

The role of big data to inform food policy globally and in Canada

*Big Data for Health Policy Workshop
University of Toronto
November 5 & 6, 2014*

Mary R. L'Abbé, PhD
*Earle W. McHenry Professor and
Chair, Department of Nutritional Sciences*

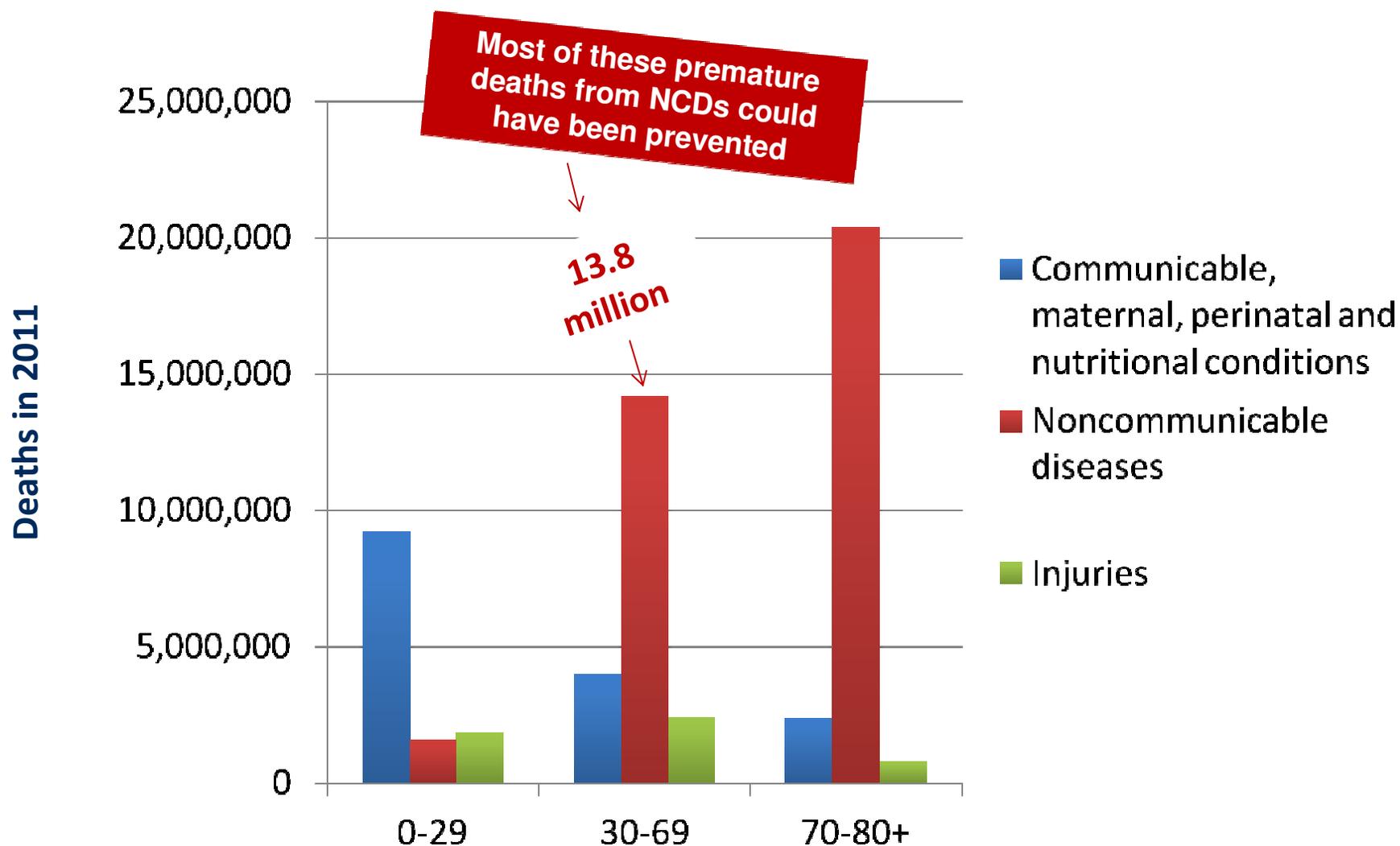


Nutritional Sciences
UNIVERSITY OF TORONTO



Why do we care?
Why do we need big data?

**In 2011, 13.8 million people, between age of 30-70, died from NCDs:
More than 85% of these deaths occurred in developing countries**



Source: WHO, Sept 2014

The UN is addressing NCDs as one of the major challenges for development

2000

Global Strategy for the Prevention and Control of NCDs

2003



Global Strategy on Diet, Physical Activity and Health

2004



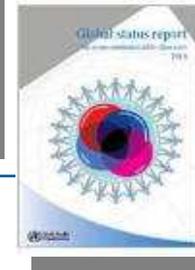
2008-2013 Action Plan on the Global Strategy for the Prevention and Control of NCDs

2008



Global Strategy to Reduce the Harmful Use of Alcohol

2009



First WHO Global Status Report on NCDs

2010



Moscow Declaration



2011 UN Political Declaration on NCDs

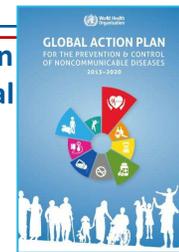
2011

UN Task Force on NCDs

2013

2013

WHO Global NCD Action Plan 2013-2020, including 9 global targets and 25 indicators



2014



2014 UN Outcome Document on NCDs

2015

2015

Country Framework for Action to engage sectors beyond health on NCDs

Adoption of the Post-2015 development agenda

2025

Attainment of the 9 global targets for NCDs by 2025

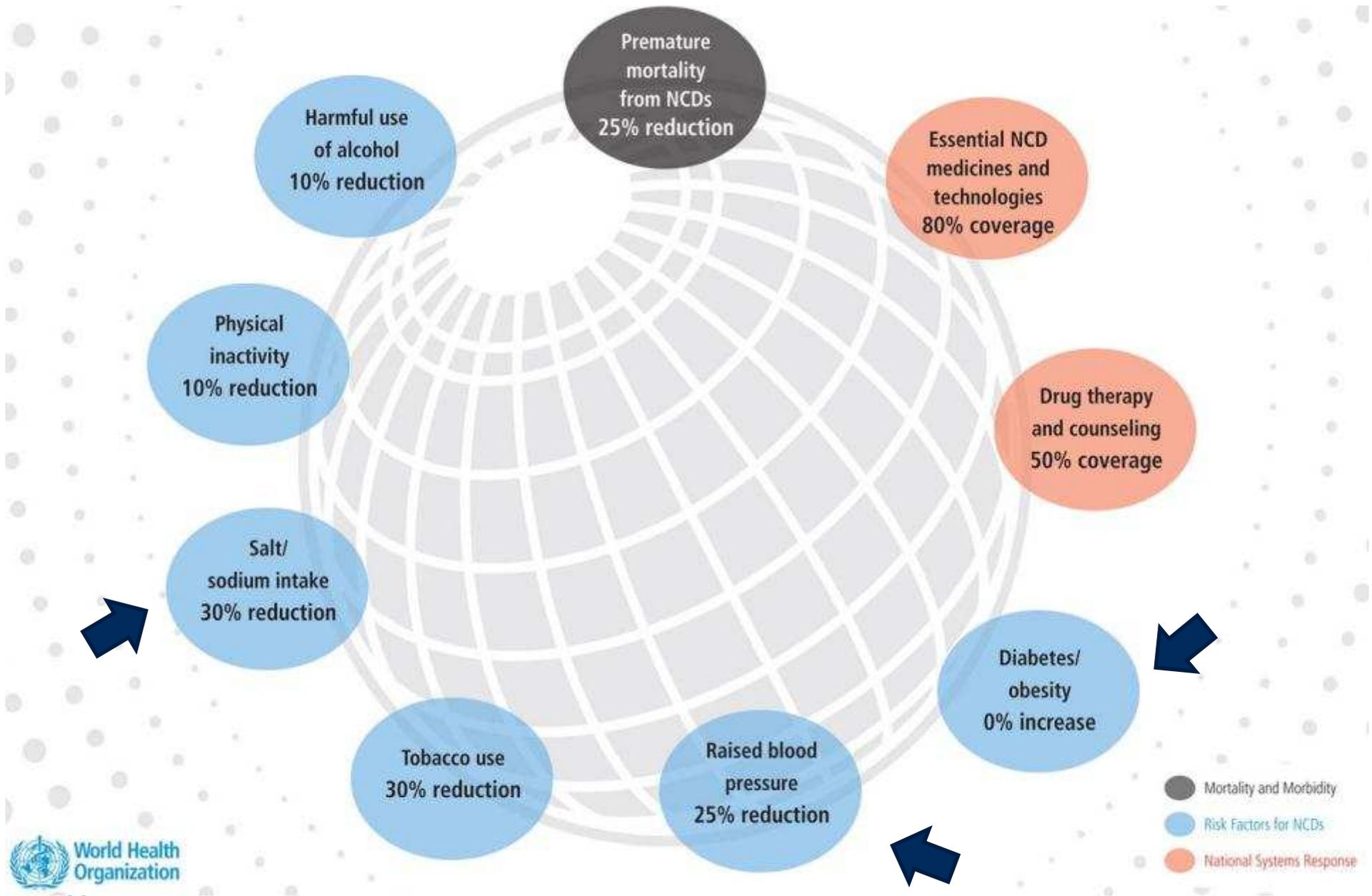


2030

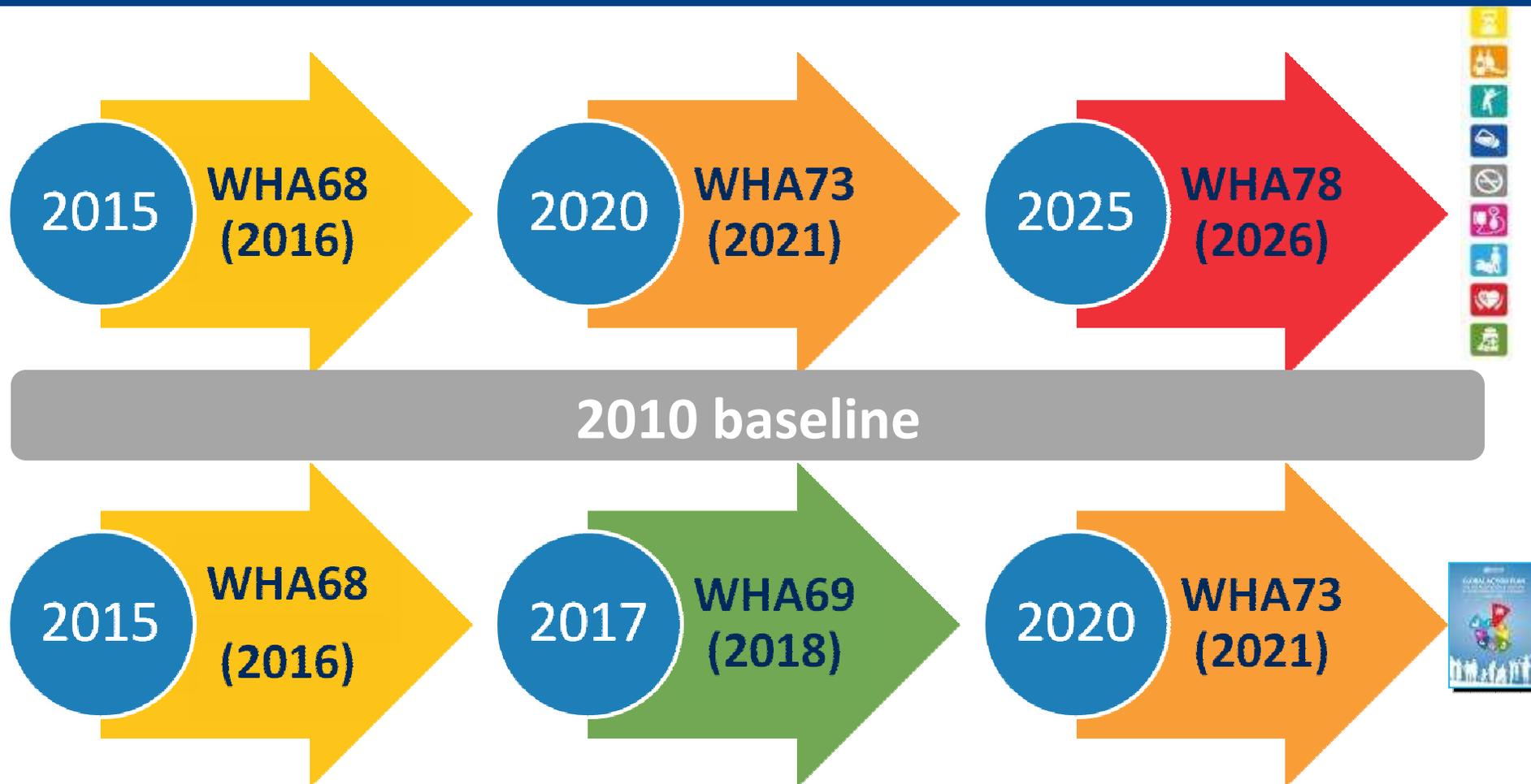
Attainment of the 9 global targets for NCDs by 2030 (as part of the post-2015 development agenda)

- World Health Assembly
- UN General Assembly
- ECOSOC

9 global targets to be attained by 2025



Global accountability framework to report progress to the World Health Assembly



Source: WHO, Sept 2014

BIG DATA TO INFORM FOOD POLICY IN CANADA

Policy announcements require information on the food supply ...

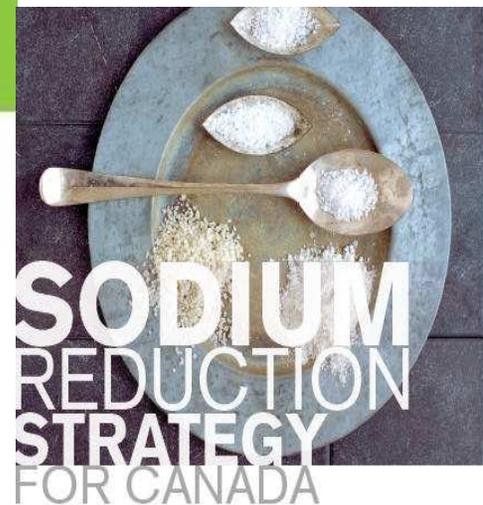
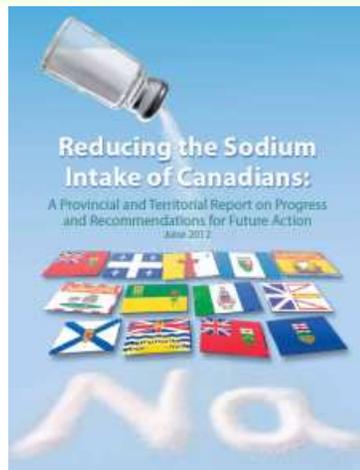


TRANSforming the Food supply
Report of the Trans Fat Task Force
Submitted to the Minister of Health
June 2006

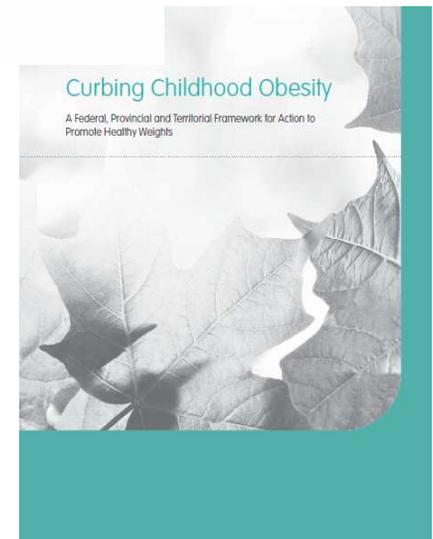


No Time to Wait:
The Healthy Kids Strategy

Healthy Kids Panel



Recommendations of the
Sodium Working Group
July 2010



Current National Food Databases won't work!

Canadian Nutrient File



Health Canada
www.hc-sc.gc.ca

Home | Contact Us | Help | Search | Canada.ca

Nutrition & Healthy Eating

Food and Nutrition

Print | Text Size: S M L XL Help | Share

Nutrient Data

Health Canada publishes two databases which list nutrient values in Canadian foods. The Canadian Nutrient File (CNF) is a comprehensive, computerized bilingual database that reports up to 150 nutrients in over 5807 foods. The database can help you find values for nutrients such as vitamins, minerals, protein, energy, fat and many more, and is updated periodically. The CNF has an online, searchable database that allows Canadians to search the nutrient values for specific foods.

- q A generic food database
- q Approx. 5,500 foods
- q Updated periodically (every 5-10 years)
- q Does not contain brand specific data
- q Very few restaurant foods

Food Label Information Program - FLIP

Data Collection (2010; 2013)

- 4 largest national retailers (Loblaws, Sobey's, Metro, Safeway); others have joined since

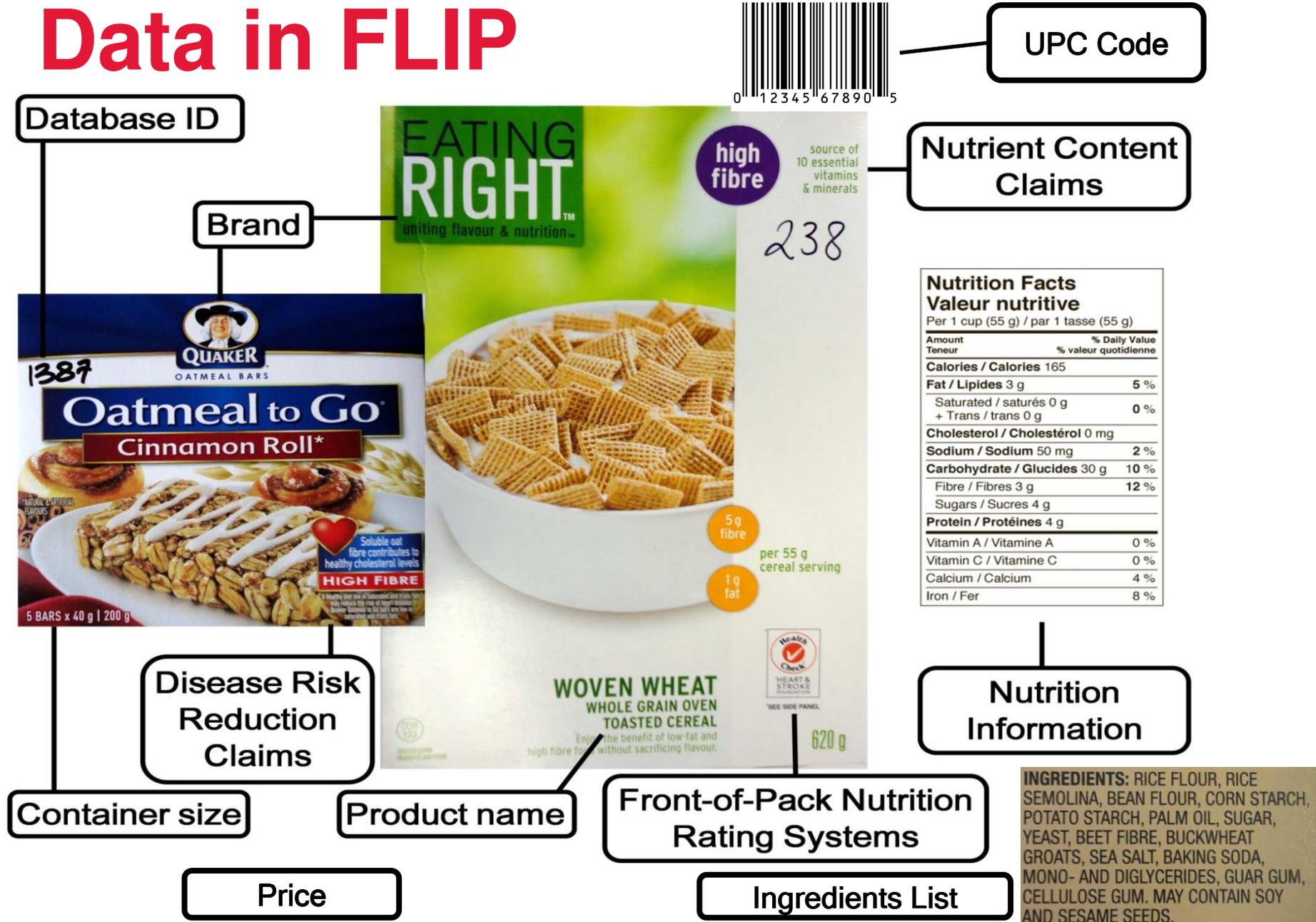
Inclusion/Exclusion Criteria

- Every food with a NFT; All national and private brands
- Excluded: (i) seasonal products; (ii) NHPs (pills/capsules/powders); (iii) baby foods

Custom Data Collection Tools/FLIP Database

- Scanned UPC to determine if food in database
- If not, use iPhone in store to photo record all sides of pack
- Approx. 15,500+ unique products collected/year
- Photos uploaded and OCR used to enter NFT and Ingredients
- Data input – India and University of Toronto

Data in FLIP



Benefits

Comprehensive

Industry-wide view; credible and unbiased

Alignment with Health Canada classifications, regulations and national CCHS surveillance data

Able to Track changes over time

International Linkages

- International Food Monitoring Collaboration (George Institute, Australia)
- World Obesity INFORMAS - International Network for Food and Obesity / non-communicable Diseases Research, Monitoring and Action Support
- IDRC grants (Costa Rica, Mexico, Latin and South America)
- European Global Food Label WG
- WHO, PAHO, FAO work

Restaurant Database as well ...

- q All restaurant chains with ≥ 20 outlets
- q Same collection times

Applications

- q Portion Size, caloric density
- q Nutritional Quality of restaurant foods
- q Menu labelling
- q Nutritional quality of foods marketed to children
- q Restaurant Apps

Sodium in Canadian restaurant foods 'alarmingly high'

Researchers examined salt levels in more than 9,000 foods at restaurants

CBC News Posted: Feb 27, 2013 2:18 PM ET | Last Updated: Feb 27, 2013 5:19 PM ET 357

CBCnews | Business



Ontario law to force calorie count on fast-food menus

Big chains would have to show calories alongside prices

CBC News Posted: Feb 24, 2014 1:19 PM ET | Last Updated: Feb 24, 2014 10:42 PM ET



Restaurant Menus
Calories, Caloric Density, and Serving Size

Mary J. Scourboutakos, BSc, Mary R. L'Abbé, PhD

Scourboutakos and L'Abbe, Am J Prev Med, 2013; Can J Public Health 2013; JAMA Int Med 2013

A RESEARCH and CHRONIC DISEASE

PREVENTION/SURVEILLANCE TOOL

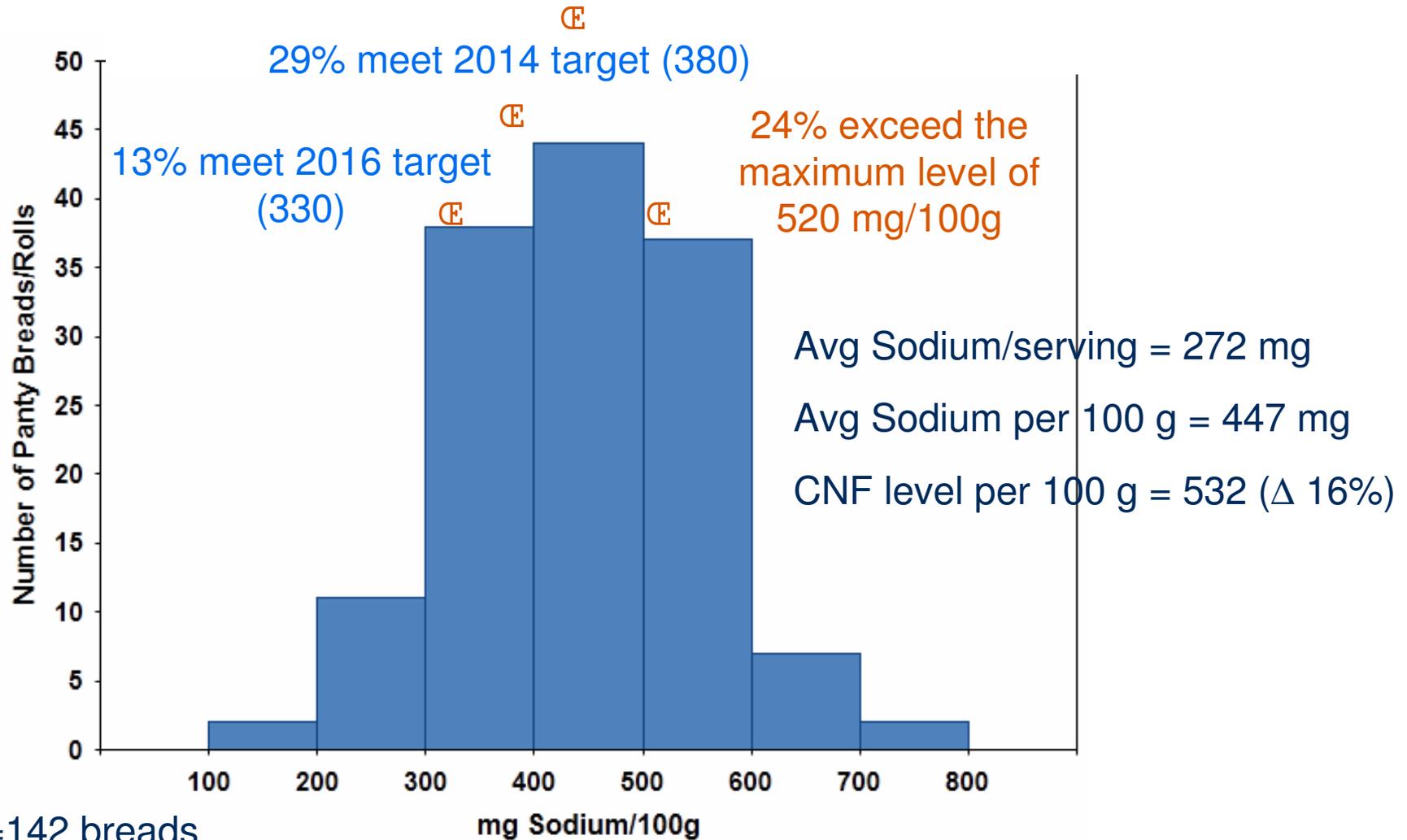
- q **To investigate the food supply – from a Public Health Policy and Chronic Disease Prevention lens**
 - Promoting Healthy Diets – Nutrients to limit (Sodium, Trans, Saturated Fat, Sugars) (*WHO Global Strategy, Global Action Plan ...*)
 - Obesity – calories, caloric density, nutrient substitution
 - Surveillance - Changes over time
- q **Support Healthy Eating**
 - Consumer research on health claims and Front-of-Pack Labelling, Supplemented foods
 - Nutrient Profiling
 - Marketing of foods to children
- q **Underpinning of Tools/Aps**
 - to enable healthy choices by consumers/ support health professionals, e.g. development of ***Salt Calculator***
- q **Platform for Global Research linkages – BIGGER DATA**

Monitoring and Surveillance: Sodium and Trans levels in Canadian foods

Example - Pantry Breads and Rolls

41% meet 2012 target (430)

29% meet 2014 target (380)

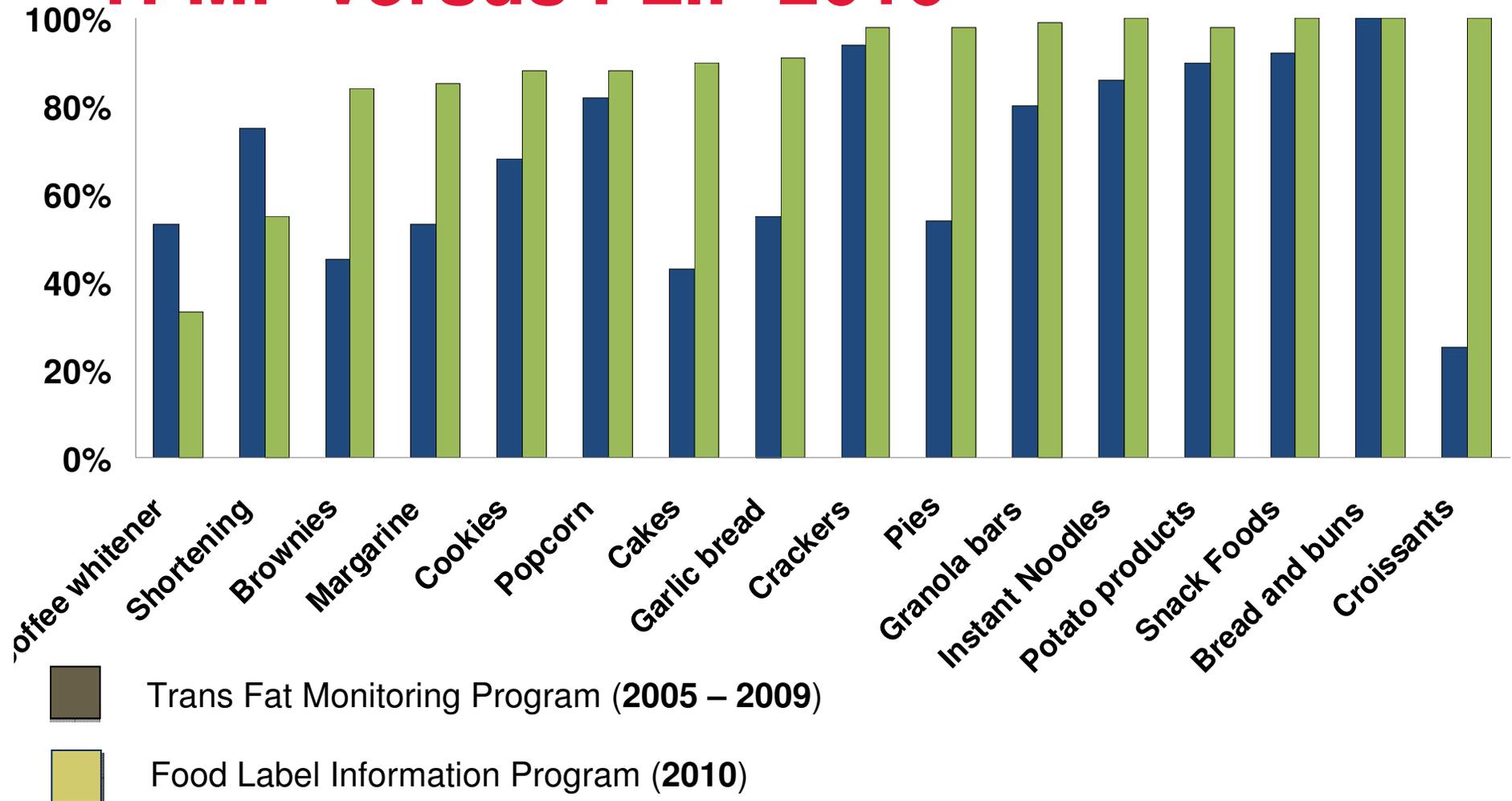


Arcand et al, Am J Prev Med (2014)

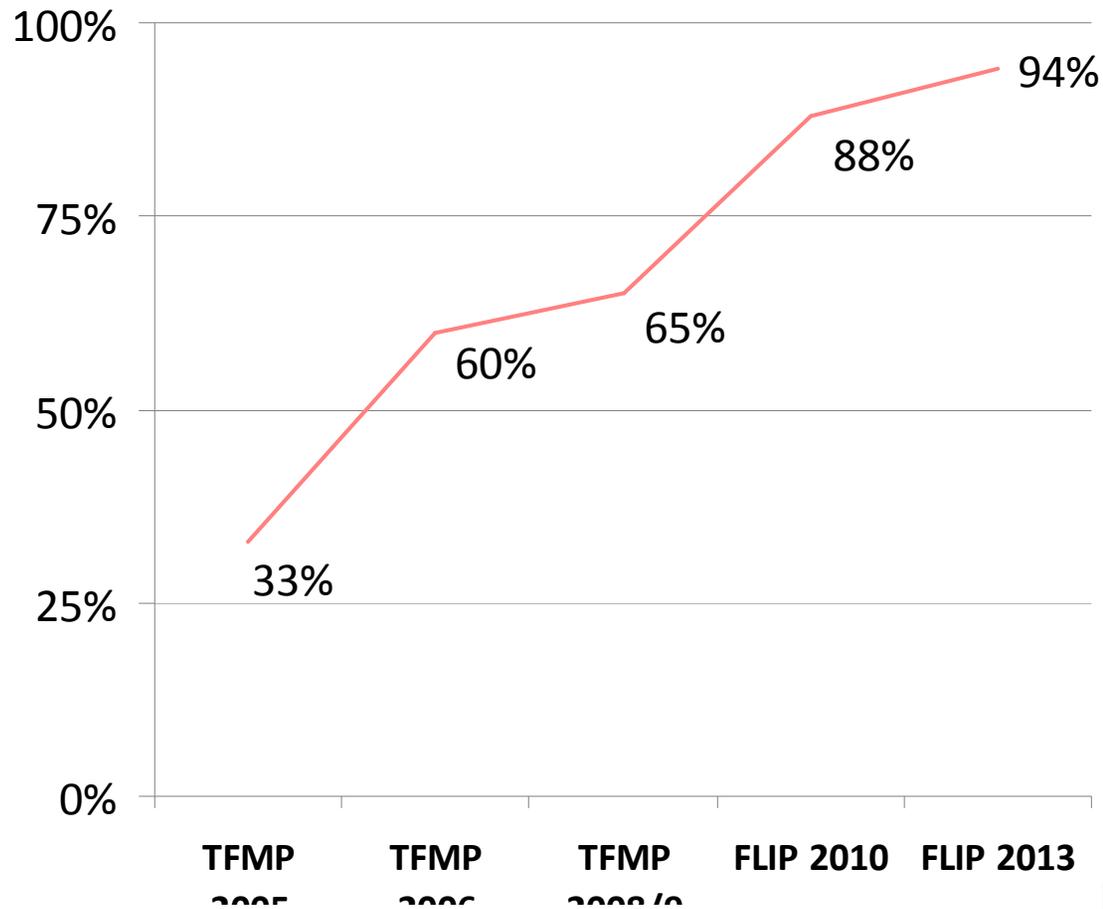
Data Analysis: Trans Fat

Arcand J, Scourboutakos MJ, Au JTC, L'Abbe MR, AJCN 2014

Baseline data: the proportion of foods meeting the trans fat limits, TFMP versus FLIP 2010



Longitudinal trend in the proportion of cookies that meet the recommended TFA limits



Consumer Tools and Aps

Supporting consumer knowledge and action (App development)



All salt has a lot of sodium and it is in most of the foods we eat – a lot in some and a little in others. Answering the following questions will help you determine how much sodium you consume each day.

ABOUT YOU

Age: (4 and up)

Sex

- Male
 Female

First tell us how often you eat in restaurants

EATING OUT

Lunch/dinner from quick-service or fast-food restaurants (eat-in or take-out)

e.g., Tim Horton's, Subway, McDonald's, Starbucks, Pizza Pizza, privately-operated cafes and cafeterias.

- | Daily | Weekly | Monthly | Never |
|-------------------------|---------------------------|---------------------------------|-----------------------------|
| <input type="radio"/> 1 | <input type="radio"/> 5-6 | <input type="radio"/> 2-3 | <input type="radio"/> Never |
| | <input type="radio"/> 3-4 | <input type="radio"/> 1 or less | |
| | <input type="radio"/> 1-2 | | |

HERE IS HOW YOUR DAILY SODIUM LOOKS

You consume about

2500 mg
of sodium per day

That's

94%
more than the recommended level of 1300 mg for your age

28%

of your intake is from eating out

22%

of your intake is from bakery products and cereals

19%

of your intake is from added salt

11%

of your intake is from cheese and dairy products

8%

of your intake is from spreads, condiments, dips and sauces

6%

of your intake is from processed meat, fish and poultry

4%

of your intake is from prepared meals, sides and soups

1%

of your intake is from salty snacks

0%

of your intake is from canned vegetables

<http://www.projectbiglife.ca/sodium/>

Arcand et al, APNM (2013)

Big Life Salt Calculator - A few state



- q Featured on MarketPlace – March 2013
- q Over 100,000 have done their own personal salt calculations; plus global pick-up
- q Clinicians have requested a detailed version – Salt Calculator Plus
- q Other apps under development

FoodSwitch® Canada coming...

The FoodSwitch app means that for the first time shoppers can:

- Scan the barcode of a product to know how healthy it is
- Switch for healthier food choices
- Share information about healthier food choices with friends
- Crowd-sourcing information for missing foods, by sending in photos



Learnings from Australia with *FoodSwitch*[®]

- q First launched in Australia in January 2012; New Zealand and UK 2014; Canada and others preparing
- q Highlighted the huge unmet need for an interpretive food labelling system to help consumers
- q Extremely popular among consumers
 - Downloaded by over 120,000 users in the first month
 - Number one application in the Apple iTunes store for the first week;
 - Apple iTunes 4+ star rating; 'App of the Week' in several publications
 - *Foodswitch* downloaded by more than 450,000 Australians
- q Huge role in consumer engagement
 - Downloads
 - Crowd sourcing data

GLOBAL OVERVIEW WHERE TO NEXT?



INFORMAS - International Network for Food and Obesity/NCD Research, Monitoring and Action Support

Boyd Swinburn, Univ Auckland (PI)



See: Obesity Reviews (September 2013)

ORGANISATIONS

PROCESSES

INFORMAS module structure

Public sector policies and actions

Private sector policies and actions

How much progress have (international, national, state and local) governments made towards good practice in improving food environments and implementing obesity/NCDs prevention policies and actions?
(University of Auckland)

How are private sector organisations affecting food environments and influencing obesity/NCDs prevention efforts?
(Sacks, Deakin University)

FOOD ENVIRONMENTS

IMPACTS

Food composition

What is the nutrient composition of foods and non-alcoholic beverages?
(Neal, The George Institute)

Food labelling

What health-related labelling is present on foods and non-alcoholic beverages?
(Rayner, University of Oxford)

Food marketing

What is the exposure and power of promotion of unhealthy foods and non-alcoholic beverages to different population groups?
(Kelly, University of Wollongong)

Food provision

What is the nutritional quality of foods and non-alcoholic beverages provided in different settings (eg. schools, hospitals, workplaces)?
(L'Abbe, University of Toronto)

Food retail

What is the availability of healthy and unhealthy foods and non-alcoholic beverages in communities and within retail outlets?
(University of Auckland)

Food prices

What is the relative price and affordability of 'less healthy' compared with 'healthy' diets, meals & foods?
(Lee, Queensland University of Technology)

Food trade & investment

What are the impacts of trade and investment agreements on the healthiness of food environments
(Friel, Australian National University)

POPULATIONS

OUTCOMES

Population diet

What is the quality of the diet of different population groups?
(Montiero, University of Sao Paulo)

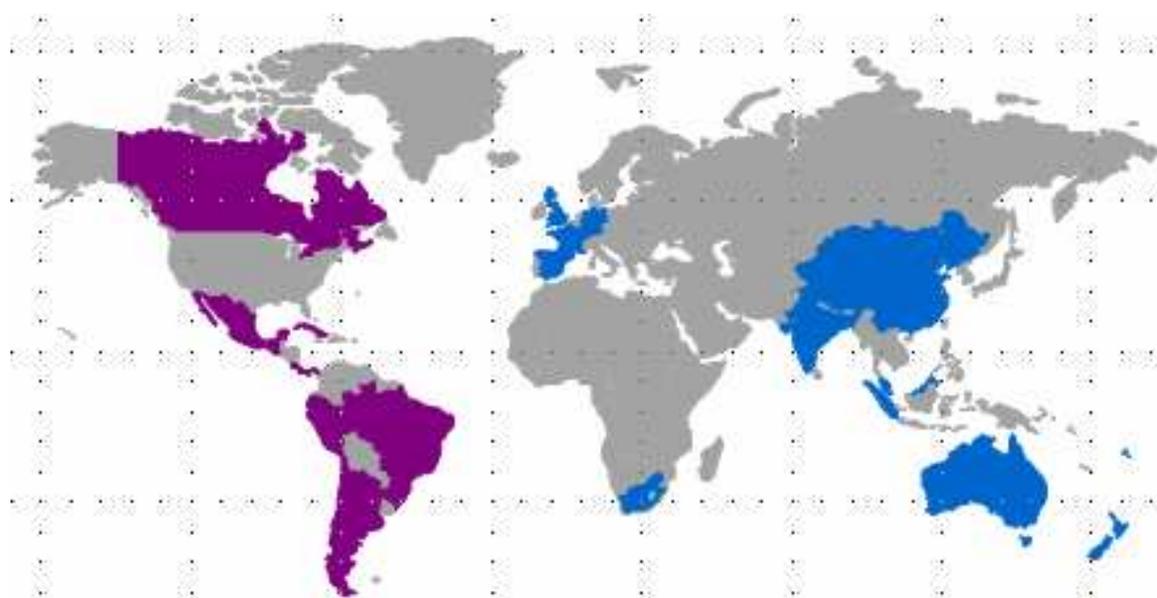
Physiological & metabolic risk factors

What are the burdens of obesity and other risk factors?
(WHO)

Health outcomes

What are burdens of NCD morbidity and mortality?
(WHO)

Global Food Monitoring Group - 30 + Countries involved



■ 13 countries in The Americas

- Argentina
- Australia
- Bangladesh
- Barbados
- Brazil
- Canada
- Chile
- China
- Costa Rica
- Cuba
- Ecuador
- Fiji
- France
- Guam
- Guatemala
- India
- Malaysia
- Mexico
- Mongolia
- New Zealand
- Panama
- Peru
- Singapore
- Solomon Islands
- South Africa
- Spain
- The Netherlands
- Tonga
- UK
- USA

Branded food products currently in global food database

Country	Number of products
Australia	60,000+
New Zealand	14,192
Costa Rica	5,246
Argentina	2,408
Canada	26,500+
China	14,287
India	7,122
UK	8,500 (+80,000 Brandbank)
Fiji	1,500
TOTAL	149,755 (+80,000 Brandbank)

Partnerships and networks lead to BIG DATA

- q University of Toronto – L'Abbe group – food databases
- q World Obesity - International Network for Food and Obesity/NCD Research, Monitoring and Action Support
- q George Institute, Australia – are collaborating for *FoodSwitch* – as a starting point to “Canadianize”
- q Dietitians of Canada – IT technical support; house and maintain the FLIP database, web “cloud” access
- q Many Granting Agencies such as CIHR; Canadian Stroke Network; IDRC; Rockefeller; WHO/FAO
- q Burroughs-Wellcome Fund (2014-2019)
- q Heart and Stroke Foundation of Canada

Thank You/Questions

Funding



E.W. McHenry
Endowed Chair
(M. L'Abbe)

Acknowledgements

Research Team:

JoAnne Arcand, PhD, RD
Mary Scourboutakos, BSc
Christina Wong, MSc
Alyssa Schermel, MSc
Teri Emrich, MPH, RD
Chelsea Murray, BSc
Mavra Ahmed, MSc
Mahsa Jessri, MSc
Sheida Noorhosseini, BSc
Jodi Bernstein, MPH

Collaborators

Doug Manuel, OHRI, ICES
Boyd Swinburn, U Auckland, NZ
Bruce Neal, George Inst, U Sydney
Adriana Blanco-Meltzer, INCENSA
Marsha Sharpe, Dietitians Canada
Wendy Lou, UofT
Ying Qi, MSc, UofT
Spencer Henson, U Guelph
Julio Mendoza, U Guelph
Mike Rayner, U Oxford, UK
Laurette Dube, McGill
David Buckeridge, McGill
Elizabeth Mansfield, Health Canada

Mary R. L'Abbe, PhD
Department of Nutritional Sciences
Faculty of Medicine, University of Toronto

mary.labbe@utoronto.ca

