

CCGL9043

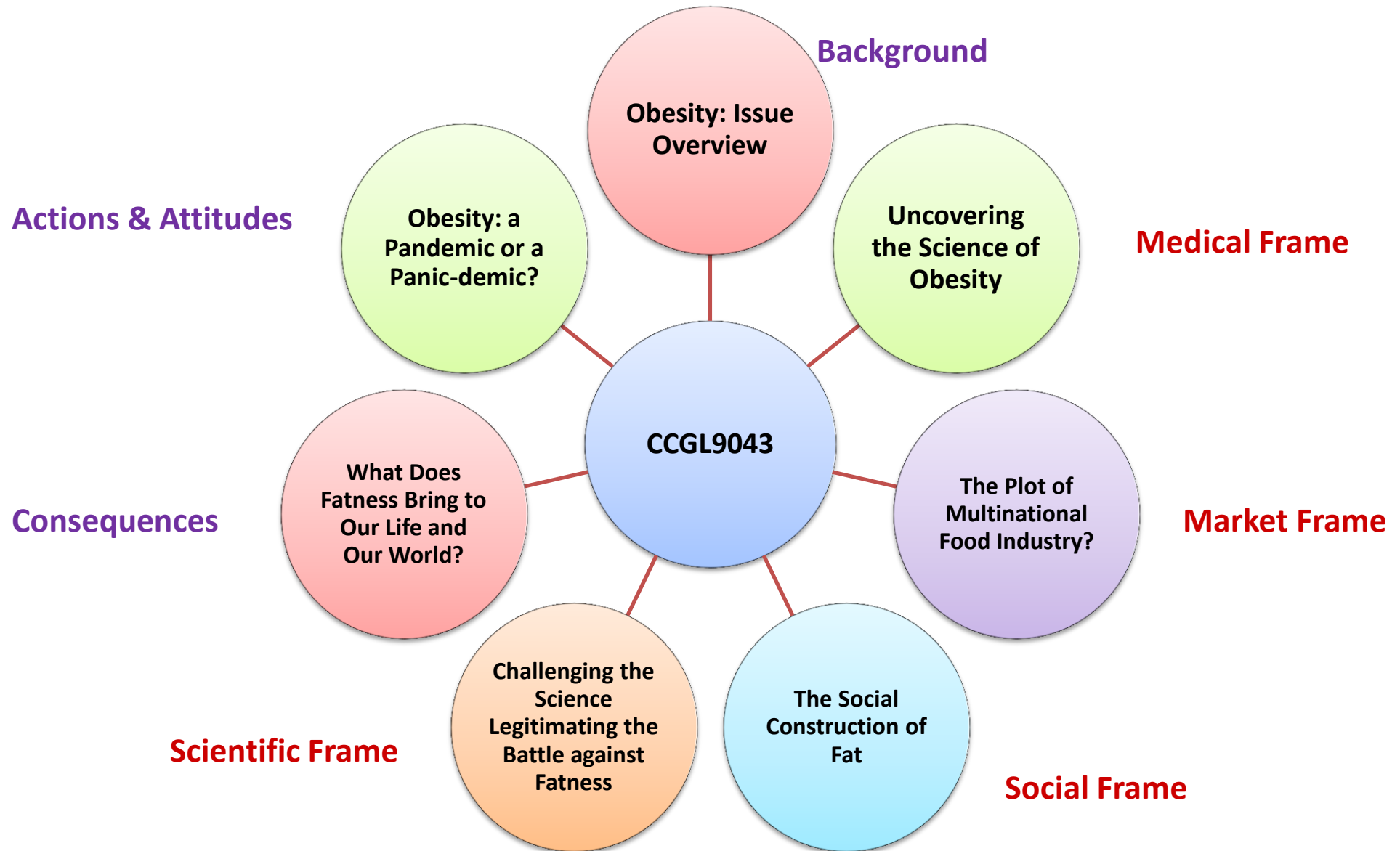
Obesity: Beyond a Health Issue



Part III

The Plot of Multinational Food Industry?

Course Outline



Class Poll

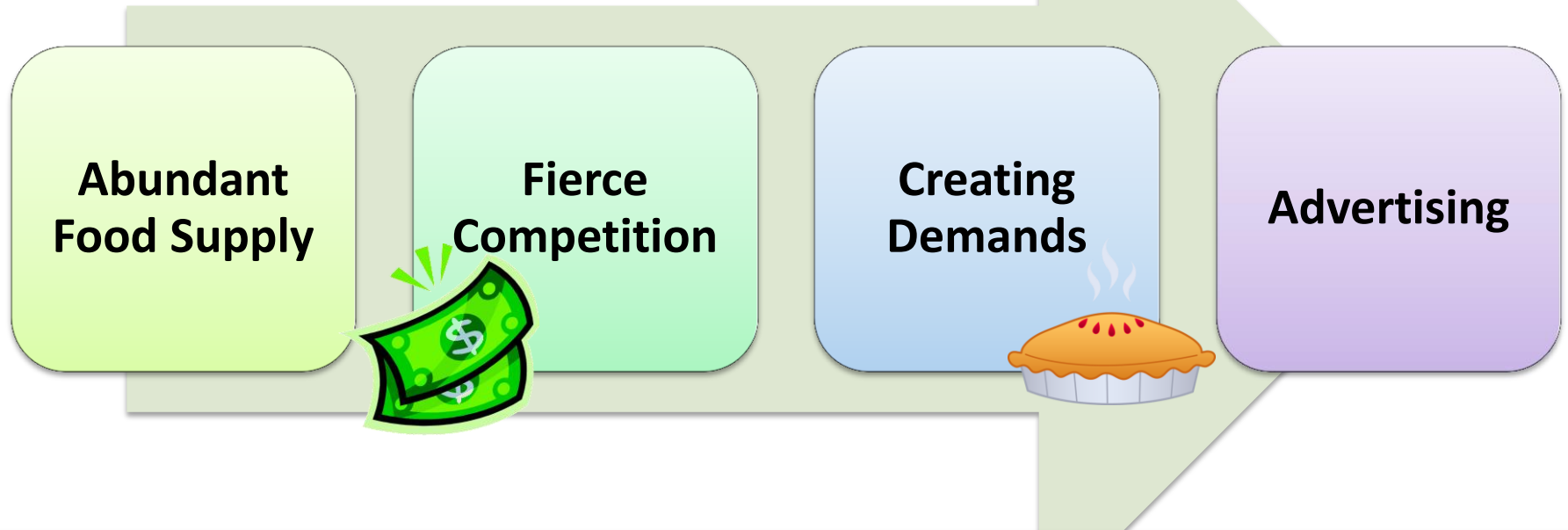
On a scale of 1 (strongly disagree) – 6 (strongly agree) indicate if you think the food industry contributes to the obesity epidemic.



How to vote

1. Grab your phone
2. Go to **www.govote.at**
3. Enter **19 63 22**

Why the Suspected Plot?



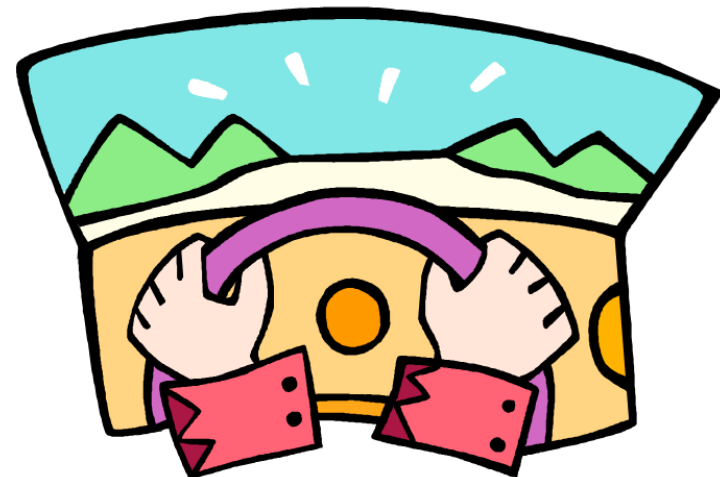
Food companies are **not health or social service agencies**, and **nutrition** becomes a factor in corporate thinking only when it can help sell food.

WHO IS IN THE DRIVER'S SEAT?

Food companies are producing what people want

OR

Food companies make us to believe so



Selling the Abundance

Taste

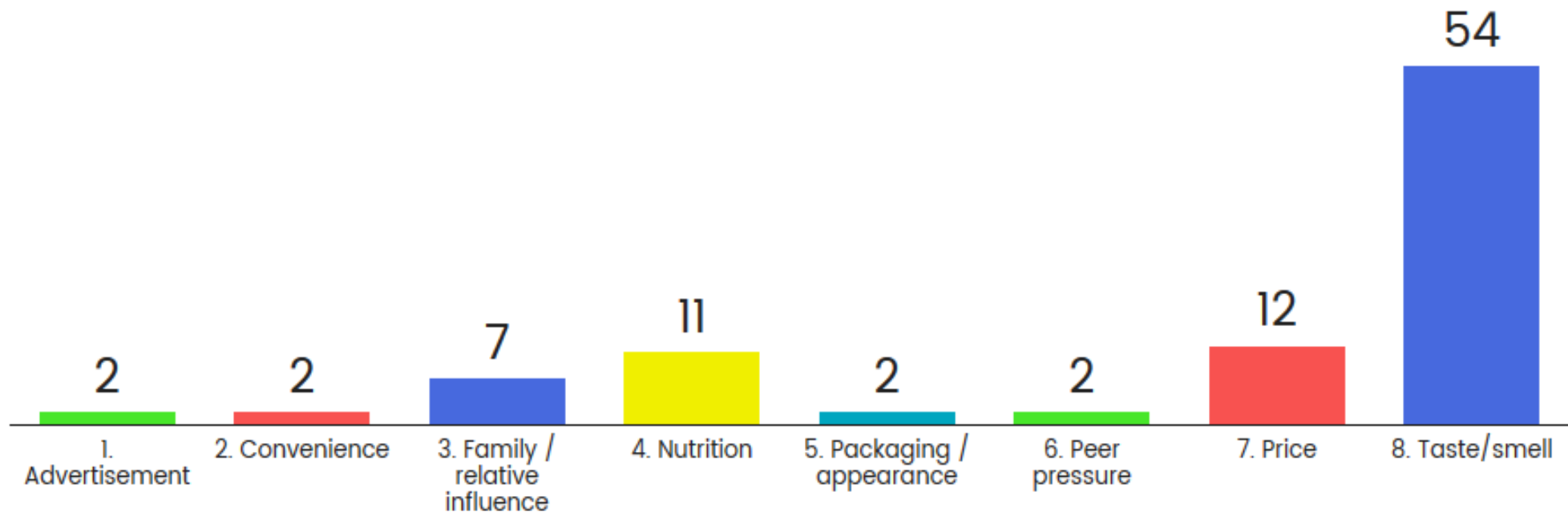
Cost

Convenience

Public
Confusion

When food is plentiful and people can afford to buy it, **basic biological needs** become less compelling and the principal determinant of food choice is **personal preference**.

**Pick ONE factor that describe best
regarding your food choice**



Taste: Make Foods Sweet, Fat, and Salty

“By deliberately manipulating three key ingredients – **salt, sugar and fat** – that act much like drugs, racing along the same pathways and neural circuitry to reach the brain's pleasure zones, the food and drink industry has created an elastic formula for a never-ending procession of lucrative products.”



A Recap on Food Addiction...

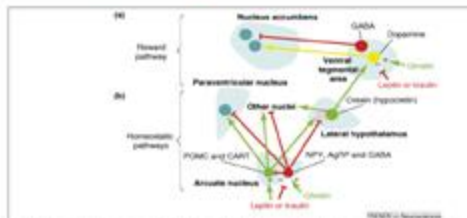
- Does the food industry intentionally make us addicted to food?
- The Science of Addictive Food (1:06-4:04;5:17-8:59)

<https://www.youtube.com/watch?v=4cpdb78pWl4>

From Lecture 2

FEELING GOOD when we EAT

Is (certain) food addictive?



Eating induces the release of dopamine, a neurotransmitter involved in reward

Trends in Neurosci 30:375-381, 2007

Sweetness is strongly preferred

Sugar (carbohydrate) is sweet

Is sugar addictive?



"Laboratory rats given a high-sugar diet and then withdrawn from sugar experience changes in both **behavior** and **brain chemistry** similar to those seen during withdrawal from morphine or nicotine."

—Princeton University scientists



Colantuoni et al. *Obesity Research* 10:478-483, 2002

DOUBLE JEOPARDY



A diet high in salt and sugar

Salt Intake, Hypertension, and Obesity in Children

Salt Intake Is Related to Soft Drink Consumption in Children and Adolescents A Link to Obesity?

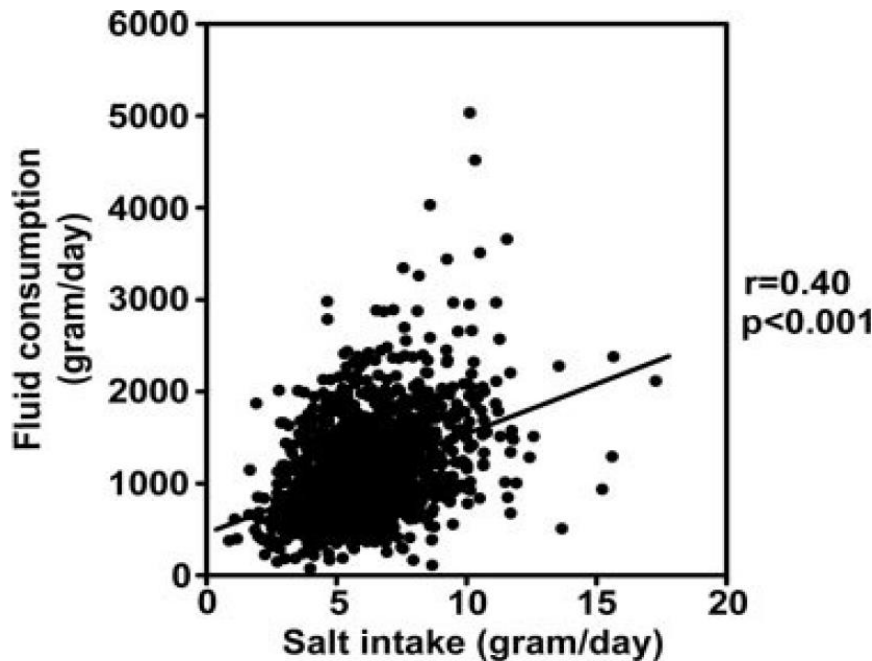
Feng J. He, Naomi M. Marrero, Graham A. MacGregor

Abstract—Dietary salt is a major determinant of fluid intake in adults; however, little is known about this relationship in children. Sugar-sweetened soft drink consumption is related to childhood obesity, but it is unclear whether there is a link between salt and sugar-sweetened soft drink consumption. We analyzed the data of a cross-sectional study, the National Diet and Nutrition Survey for young people in Great Britain. Salt intake and fluid intake were assessed in 1688 participants aged 4 to 18 years, using a 7-day dietary record. There was a significant association between salt intake and total fluid, as well as sugar-sweetened soft drink consumption ($P<0.001$), after adjusting for potential confounding factors. A difference of 1 g/d in salt intake was associated with a difference of 100 and 27 g/d in total fluid and sugar-sweetened soft drink consumption, respectively. These results, in conjunction with other evidence, particularly that from experimental studies where only salt intake was changed, demonstrate that salt is a major determinant of fluid and sugar-sweetened soft drink consumption during childhood. If salt intake in children in the United Kingdom was reduced by half (mean decrease: 3 g/d), there would be an average reduction of ≈ 2.3 sugar-sweetened soft drinks per week per child. A reduction in salt intake could, therefore, play a role in helping to reduce childhood obesity through its effect on sugar-sweetened soft drink consumption. This would have a beneficial effect on preventing cardiovascular disease independent of and additive to the effect of salt reduction on blood pressure. (*Hypertension*. 2008;51:629-634.)

Arguments:

Salt intake determines **fluid intake** (you feel thirsty so drink more)

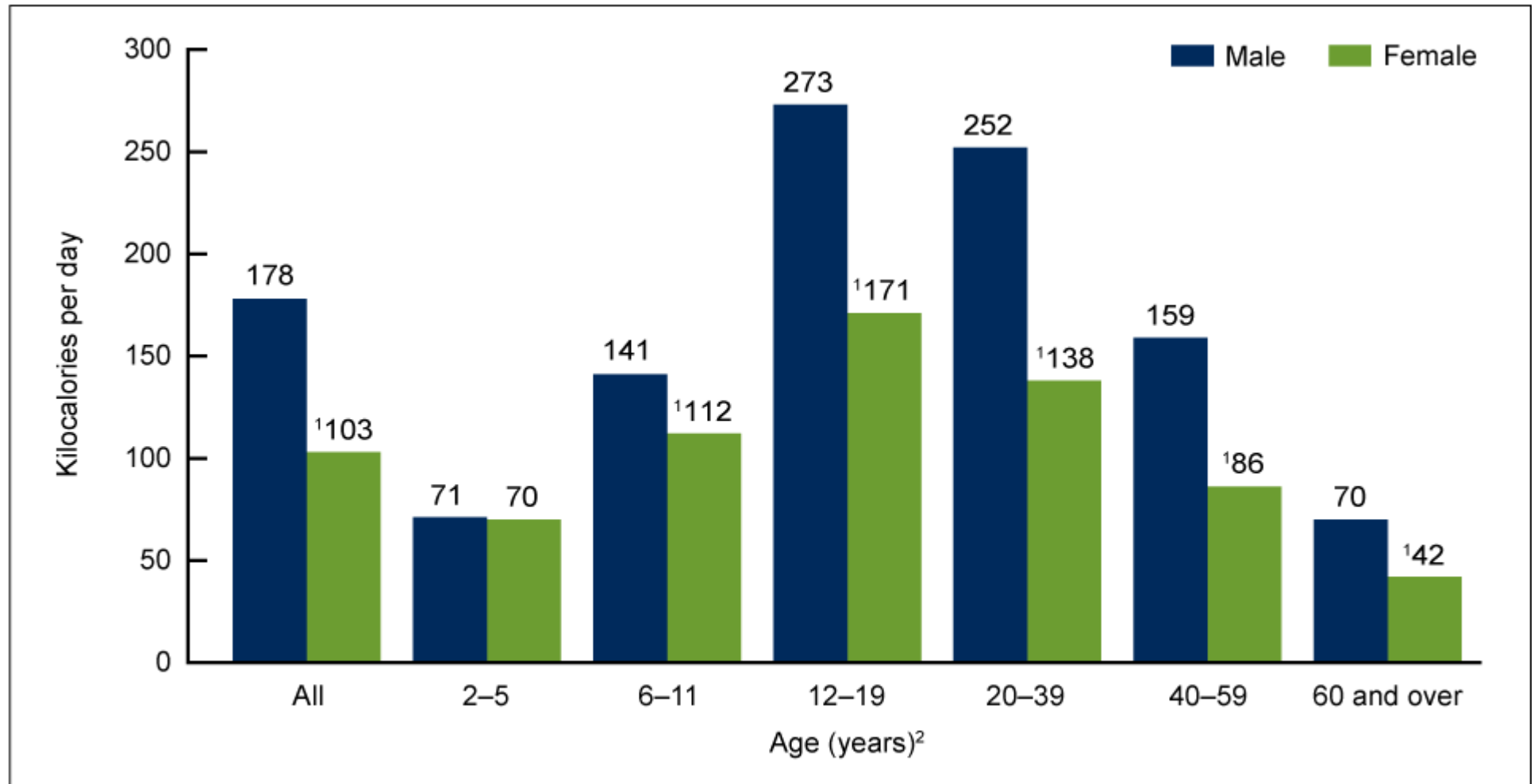
In children and adolescents, salt intake is **directly related** with higher fluid intake as well as intake of sugary drinks.



If their current salt intake is reduced by half, the projected decrease in soft drink consumption would be **~ 2 cups / week (or 200 kcal)**.

Figure 2. Relationship between salt intake and fluid consumption in children and adolescents.

Figure 1. Mean kilocalories from sugar drinks for ages 2 and over: United States, 2005–2008



¹Significantly different from males.

²Significant quadratic trend for both males and females.

SOURCE: CDC/NCHS, National Health and Nutrition Examination Survey, 2005–2008.

Situation in Hong Kong?

<http://www.cdc.gov/nchs/data/databriefs/db71.htm>

Table 1: Number of cups of soft drinks usually drunk each day in the seven days preceding the survey among children aged 2-14 by sex

Number of cups*	Sex		Overall
	Male	Female	
None	17.3%	20.9%	19.0%
Less than 1 cup	53.7%	55.2%	54.4%
1 cup	18.9%	16.6%	17.8%
2 cups	5.9%	4.6%	5.2%
3 cups or more	3.8%	2.2%	3.0%
Unknown / Missing	0.5%	0.5%	0.5%
Total	100.0%	100.0%	100.0%

Table 2: Number of cups of soft drinks usually drunk each day in the seven days preceding the survey among children aged 2-14 by age group

Number of cups*	Age group			Overall
	Aged 2-5	Aged 6-10	Aged 11-14	
None	31.7%	18.8%	11.9%	19.0%
Less than 1 cup	53.3%	56.2%	53.2%	54.4%
1 cup	9.8%	17.1%	23.1%	17.8%
2 cups	2.5%	4.6%	7.5%	5.2%
3 cups or more	1.7%	2.9%	3.9%	3.0%
Unknown / Missing	1.0%	0.4%	0.4%	0.5%
Total	100.0%	100.0	100.0	100.0%

Note: * 1 cup = 250 millilitres or 8 fluid ounces.

Source: Child Health Survey 2005-2006.

DOUBLE JEOPARDY

Preferences for Salty and Sweet Tastes Are Elevated and Related to Each Other during Childhood

Julie A. Mennella*, Susana Finkbeiner, Sarah V. Lipchock, Liang-Dar Hwang, Danielle R. Reed

Monell Chemical Senses Center, Philadelphia, Pennsylvania, United States of America

Abstract

Background: The present study aimed to determine if salty and sweet taste preferences in children are related to each other, to markers of growth, and to genetic differences.

Methods: We conducted a 2-day, single-blind experimental study using the Monell two-series, forced-choice, paired-comparison tracking method to determine taste preferences. The volunteer sample consisted of a racially/ethnically diverse group of children, 5–10 years of age ($n = 108$), and their mothers ($n = 83$). After excluding those mothers who did not meet eligibility and children who did not understand or comply with study procedures, the final sample was 101 children and 76 adults. The main outcome measures were most preferred concentration of salt in broth and crackers; most preferred concentration of sucrose in water and jelly; reported dietary intake of salty and sweet foods; levels of a bone growth marker; anthropometric measurements such as height, weight, and percent body fat; and *TAS1R3* (sweet taste receptor) genotype.

Results: Children preferred higher concentrations of salt in broth and sucrose in water than did adults, and for both groups, salty and sweet taste preferences were significantly and positively correlated. In children, preference measures were related to reported intake of sodium but not of added sugars. Children who were tall for their age preferred sweeter solutions than did those that were shorter and percent body fat was correlated with salt preference. In mothers but not in children, sweet preference correlated with *TAS1R3* genotype.

Conclusions and Relevance: For children, sweet and salty taste preferences were positively correlated and related to some aspects of real-world food intake. Complying with recommendations to reduce added sugars and salt may be more difficult for some children, which emphasizes the need for new strategies to improve children's diets.



From Lecture 2

PLoS One 9(3):e99201, 2014

A diet high in salt and sugar

Cost: Add Value but Keep Prices Low

2011 Food dollar: Industry Group (nominal)



Cost: Add Value but Keep Prices Low

- Marketers can add value to fruits and vegetables by selling them **frozen, canned, or precut**.
- Food companies are more likely to focus on developing **added-value products** than to promote consumption of fresh fruits and vegetables.



What is the average income for food in HK?

☐ 9%

☐ 12%

☐ 15%

☐ 18%

☐ 21%

Countries	Average income for food (%)
America	<10%
Kenya	44.9%
Philippines	37%
Japan	14.4%
Hong Kong	?



How to vote

1. Grab your phone
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3. Enter **94 53 84**

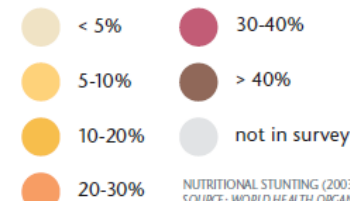
Annual income spent on food

(% OF HOUSEHOLD CONSUMPTIVE EXPENDITURES)

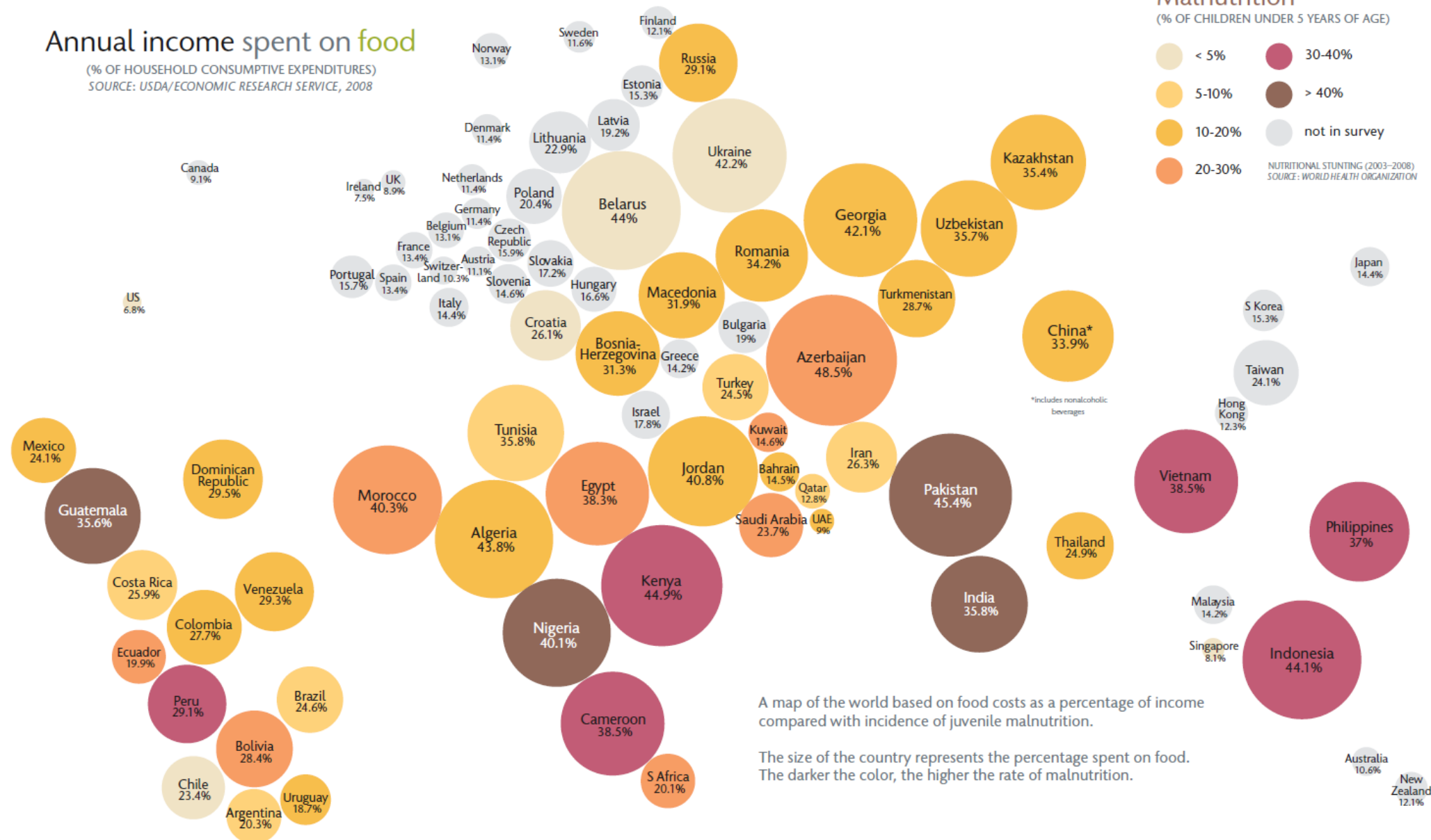
SOURCE: USDA/ECONOMIC RESEARCH SERVICE, 2008

Malnutrition

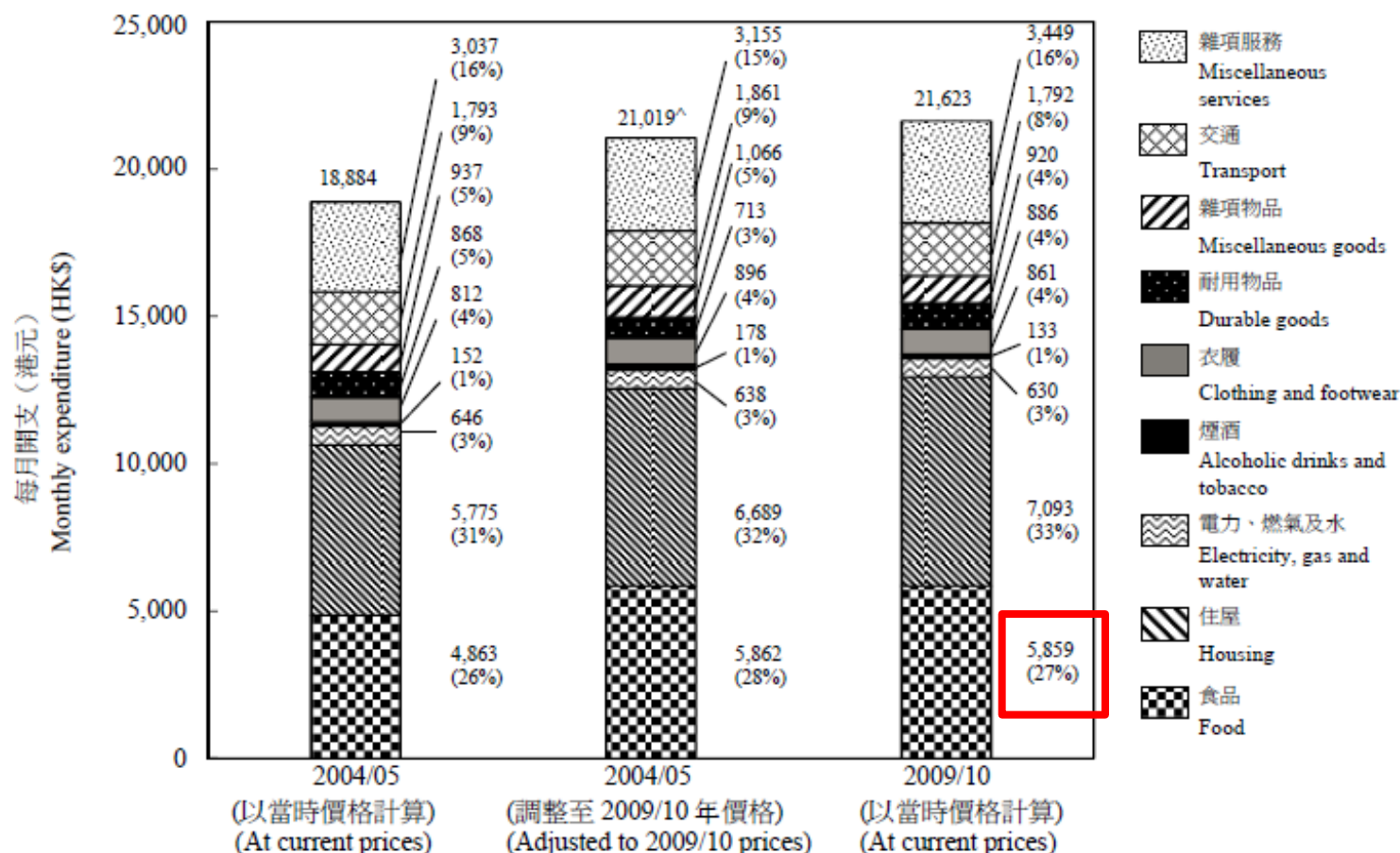
(% OF CHILDREN UNDER 5 YEARS OF AGE)



NUTRITIONAL STUNTING (2003-2008)
SOURCE: WORLD HEALTH ORGANIZATION



圖一 二零零四至零五年及二零零九至一零年按商品或服務類別劃分的住戶開支模式比較
Chart 1 Comparison of Household Expenditure Patterns by Commodity/Service Section between 2004/05 and 2009/10



註釋： ^這數字是把總開支經消費物價指數的總指數調整後得出，因此，並不等於個別商品或服務類別經相應類別的消費物價指數調整後的開支額的總和。

Note : ^The figure is compiled by adjusting the total expenditure by the all-item CPI and does not equal to the sum of the expenditure of individual commodity/service sections adjusted by the CPIs for corresponding sections.



Convenience: Make Eating Fast



Then



Now



Convenience adds value to foods and stimulates the food industry to create even more products that can be consumed quickly and with minimal preparation.



Confusion: Keep the Public Puzzled

Vitamin C 'gives chemotherapy a boost'

Vitamin D 'key to healthy brain'

Hold the salmon: omega-3 fatty acids
linked to higher risk of cancer

Fish oil supplements 'beat psychotic mental illness'

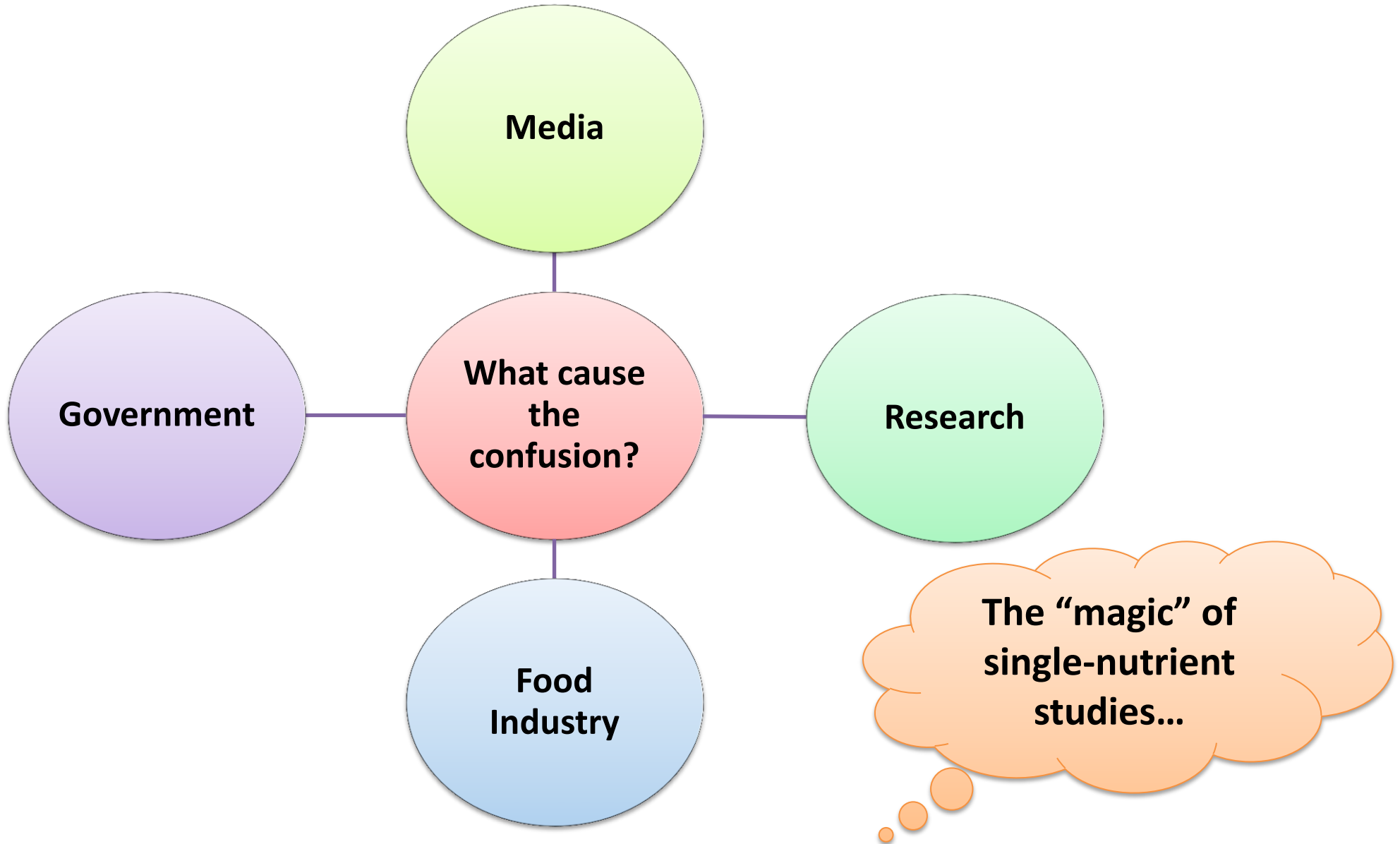
Omega-3 may curb memory loss, study says

Coffee may reduce risk for type 2 diabetes

Study: Heavy coffee drinking in people under 55
linked to early death

Soy foods 'reduce sperm numbers'

Confusion: Keep the Public Puzzled



Selling the Abundance

Taste

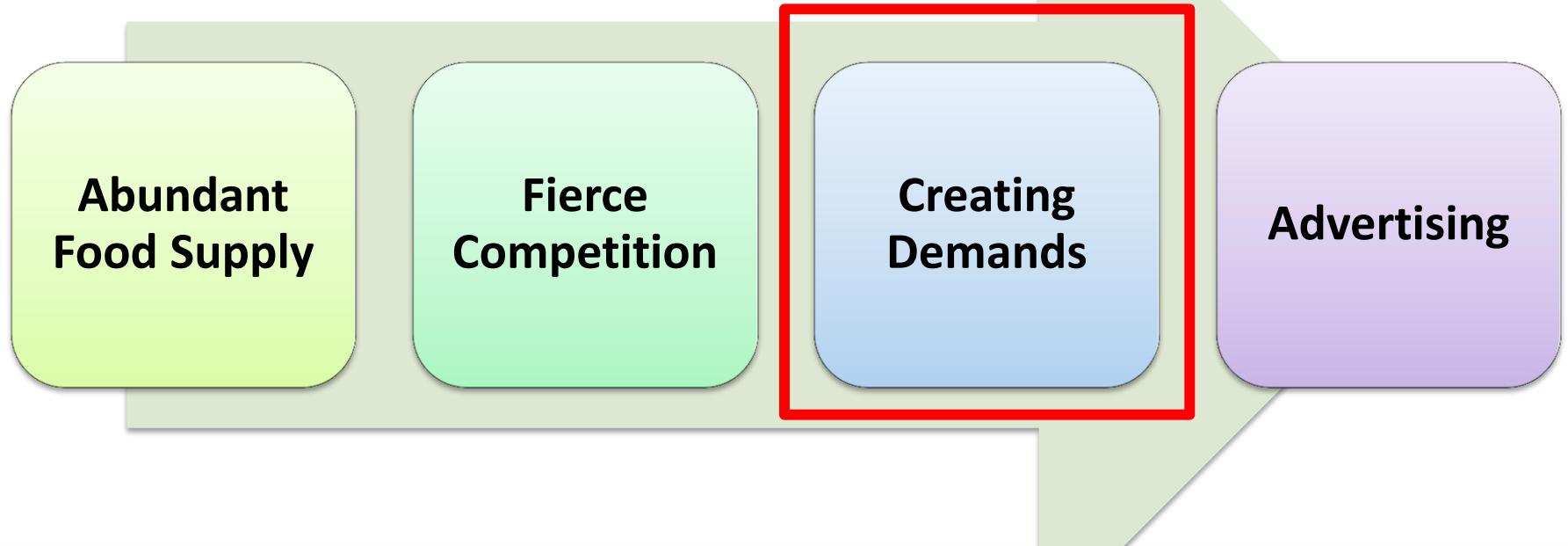
Cost

Convenience

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When food is plentiful and people can afford to buy it, **basic biological needs** become less compelling and the principal determinant of food choice is **personal preference**.

Why the Suspected Plot?



Food companies are not health or social service agencies, and nutrition becomes a factor in corporate thinking only when it can help sell food.

How the food industry makes us eat more?

1. Increase the **Portion** size
2. Advertise, Advertise, Advertise
3. Introduce New Products



Increase the Portion size

Selling the Abundance



5 cups
270 calories



Tub
630 calories



3-inch diameter
140 calories



5-6-inch diameter
350 calories



333 calories



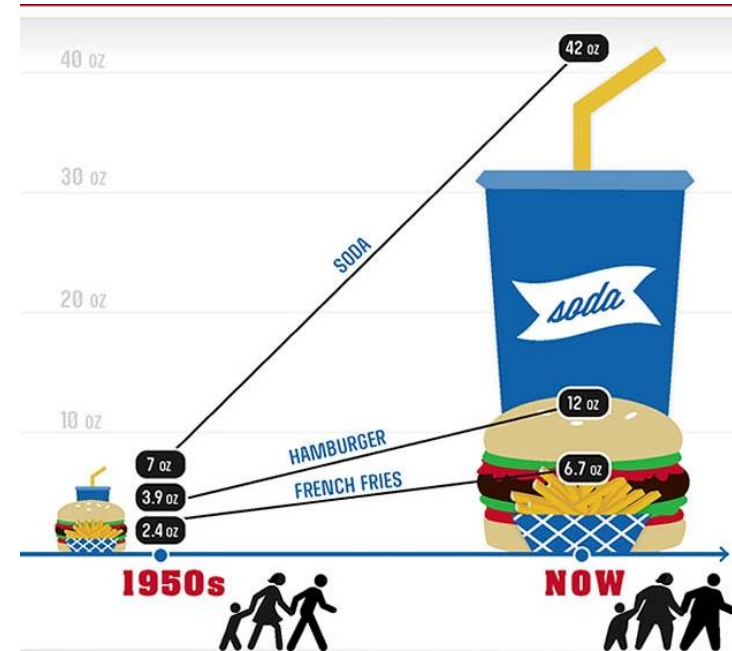
590 calories



Original 8-ounce bottle
97 calories



20-ounce bottle
242 calories



Hypothesis??

Growing portion sizes
Vs.
Natural regulation

Memorable Monologue: Cup Sizes

https://www.youtube.com/watch?v=_Qp1QkGJdU

<http://whatifpost.com/wp-content/uploads/2012/06/CDC-portion-sizes.jpg>

Do Large Portions Increase Eating?

Portion-Sizes Out of Control

https://www.youtube.com/watch?v=JRJW6jblrFk&feature=youtu.be_gdata_player



- 67 % Americans report that they **eat whatever is on their plates**, regardless of portion size.
- Moviegoers eat 49% to 61% **more popcorn** when given a larger container.
- When subjects were given a 12" sub instead of an 8" version, **calorie intake increased** 11% in women and 20% in men.

American Institute for Cancer Research. As restaurant portions grow, vast majority of Americans still belong to "Clean Plate Club." Survey released Jan. 15, 2001. Available at www.aicr.org. Accessed Dec. 14, 2002.

Ello-Martin JA, Roe LS, Meengs JS, Wall DE, Rolls BJ. Increasing the portion size of a unit food increases energy intake. *Appetite*, 2002;39:74.

Rolls BJ, Morris EL, Roe LS. Portion size of food affects energy intake in normal-weight and overweight men and women. *American Journal of Clinical Nutrition*, 2002;76:1207–1213.

Wansink B. Accounting for taste: Prototypes that predict preference. *Journal of Database Marketing*, 2000;7:308–320.

Perceptions of What Is Right to Eat

Are overweight subjects less accurate in estimating portion size?

We found no definitive differences in the ability of overweight and normal-weight subjects to accurately estimate food portions. Therefore, our data do not support conclusions by others that overweight subjects are significantly less accurate than the normal-weight subjects in their estimates. However, our overweight sample included only 50% obese and was homogeneous as to education, income, and ethnicity. Nevertheless, we found serious errors in food portion estimation by all subjects. Moreover, our data support the findings of Rapp, which show inaccurate portion estimation even when subjects were actively involved in a diet counseling program. And, in general, our data support researchers who have concluded that inaccurate estimation of portion size is a major problem. If the results hold true across populations, the magnitude of errors could have a profound effect on the accuracy of our food composition data for therapeutic or monitoring purposes and requires creative modification of methods taught for monitoring and reporting food intake.



Blake, A. J., Guthrie, H. A., & Smiciklas-Wright, H. (1989). Accuracy of food portion estimation by overweight and normal-weight subjects. *Journal of the American Dietetic Association*, 89(7), 962-964.

- Overconsumption: Who is responsible?
- Are we manipulated by food companies?



WHO IS IN
THE DRIVER'S
SEAT?

How the food industry makes us eat more?

1. Increase the **P**ortion Size
2. **Advertise, Advertise, Advertise**
3. Introduce New Products



How the food industry makes us eat more?

Identify the strategies used by Nestle to increase sales in Brazil.



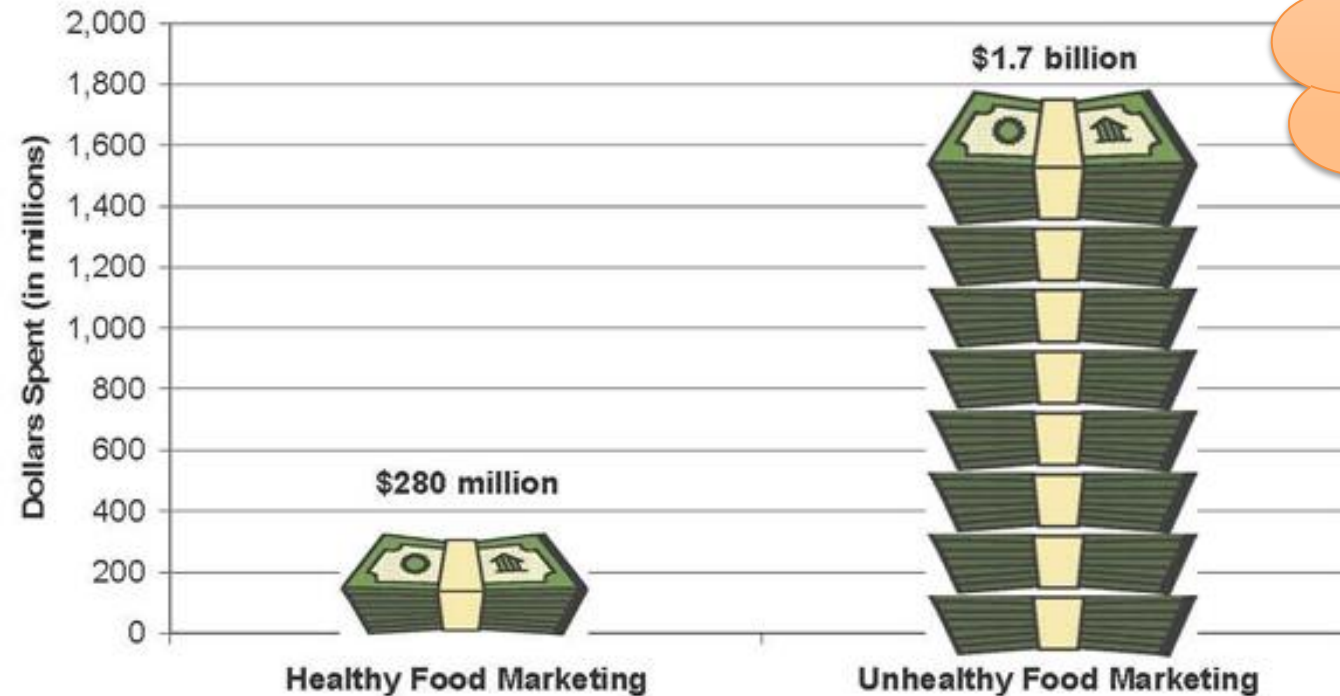
A "humanitarian" action??

Globesity: Fat's New Frontier (32:38-36:08)
<https://www.youtube.com/watch?v=mGL3iT5MMdQ>

Nestle's Mobile Nestlemarket

Children as Market Objects

Spending on Food Marketing to Kids*



Children controlling
increasing amounts
of money

Lifetime brand
loyalty

Pester power

*Federal Trade Commission (FTC). *Marketing Food to Children and Adolescents: A Review of Industry Expenditures, Activities, and Self-regulation*. Washington, D.C.: FTC, 2008.

“It isn’t enough to just advertise on television. . . . You’ve got to reach kids throughout their day—in school, as they’re shopping at the mall . . . or at the movies. You’ve got to become part of the fabric of their lives.”—Carol Herman, Senior Vice President, Grey Advertising

Institute of Medicine. *Food Marketing to Children: Threat or Opportunity?* Washington, DC: National Academies Press, 2006.

Cotugna N. TV ads on Saturday morning children’s programming—what’s new? *J Nutrition Education* 1988;20:125–127. Kotz K, Story M. Food advertisements during children’s Saturday morning television programming: are they consistent with dietary recommendations? *J Am Diet Assoc* 1994;94:1296–1300.

Examples



Disney has a long history of helping sell fast foods, sugared cereals, and more.



“We’re **excited** about the possibilities with this alliance,” said Kellogg spokesman Neil Nyberg.



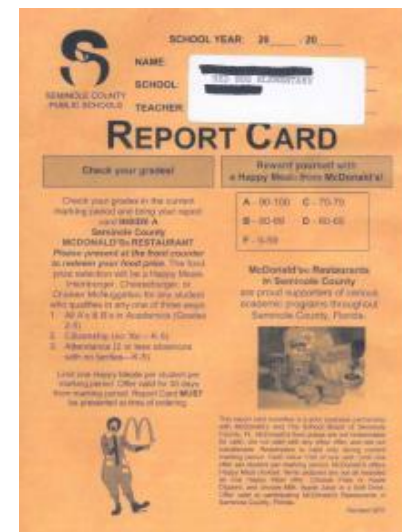
“Clearly in the case of cereal, Kellogg is a **global leader** in their category the same way Coca-Cola is a leader in carbonated beverages,” said Andy Mooney, president of Disney Consumer Products. Mooney said his goal is to **put Disney products in front of consumers on a daily basis.**

TED^xManhattan

x = independently organized TED event

Marketing Food to Children (1:50-6:44; 7:24-8:47)

<https://www.youtube.com/watch?v=0bop3D7-dDM>

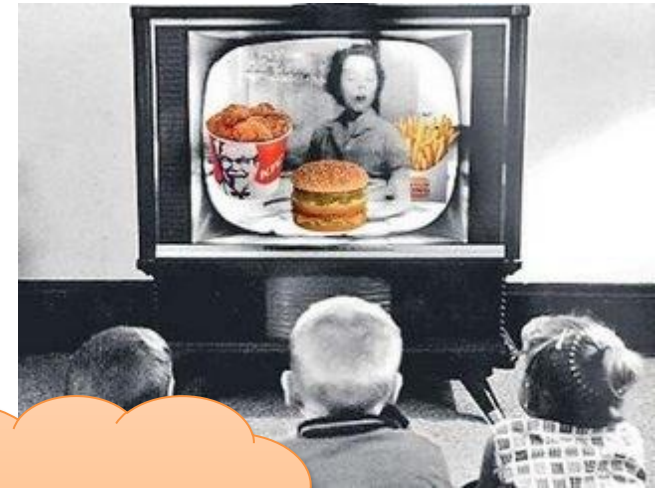


Say No to Direct-to-child Marketing

“The reason they chose Coke or Pepsi had **nothing to do with taste**. . . . [We] think the advertising media targets their advertisements to appeal to teenagers because . . . [that’s when you] **develop buying habits** and that’s when you have more pressure to drink the brand that’s cool.”



The commercial exploitation of children . . . is particularly egregious. Recognizing that children are **not fully mature** with regard to making informed decisions, we control the promotion of alcohol, firearms, and tobacco. Yet we **assume that young children can rationally decide about food choices** that have important health consequences... —Walter Willett, Harvard nutrition researcher



**Aims at
uncritical minds**

**Conflict-ridden
manipulation**

**Influences
buying habits**

Say Yes to Direct-to-child Marketing

The food industry rationalizes it by...

Freedom of
speech

Exercise is
the key

Does not increase
consumption

Not
inherently
unhealthy

Not a major influence
on food choice



“In reality, there is no evidence that advertising is a major influence on children’s food choices; at the same time, there is substantial evidence that it is not a major influence, and that other factors— notably **inherent taste preferences and **parents**—are a much stronger influence.”**

Responses & Actions

“Advertising directed toward children is inherently **deceptive and exploits children** under eight years of age.”



Marketing to children is **exploitive and harmful** to the nation's youth.



Campaign for a Commercial-Free Childhood

CSPI started an organization called **“Kids Against Junk Foods”**.



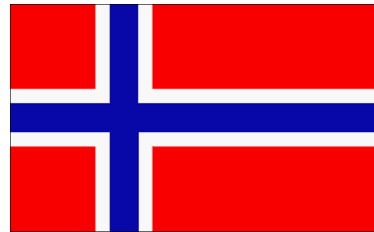
Regulations on Food Advertising



Quebec



Belgium



Norway



Sweden



Mexico



Slovenia



Iceland



Chile



Turkey

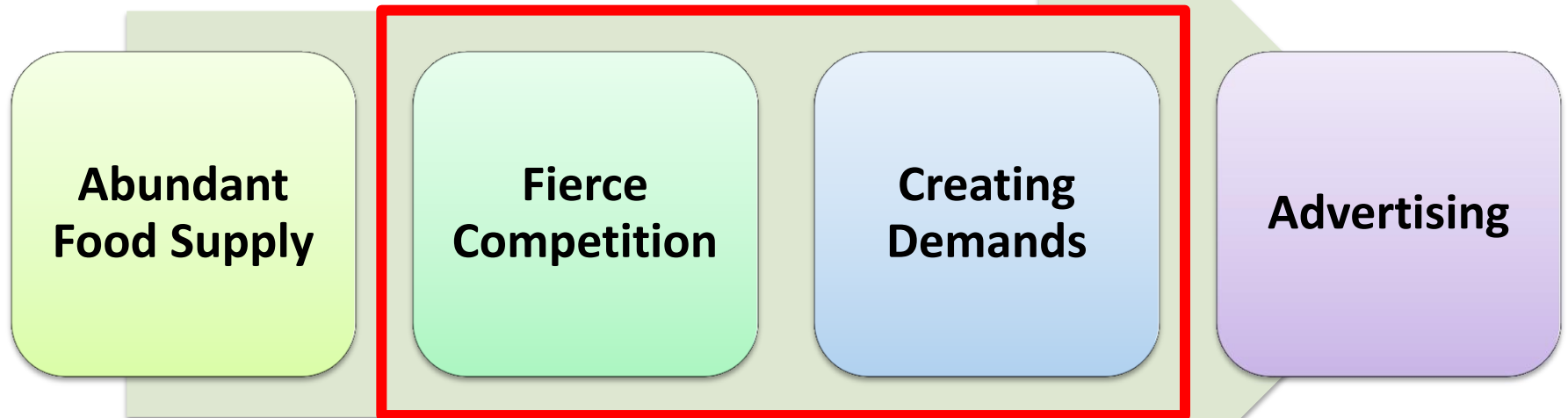
Laws and regulations are implemented in these countries on advertising to children.

How the food industry makes us eat more?

1. Increase the **P**ortion Size
2. Advertise, Advertise, Advertise
3. **Introduce New Products**



Why the Suspected Plot?



Food companies are not health or social service agencies, and nutrition becomes a factor in corporate thinking only when it can help sell food.

Summary

