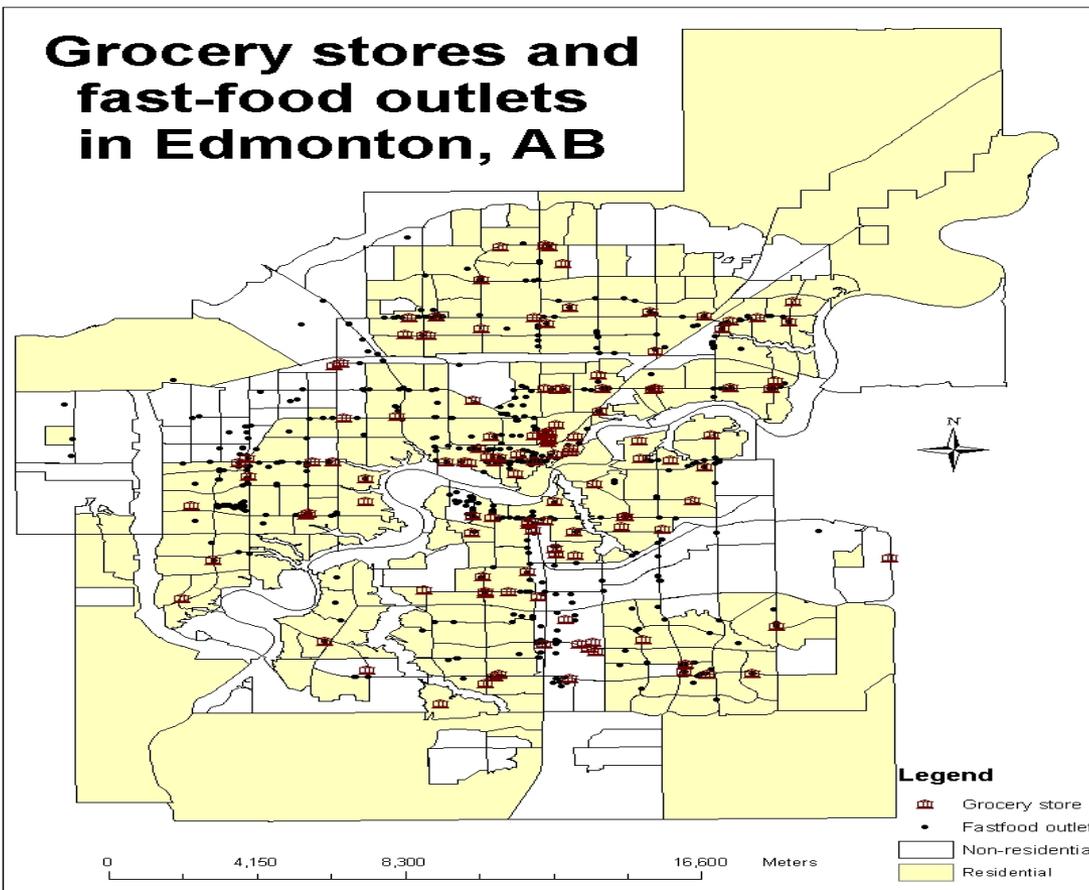
- Food environments shape the availability, affordability, and social acceptability of food and nutrition “choices”
  - association between food environments and diet-related outcomes
- Physical – access and availability
- Economic – affordability
- Communication – messages
- Social – acceptability
- Political – Rules and regulations



# Physical Environment Accessibility & Availability

- Neighbourhoods
- Stores
- **Schools**
- **Public or Community Buildings**

## Grocery stores and fast-food outlets in Edmonton, AB



Map by Vladimir Yasenovskiy

(Hemphill et al, AJHP, 2008)

## Physical Access to Food

- **Supermarkets (61)** – Healthy foods
- **Fast-food outlets (761)** – High calorie, low-nutrient foods

# Average shelf-space of fruits and vegetables vs. junk food within 1km

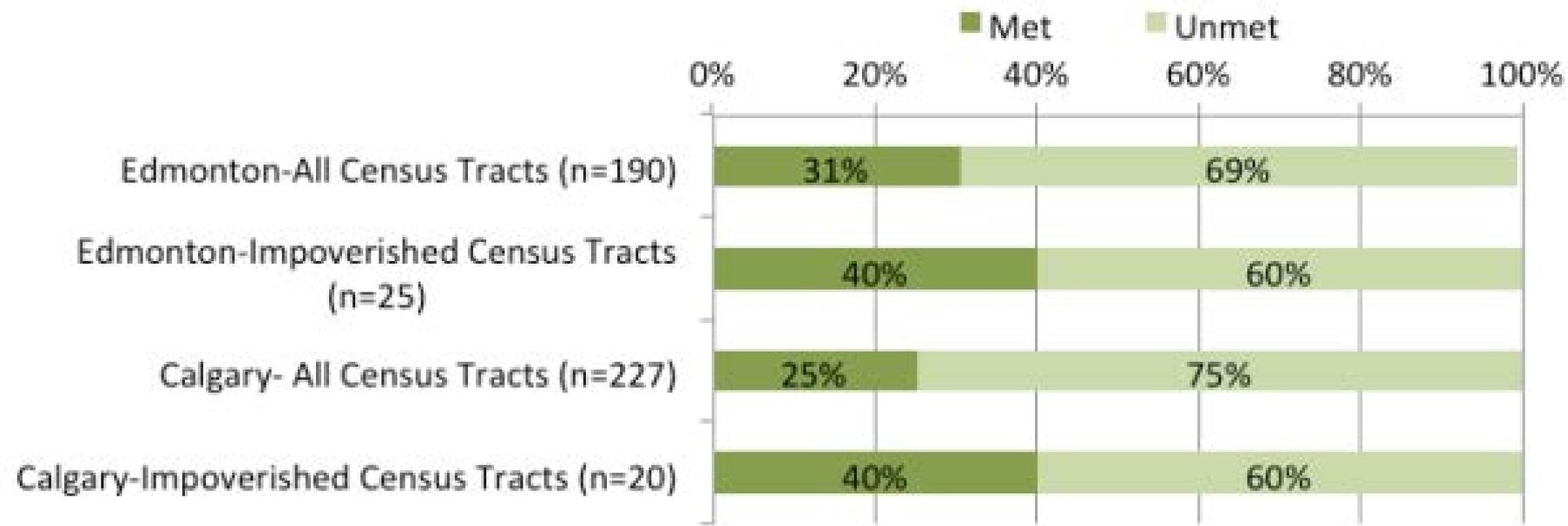


Minaker LM\*, **Raine KD**, Wild TC, Nykiforuk CIJ, Thompson ME, Frank LD.  
Objective food environments and health outcomes. *American Journal of Preventive Medicine.*  
2013; 45(3): 289-296.

$$mRFEI = 100 \times \left( \frac{\# \text{ Healthy Food Retailers}}{\# \text{ Healthy Food Retailers} + \# \text{ Unhealthy Food Retailers}} \right)$$

4

FIGURE 10. Percentage of Census tract that met the benchmark modified Retail Food Environment Index score.



Research article

Open Access

## Relation between local food environments and obesity among adults

John C Spence\*<sup>1</sup>, Nicoleta Cutumisu<sup>1</sup>, Joy Edwards<sup>2</sup>, Kim D Raine<sup>3</sup> and Karen Smoyer-Tomic<sup>4</sup>

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\* Corresponding author

Published: 18 June 2009

BMC Public Health 2009, 9:192 doi:10.1186/1471-2458-9-192

This article is available from: <http://www.biomedcentral.com/147>

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### Abstract

**Background:** Outside of the United States, evidence for associations between exposure to fast food establishments and risk for obesity among adults is limited and equivocal. The purposes of this study were to investigate whether the relative availability of different types of food retailers around people's homes was associated with obesity among adults in Edmonton, Canada, and if this association varied as a function of distance between food locations and people's homes.

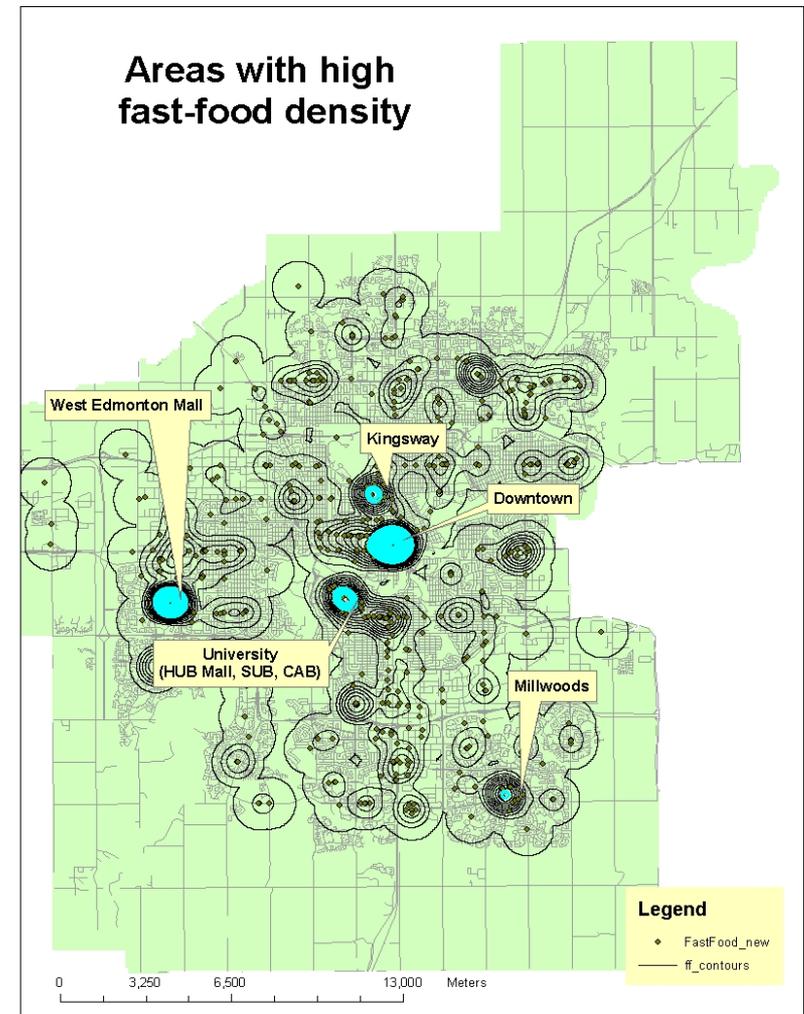
**Methods:** Data from a population health survey of 2900 adults (18 years or older) conducted in 2002 was linked with geographic measures of access to food retailers. Based upon a ratio of the number of fast-food restaurants and convenience stores to supermarkets and specialty food stores, a Retail Food Environment Index (RFEI) was calculated for 800 m and 1600 m buffers around people's homes. In a series of logistic regressions, associations between the RFEI and the level of obesity among adults were examined.

**Results:** The median RFEI for adults in Edmonton was 4.00 within an 800 m buffer around their residence and 6.46 within a 1600 m buffer around their residence. Approximately 14% of the respondents were classified as being obese. The odds of a resident being obese were significantly lower (OR = 0.75, 95%CI 0.59 – 0.95) if they lived in an area with the lowest RFEI (below 3.0) in comparison to the highest RFEI (5.0 and above). These associations existed regardless of the covariates included in the model. No significant associations were observed between RFEI within a 1600 m buffer of the home and obesity.

**Conclusion:** The lower the ratio of fast-food restaurants and convenience stores to grocery stores and produce vendors near people's homes, the lower the odds of being obese. Thus the proximity of the obesogenic environment to individuals appears to be an important factor in the risk for obesity.

# Access to Fast Food

- People living in low income neighbourhoods are exposed to 2.7 times more fast food outlets than those living in middle or upper income neighbourhoods (Hemphill et al, AJHP, 2008)

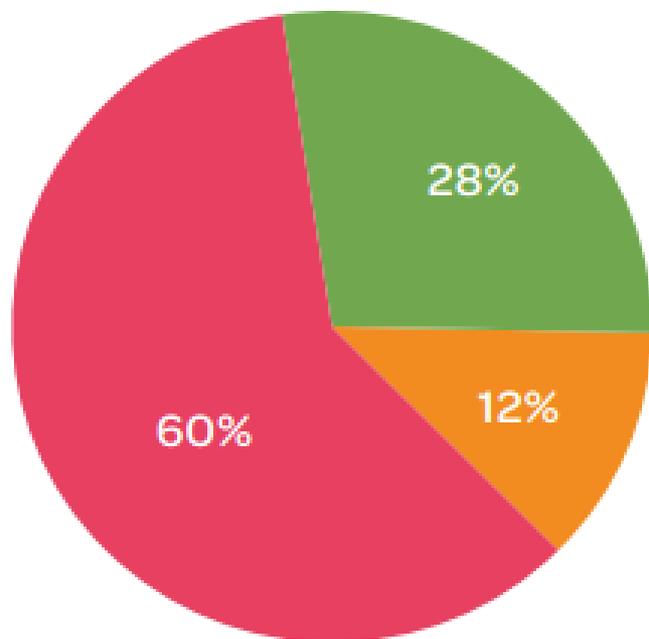


# Community Facilities (Recreation)



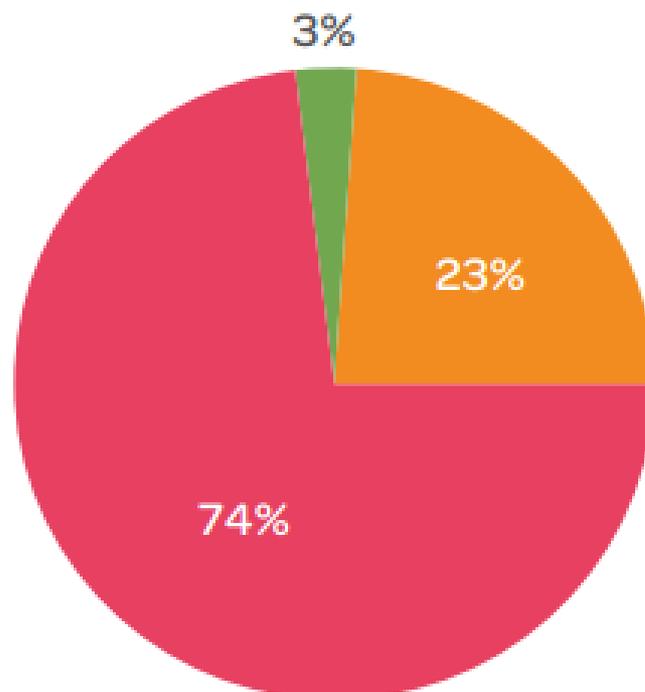


FIGURE 8: Healthfulness of beverages (n=263) sold in concession in recreation facilities in Alberta



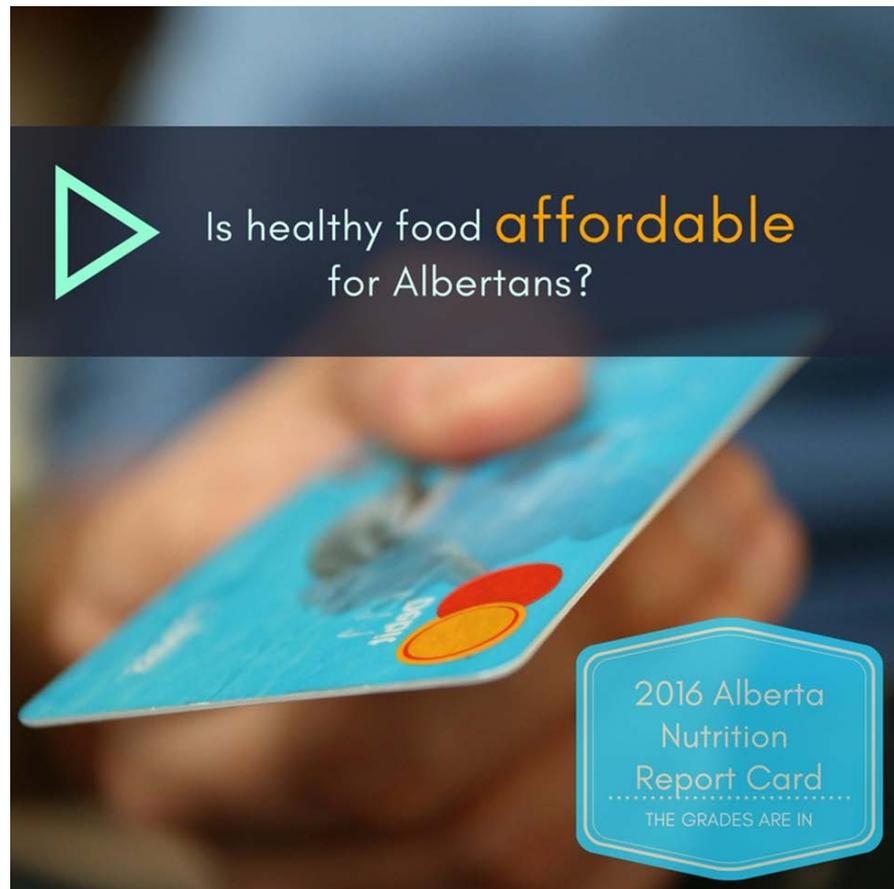
- Choose Most Often
- Choose Sometimes
- Choose Least

FIGURE 9: Healthfulness of foods (n=147) sold in concession in recreation facilities in Alberta



- Choose Most Often
- Choose Sometimes
- Choose Least

# Economic Environment





# AHS Affordability of Healthy Eating Report



# Food Affordability

(Leia Minaker MSc thesis)

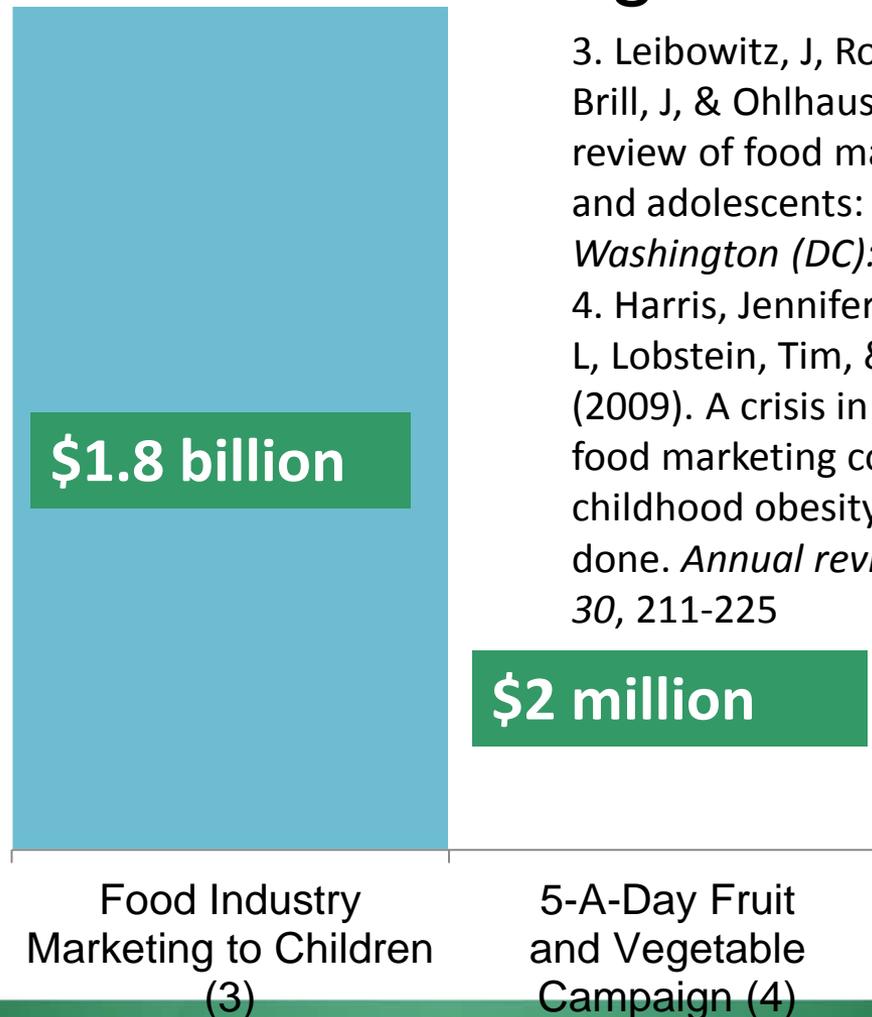
Food outlet comparison of mean energy cost (\$Cdn/100kcal) of typical foods

	Asian	Burger	Cafeteria	Coffee	Pizza	Sandwich	Sit-Down	Smoothies
Asian	<b>0.93</b>	NSD						
Burger		<b>0.65</b>	p=0.002	NSD	NSD	p=0.045	NSD	p=0.025
Cafeteria			<b>1.52</b>	p=0.000	NSD	NSD	NSD	NSD
Coffee				<b>0.60</b>	NSD	p=0.014	NSD	p=0.012
Pizza					<b>0.90</b>	NSD	NSD	NSD
Sandwich						<b>1.20</b>	NSD	NSD
Sit-Down							<b>1.02</b>	NSD
Smoothies								<b>1.51</b>

Cheapest calories: Box of 12 donuts (\$0.18 per 100kcal)

Most Expensive: salad greens (cafeteria) (\$9.78/100kcal)

# Communication Environment: Where do our Food and Nutrition Messages Come From?



3. Leibowitz, J, Rosch, JT, Ramirez, E, Brill, J, & Ohlhausen, M. (2012). A review of food marketing to children and adolescents: follow-up report. *Washington (DC): US FTC.*

4. Harris, Jennifer L, Pomeranz, Jennifer L, Lobstein, Tim, & Brownell, Kelly D. (2009). A crisis in the marketplace: how food marketing contributes to childhood obesity and what can be done. *Annual review of public health, 30, 211-225*

# Messages on Campus

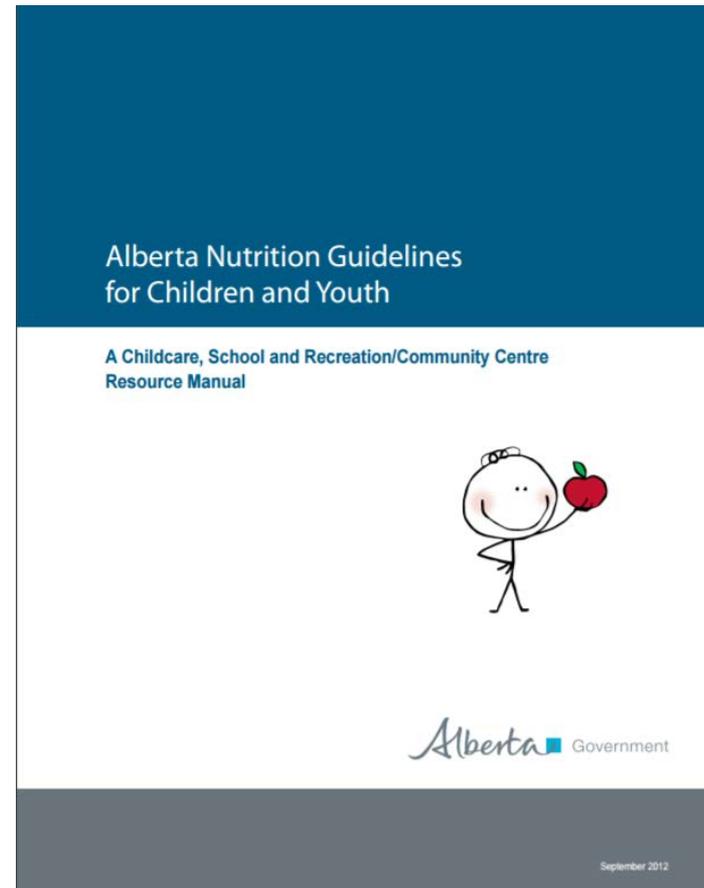
Minaker, Raine & Cash

Can J Pub Health 2009;100(6):421-25.

**Table 3.** Number and Proportion of Different Advertisement Types\* by Type of Outlet

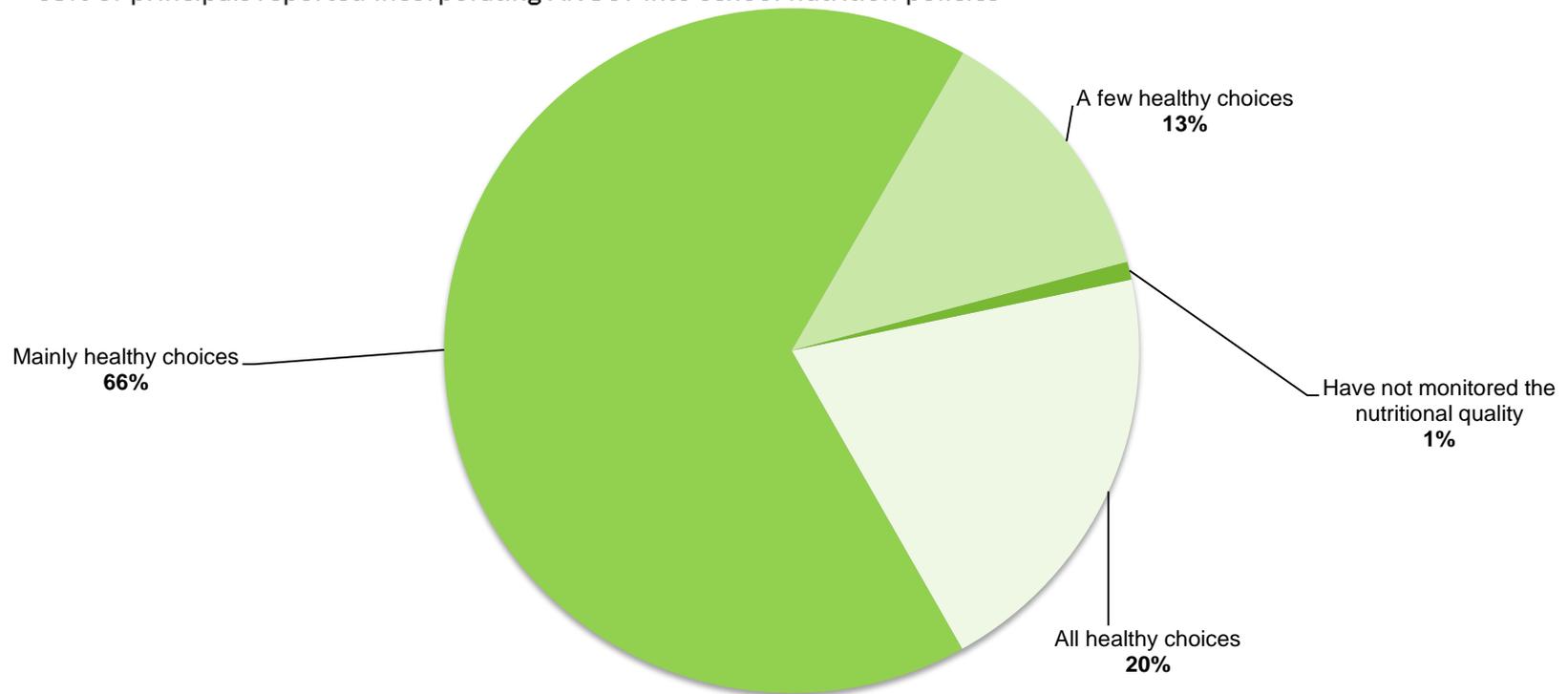
Type of Outlet	Number of Ads	% Unhealthy Adst	% Healthy Adst	% Overrepresented
Asian outlets	40	65	20	10
Burger outlets	44	64	2	18
Cafeterias	141	60	25	1
Coffee shop	63	48	10	2
Pizza place	35	86	3	6
Sandwich shop	114	50	25	5
Sit-down restaurants	7	29	14	0
Smoothies outlets	55	25	47	0

# Political Environment



# Healthy Foods at Schools?

- REAL Kids Alberta survey found 91% of principals reported using the ANGCY
- 63% of principals reported incorporating ANGCY into school nutrition policies



Principals' responses to "How do you rate the nutritional quality of the food and beverages that are served or available for sale in your school?" (n=122)

# Profit motive conflicts with promotion of healthy eating...

## **REFRESHING SUPPORT FOR STUDENTS**

The Students' Union, the University of Alberta and Coca-Cola are proud to announce that our partnership has generated a total of **\$2,531,508** in just the first five years of the Cold Beverage Agreement. Here is how these funds are reaching students:

*\$1,011,721 for Scholarships*  
*\$1,011,721 for Student Financial Aid*  
*\$224,826 for Graduate Studies*  
*\$283,240 for Students' Union Services*

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**Total**      **\$2,531,508**



# THE GATEWAY

volume XCVII number 26 • the official student newspaper at the university of alberta • www.gateway.ualberta.ca • thursday, 11 january, 2007

## Coke contract raises ethical concerns for SU

NATALIE CLIMENHAGA  
Senior News Editor

With the Students' Union getting ready to vote on a plebiscite question regarding the renewal of the single source beverage agreement with the Coca-Cola Company, debate is far from flat.

The University of Alberta originally signed an exclusivity agreement with Coke on 1 June, 1998 that was set to expire 31 May, 2008. However, under the terms of the new ten-year agreement, which would be retroactively implemented 1 June 2005, the beverage giant would continue its monopoly on campus until 31 May, 2015.

"From a financial perspective it's really black and white—this is what we should do," SU Vice-President (Operations & Finance) Chris Cunningham said.

Cunningham explaining that a provision in the original contract stated that if the U of A didn't meet its vending targets during the first ten years, the agreement would be extended for two subsequent years without any funding benefits for students.

PLEASE SEE COKE • PAGE 6

ALSO READ PRUSAKOWSKI ON PAGE 9

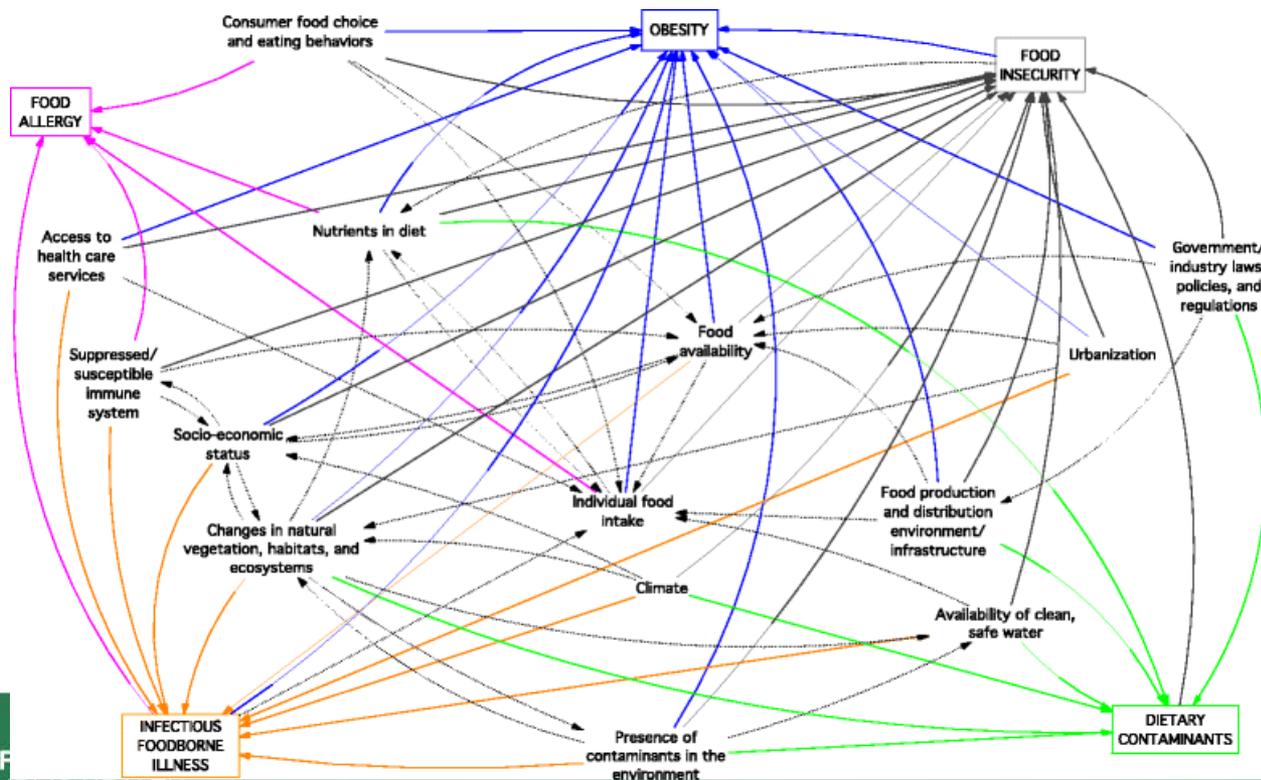


ASHLEY SCARLETT

**A FOUNTAIN OF OPINIONS** The pending decision whether or not to continue an exclusivity contract with the Coca-Cola Company has drawn polarized debate.

Don't get Caught in a "Toxic" Food Environment ...think out of the box!





# Population Health Interventions

- Applying lessons from tobacco control to physical activity and nutrition
- Built on models from Australia and Quebec
- Funded 2009-11 by ACPLF as a Population Health Innovative Intervention
- Ongoing funding from HSF

## Healthy Communities

Advocating for policy to make healthy choices easier in Alberta communities.

## Evidence

Together with our partners, we compile evidence to help communities, practitioners, and policy influencers facilitate healthy public policy change. Explore our latest projects.

## Tools & Resources

Access a database of tools and resources to help make healthy public policy change easier in your community.

[www.abpolicycoalitionforprevention.ca](http://www.abpolicycoalitionforprevention.ca)



# “Appetite” for change and priorities for obesity prevention

**Original Article**  
EPIDEMIOLOGY/GENETICS



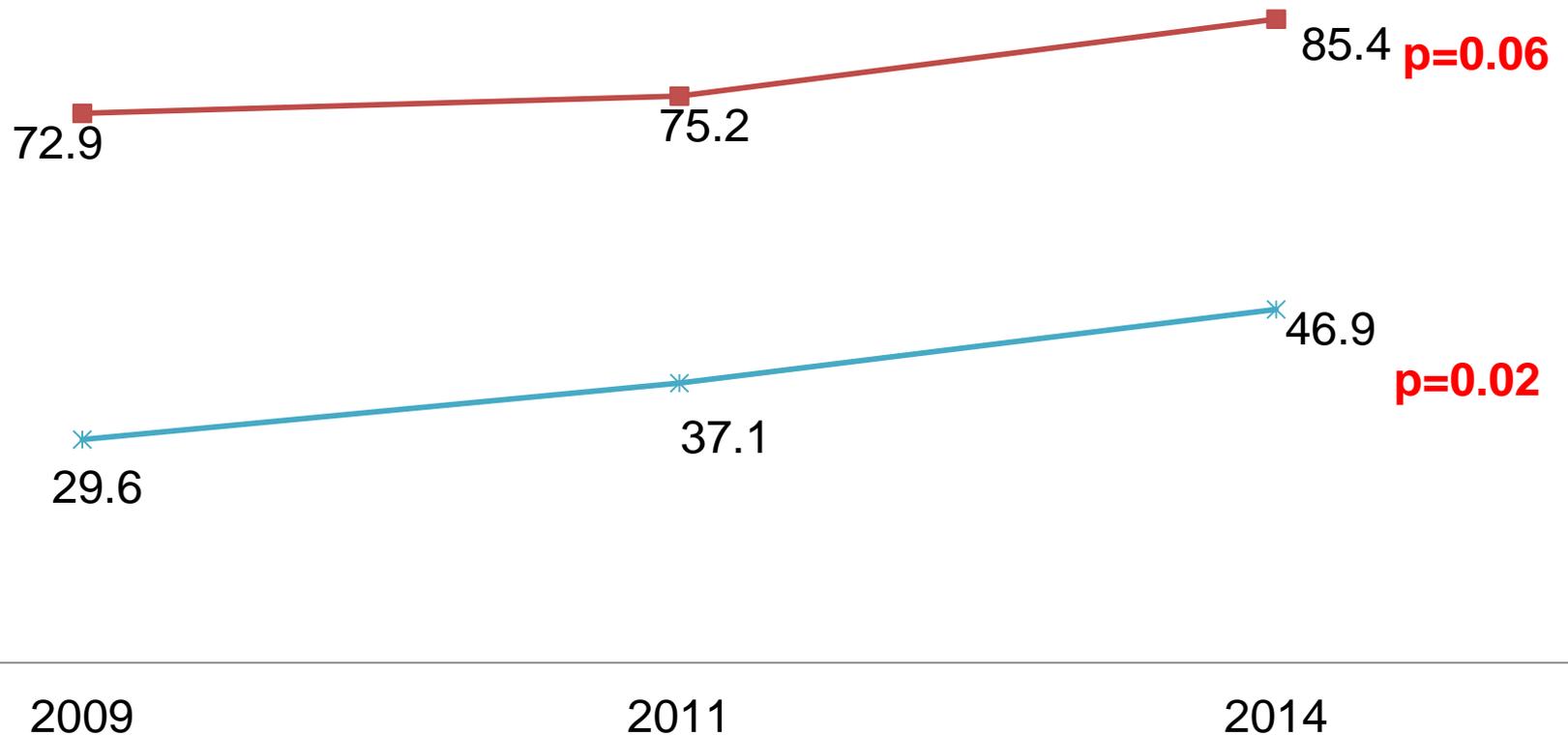
## Understanding Key Influencers’ Attitudes and Beliefs about Healthy Public Policy Change for Obesity Prevention

*Kim D. Raine, Candace I.J. Nykiforuk, Karen Vu-Nguyen, Laura M. Nieuwendyk, Eric VanSpronsen,  
Shandy Reed and T. Cameron Wild*

Obesity (2014) 22(11), 2426-2433. doi:10.1002/oby.20860

## Restrictive Environmental Policy Approaches in Alberta (2009-2014)

- Prohibit advertising and promotion of unhealthy foods and beverages to children under the age of 16
- \* Zoning to limit the number of fast food restaurants per square kilometer



# How is Food Marketing Controlled in Canada?

- Quebec Consumer Protection Act<sup>6</sup>
  - No marketing to children at all (food or non-food)
- Canadian Children's Food and Beverage Advertising Initiative<sup>7</sup>
  - Voluntary regulation of food industry

6. Office de la protection du consommateur. (2012). *Advertising Directed at Children under 13 Years of Age: Guide to the Application of Sections 248 and 249 Consumer Protection Act*. (ISBN: 978-2-550-66386-7). Quebec City, Quebec: Gouvernement du Quebec.

7. Advertising Standards Canada. (n.d.). Children's Food and Beverage Advertising Initiative Retrieved August 28, 2015, from <http://www.adstandards.com/en/childrensinitiative/default.htm>

Proposed: A national regulatory  
system prohibiting commercial  
marketing of foods and beverages  
to children

Journal of Public Health Policy,  
43(2) 239-253, 2013  
doi:10.1057/jphp.2013.9



stopmarketingtokids.ca



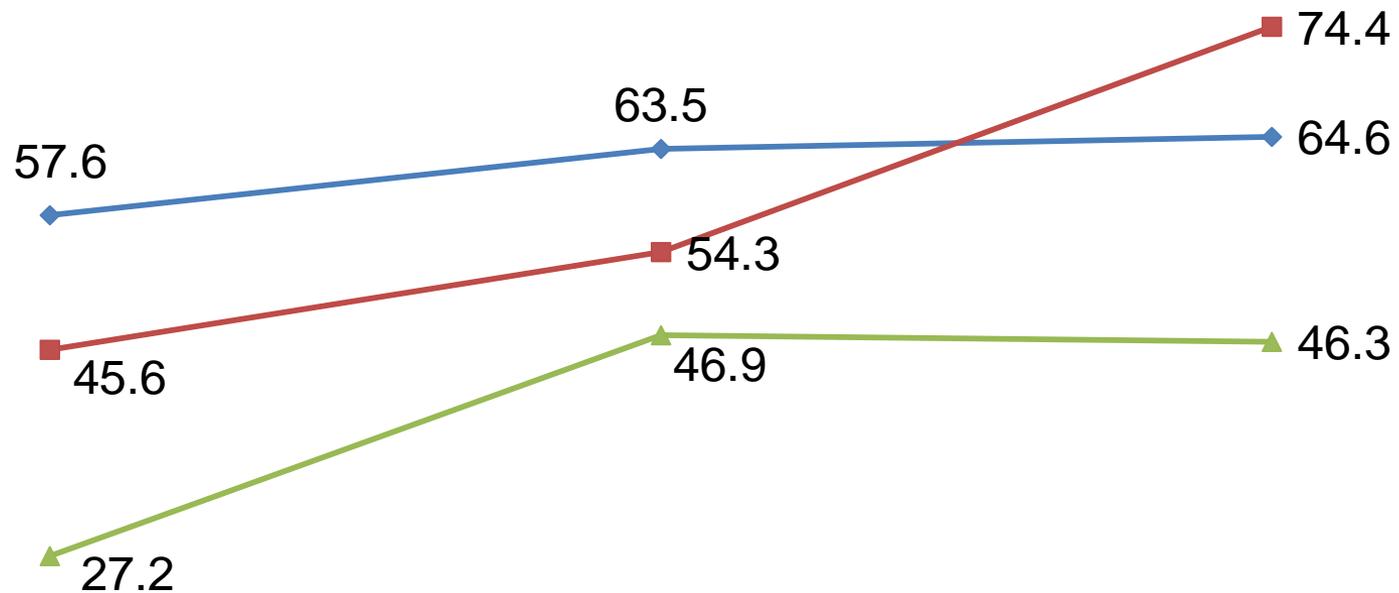
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## Economic Policy Approaches in Alberta (2009-2014)

- ◆ Tax unhealthy food and beverage purchases
- Subsidize the purchase of healthy foods and beverages **p<0.01**
- ▲ Hold producers of unhealthy foods liable for health care costs associated with obesity **p<0.01**



# THE HEALTH AND ECONOMIC IMPACT OF A TAX ON SUGARY DRINKS IN CANADA

## SUMMARY

AMANDA C JONES, J LENNERT VEERMAN & DAVID HAMMOND

 UNIVERSITY OF WATERLOO  
FACULTY OF APPLIED HEALTH SCIENCES  
School of Public Health and Health Systems



TABLE 1

**SUMMARY OF HEALTH AND ECONOMIC BENEFITS FROM 20% BEVERAGE TAXES**

2016-2041

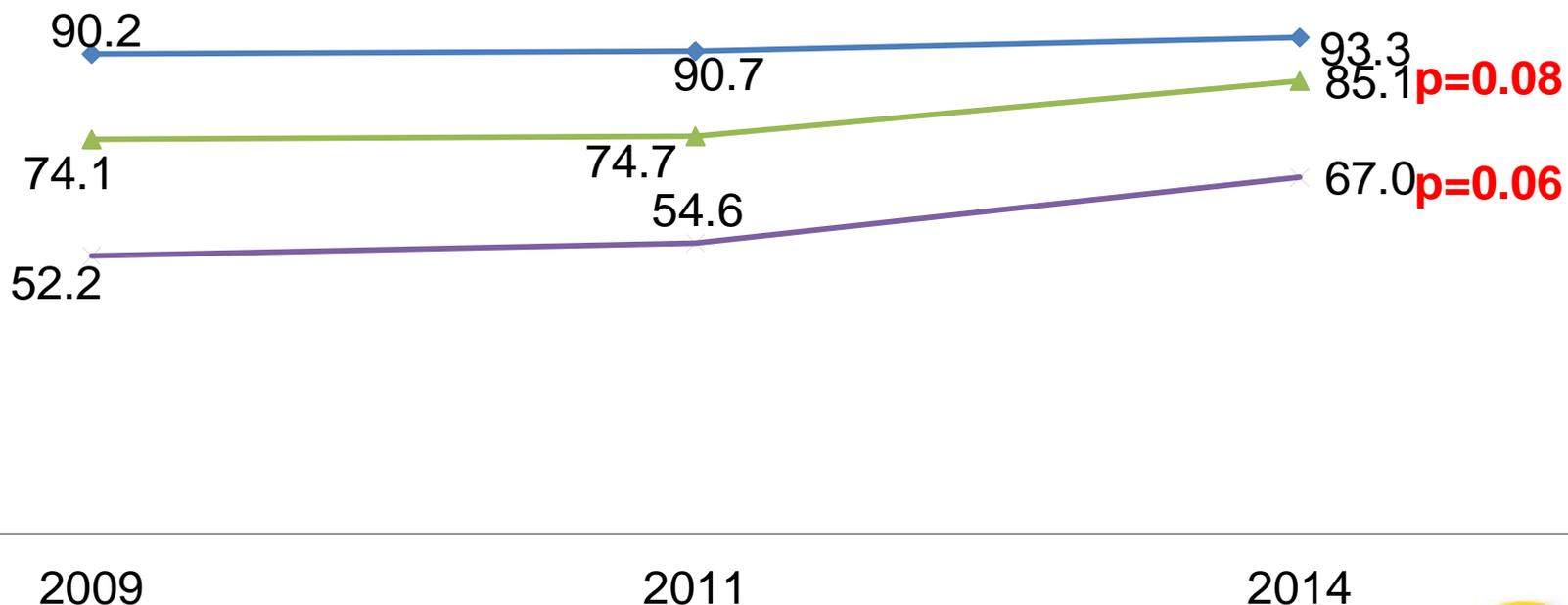
	20% SSB tax	20% sugary drink tax
<b>Deaths postponed</b>	7,874	13,206
<b>DALYs averted</b>	309,441	488,778
<b>Cases of overweight &amp; obesity prevented</b>	519,292	764,238
<b>New type 2 diabetes cases prevented</b>	138,635	215,846
<b>New ischemic heart disease cases prevented</b>	36,996	61,230
<b>New cancer cases prevented</b>	12,053	21,777
<b>New stroke cases prevented</b>	4,833	8,151
<b>Health care costs savings</b>	\$7,350,664,242	\$11,456,596,995
<b>Tax revenue</b>	\$29,647,578,056	\$43,610,950,060
<b>Health care costs savings &amp; revenue</b>	\$36,998,242,299	\$55,067,547,055

## Non-Restrictive Environmental Policy Approaches in Alberta (2009-2014)

◆ Mandate policies for school nutrition programs

▲ Mandatory calories listing on restaurant menus

✕ Zoning to increase the number of small grocery stores that people can walk to in every neighborhood



# Local Facility Action: Nudging Change in the Healthy Direction

Olstad et al. *International Journal of Behavioral Nutrition and Physical Activity* 2014, **11**:6  
<http://www.ijbnpa.org/content/11/1/6>



INTERNATIONAL JOURNAL OF BEHAVIORAL  
NUTRITION AND PHYSICAL ACTIVITY

RESEARCH

Open Access

## Choosing healthier foods in recreational sports settings: a mixed methods investigation of the impact of nudging and an economic incentive

Dana Lee Olstad<sup>1,2,3\*</sup>, Laksiri A Goonewardene<sup>2,4</sup>, Linda J McCargar<sup>1,2</sup> and Kim D Raine<sup>1,3</sup>

### Abstract

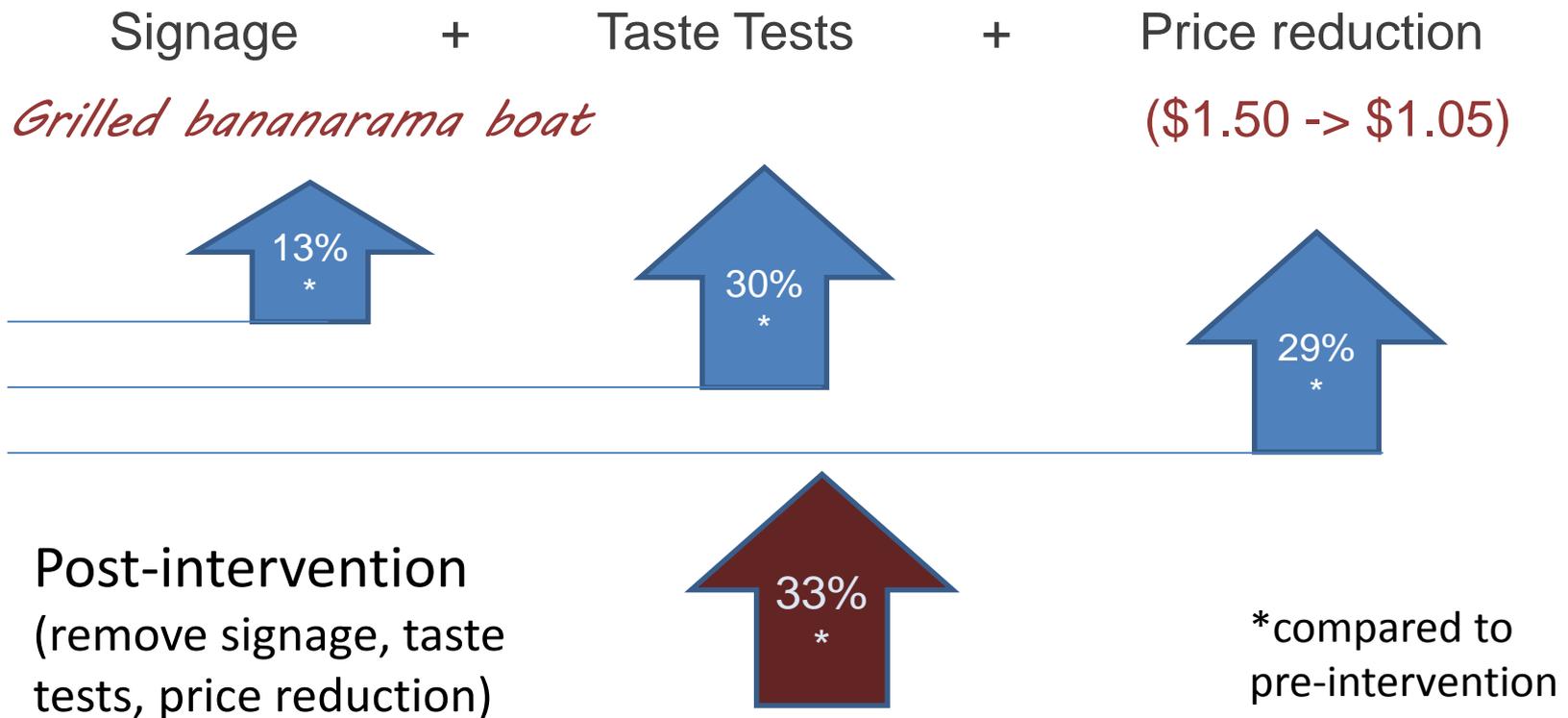
**Background:** Nudging is an approach to environmental change that alters social and physical environments to shift behaviors in positive, self-interested directions. Evidence indicates that eating is largely an automatic behavior governed by environmental cues, suggesting that it might be possible to nudge healthier dietary behaviors. This study assessed the comparative and additive efficacy of two nudges and an economic incentive in supporting



# Nudging Guides Quick Decisions

- **Most food decisions are made quickly and in response to environmental cues, such as signage, visibility and location of food items**
- **Nudging uses subtle environmental cues to encourage healthier choices (e.g. putting healthier items at eye level and in easy to reach spots)**

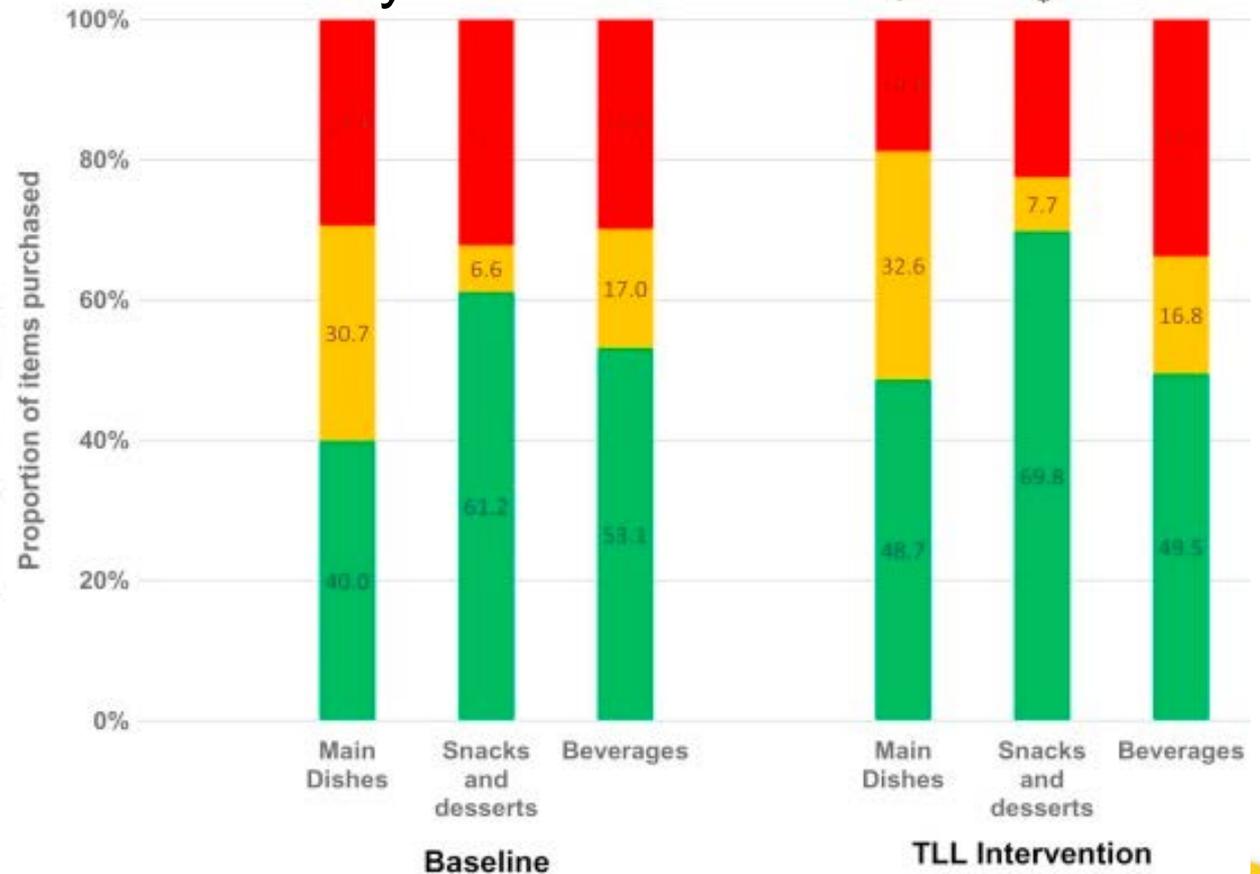
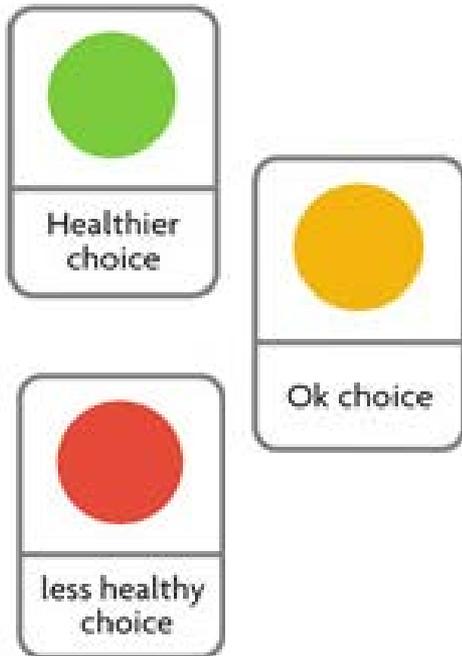
# Response to Nudging (No Impact on Revenue)



# Effective Interventions: Menu Labelling (No Impact on Revenue)

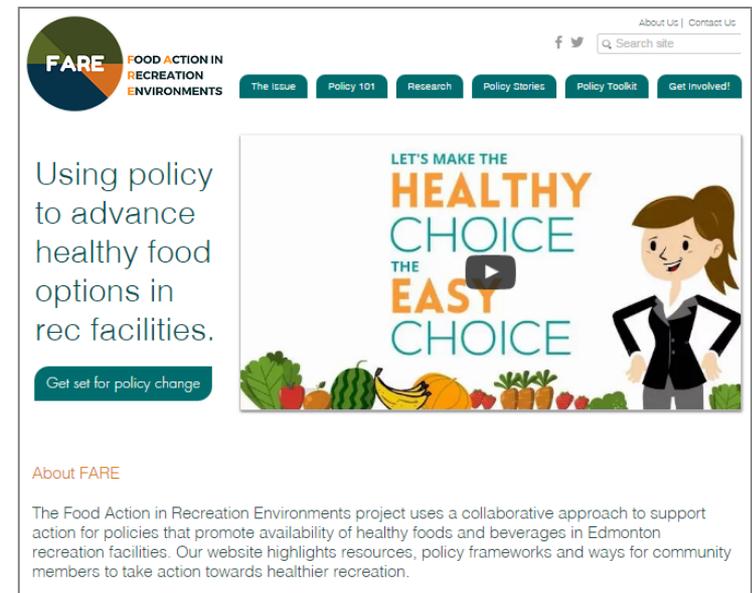
## Intervention 3: Promote healthy food awareness

### Menu Labelling



# Food Action in Recreation Environments (FARE) Project

- FARE uses a collaborative approach to promote healthier food environments in Edmonton and area recreational facilities through policy change
- [www.apccprecproject.com](http://www.apccprecproject.com)



Edmonton  
Community  
Foundation

# Quick Wins: Vending

- ✓ Move 'Choose Most Often' items to line of sight in vending machine (e.g. water, granola bars, Sun Chips)
- ✓ Put "eat good stuff" stickers on vending machines and around Recreation Centre
- ✓ Find 2 "healthy" alternatives to popular 'Choose Least Often' items
- ✓ Ask vending suppliers to support your goals



# Here is how it looks



# Possible Requirements for Your Next Vending Services Contract

- ✓ Require Healthy Image Vendor must supply **healthy logoed** machines only
- ✓ Require Healthy Product **Placement** Present Healthiest products prominently
- ✓ Require value **pricing**
  - ✓ Feature healthy best value products
- ✓ Require continuous **new** products
- ✓ Plan for future changes to **healthy portfolio**
- ✓ Require suppliers to bring new product suppliers
- ✓ Provide a **plan-o-gram** for your machine to the company
- ✓ **Sample vending RFP's** are on the Stay Active Eat Healthy website



# Evaluation: Benchmarking

## Develop an Annual Policy Report Card on Food Environments and Nutrition to:

- Provide an assessment of how current environments and policies support or create barriers to improving children's dietary behaviours and body weights
- Increase awareness of the public, practitioners and policy makers of the relevance of food environments for health promotion and obesity prevention

# History of the Nutrition Report Card (2017 = 3<sup>rd</sup> annual)

- Inspired by ParticipACTION Physical Activity Report Card



COALITIONS LINKING ACTION  
& SCIENCE FOR PREVENTION

Preventive Medicine 69 (2014) 287–295

Contents lists available at ScienceDirect

 Preventive Medicine

journal homepage: [www.elsevier.com/locate/ypmed](http://www.elsevier.com/locate/ypmed)



## Development of a Report Card on Healthy Food Environments and Nutrition for Children in Canada

Dana Lee Olstad, Kim D. Raine\*, Candace I.J. Nykiforuk

*School of Public Health, 3-300 Edmonton Clinic Health Academy, 11405 87 Ave, University of Alberta, Edmonton, AB T6G 1C9, Canada*

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**Keywords:**  
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Dietary behaviours  
Obesity  
Nutrition policy  
Report card  
Monitoring

ABSTRACT

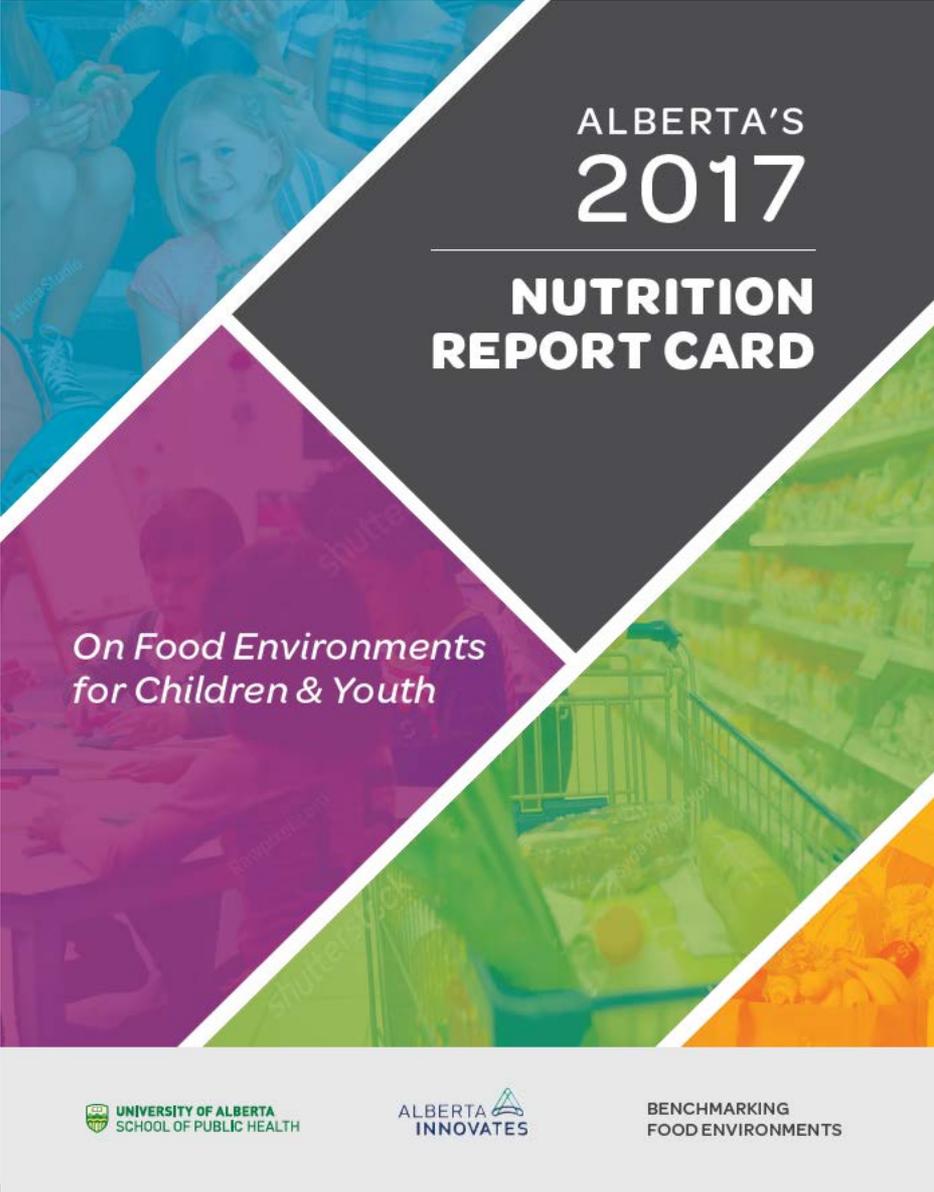
**Objective:** The purpose of the Report Card on Healthy Food Environments and Nutrition for Children is to assess how current environments and policies in Canada support or create barriers to improving children's dietary behaviours and body weights.

**Method:** In 2014 we reviewed the literature to identify indicators of the quality of children's food environments and related policies. Scoring systems used to monitor and report on progress on a variety of public health activities were consulted during development of a grading scheme. The Report Card was revised following reviews by an Expert Advisory Committee.

**Results:** The Report Card assigns a grade to policies and actions (42 indicators and benchmarks) within 4 micro-environments (physical, communication, economic, social) and within the political macro-environment. Grade-level scores of A through F are assigned that reflect achievement of, supports for, and monitoring of indicator-specific benchmarks. A Canadian Report Card will be released annually starting in 2015.

**Conclusion:** The Report Card is a novel tool to monitor the state of children's food environments and supportive policies, inform stakeholders of the state of these environments and policies, engage society in a national discussion, and outline a policy-relevant research agenda for further study.

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ALBERTA'S  
2017  
NUTRITION  
REPORT CARD

*On Food Environments  
for Children & Youth*

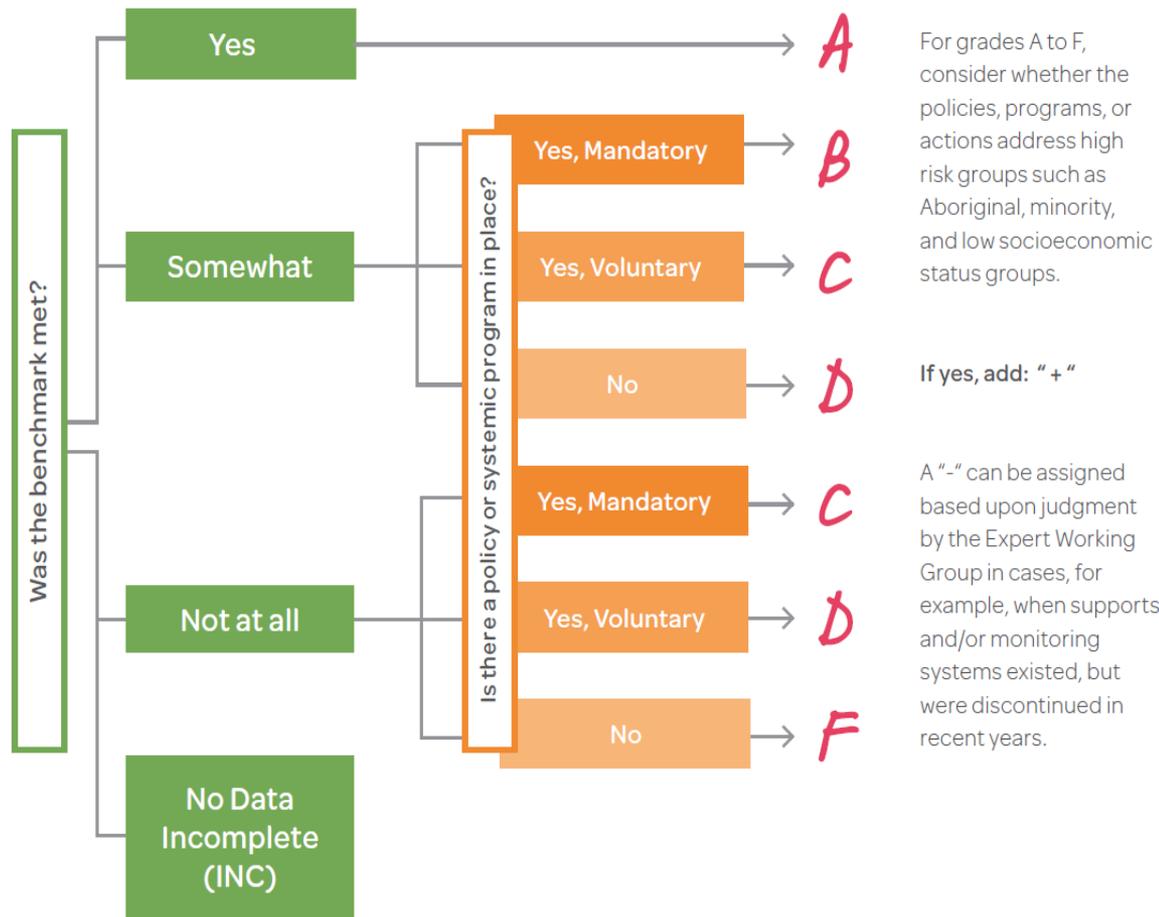
- **Assesses** Alberta's current food environment & nutrition policies
- Aim is to increase **awareness**, focus on health promotion & obesity prevention
- Serves as a **tool** to identify areas that require action

# How was the Nutrition Report Created?

- Review of literature, over 20 Canadian nutrition and physical activity experts identified key indicators



# Grading



ALBERTA'S  
**2017**  
NUTRITION  
REPORT CARD

*On Food Environments  
for Children & Youth*

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ALBERTA  
INNOVATES

BENCHMARKING  
FOOD ENVIRONMENTS



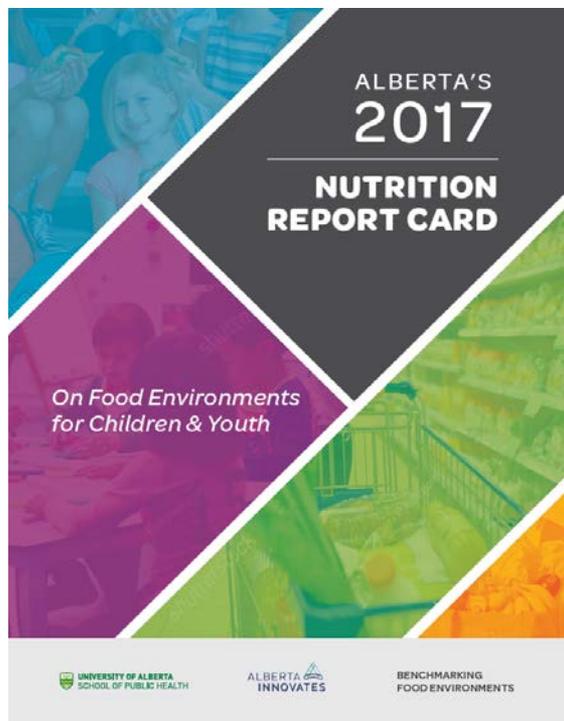
*The  
grades  
are in!*

[www.uab.ca/nrc](http://www.uab.ca/nrc)

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# Alberta's 2017 Nutrition Report Card Highlights



Alberta's 2017 Nutrition Report Card:

*The grades are in!*

**What final grade did Alberta receive on the 2017 Nutrition Report Card?**

Following this year's rigorous grading process, Alberta received an overall score of 'C,' which is an improvement from last year!



**2016 – D**

**2015 -- C**

# Lessons Learned

- Focusing on creating public health capacity and environmental conditions supportive of changes is necessary to build a foundation for changes in behaviour and health outcomes
- The combination of innovative interventions (advocacy, policy implementation and assessment tools) and research methods have moved the field of environmental and policy intervention for healthy eating and obesity prevention ahead, but there is still much work to do!



Moving  
upstream to  
improve  
health



# Thank you!



COALITIONS LINKING ACTION  
& SCIENCE FOR PREVENTION



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