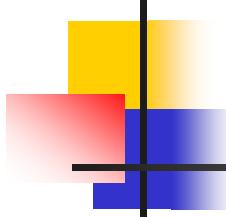


Getting Rid of Trans Fat: Policies, Incentives, and Progress

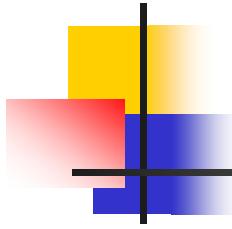
Laurian J. Unnevehr
Evelina Jagmanaitė
University of Illinois

Food Product Composition, Consumer Health, and Public Policy
Berkeley, CA April 10, 2007



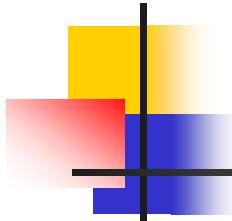
Background

- Partially hydrogenated soybean oil used in margarine, processed products as sub for sat fats from animal, palm
 - Push to replace tropical oils in 1980s
- Provides stability, texture, flavor in many uses similar to sat fats
- Nutrition science suggesting negative health impact coalesced in early 1990s



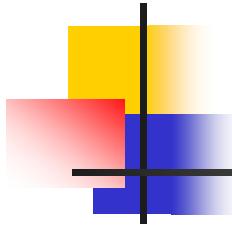
Summary of Health Impacts

- Trans fats
 - Raise LDL and lower HDL cholesterol
 - Increase risk of CHD and type 2 diabetes
 - “Worse than saturated fat” according to 2006 NEJM review article
 - Estimated 30,000 deaths per year
- IOM in 2002 – low as possible
- Dietary guidelines in 2005– less than 1%



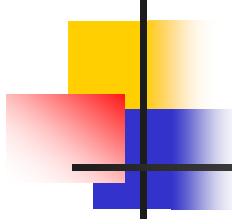
How do we consume trans fats?

- Estimates of trans fat consumption vary, as the same food item may have widely varying amounts of trans fats
- Dietary estimates agree that fried fast foods, pastries, margarine, snacks are greatest sources of artificial trans fats



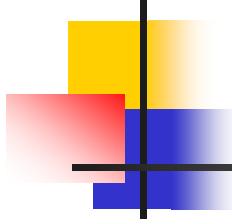
Three Kinds of “Push”

- Mandatory disclosure in nutrition label on packaged foods
 - 1994 CSPI petition to FDA; amended 1998
 - 1999 preliminary rule
 - 2003 final rule
 - Jan 1, 2006 implementation
- Creates incentives to reformulate to retain consumers seeking low or no trans



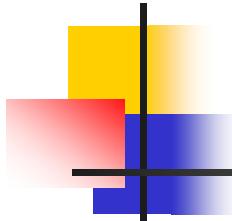
Three Kinds of “Push”

- Liability– lawsuits filed against
 - Kraft in 2003
 - McD's in 2005
 - KFC in 2006
- Creates incentives to reformulate, even if legal claim not fully validated, to avoid negative publicity



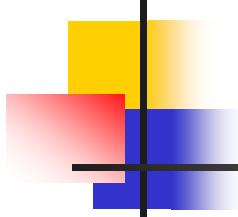
Three Kinds of “Push”

- Banning transfats
 - Danish example in 2004
 - NYC ban passed in late 2006 for full implementation in 2008
 - CSPI pending petition to FDA to remove from GRAS list (de facto national ban)
 - Several states, other cities considering ban
- Creates incentives for food service to find substitutes to avoid differentiating for major market(s)



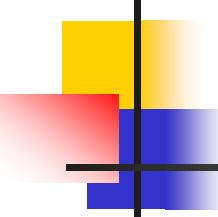
What is the food industry response?

- Which companies, markets responded?
 - Will overall trans fat cons decline?
- What substitutes?
 - Substituting sat fat for trans fat?
- What additional costs?
 - Will healthier food be more expensive?
- What time lag?
 - Do we have less healthy in short run and more healthy in long run?



Preliminary Answers

- Sources of Information
 - Trade news
 - Secondary sources, eg. regulatory analysis
 - Productscan new product label data
 - Industry interviews
- 3 stories to tell



Story #1: Food Service Replaces Frying Oils

- Major food services announce intentions to replace trans fats
 - Wendy's in 2005
 - Taco Bell, KFC, McD, BK in 2006
 - Disney by 2008
- Most activity after NY ban; demonstration effect evident, eg. BK announce within days of McD
- Testing alternatives has been underway for 4-5 yrs; complete substitutions will take another 3 yrs to implement

There are wide international variations in trans fat in fast food, suggesting that reductions are possible

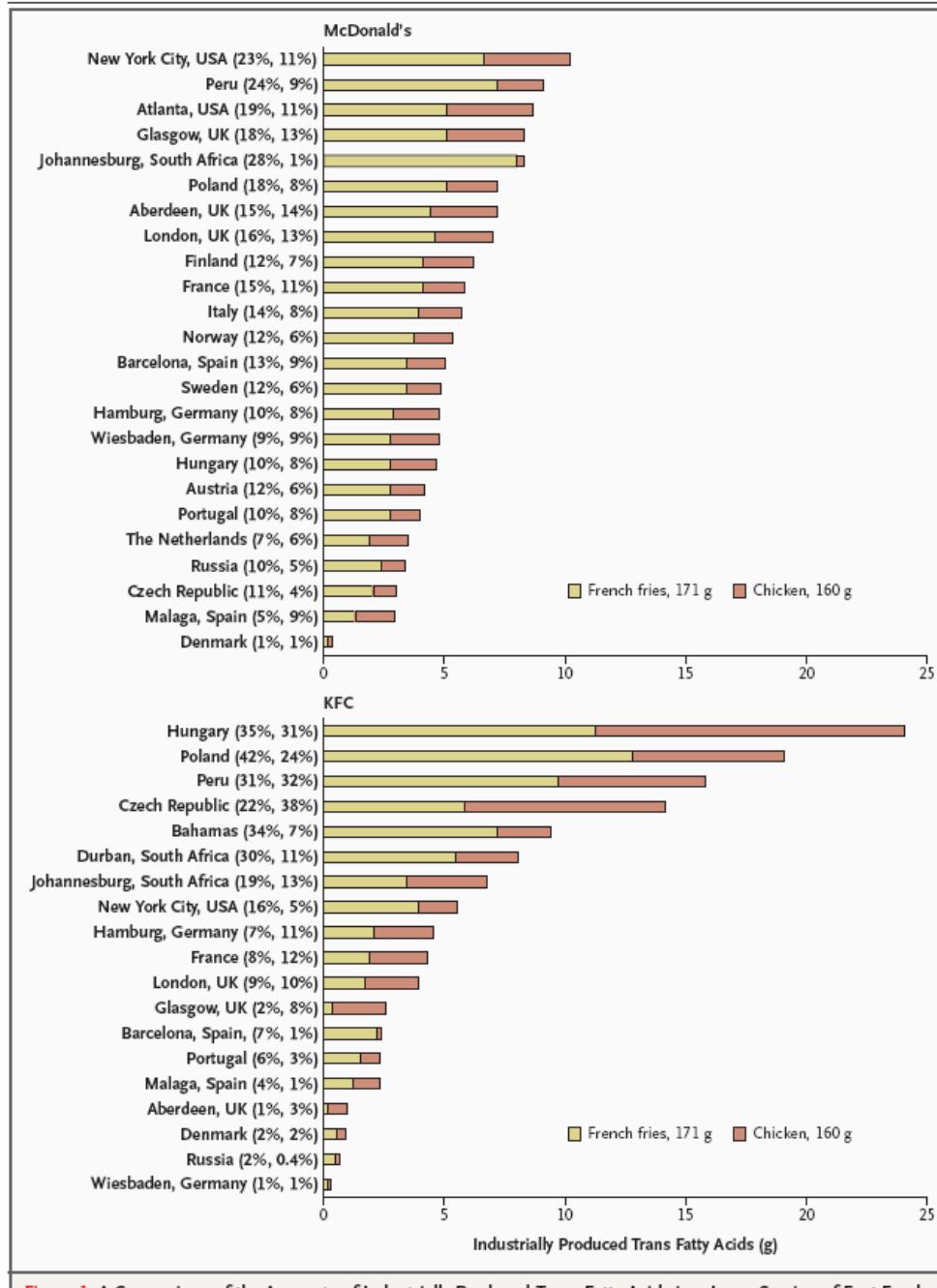
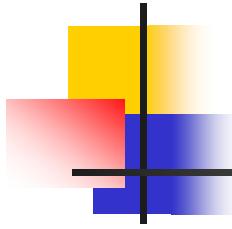


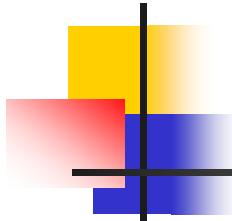
Figure 1. A Comparison of the Amounts of Industrially Produced Trans Fatty Acids in a Large Serving of Fast Food from Two Outlets in Various Countries.

The values in parentheses on the y axis are trans fatty acids as a percentage of the total fat found in 43 servings of french fries and chicken nuggets purchased at McDonald's or KFC.



Food Service Fry Oils

- Substitution possibilities include blends of conventional oils (eg., cottonseed, sunflower) and development of enhanced oils, eg., low lino soy
- Exact blend must meet specific product taste / sensory requirements (fries differ from nuggets)
- Estimate that oil must be changed out twice as often– cost increase for fast food operators



Story #2: Packaged Foods Reformulated

- Announcements from major brands
 - Unilever in 1990s
 - Nestle in 2002
 - Kraft in 2003 (Oreos)
 - Campbell's in 2004 (Goldfish)
 - Kellogg's in 2005 (Keeblers)
 - Frito-Lay's in 2006 (chips)
- Substitutions complex; require testing, new equipment; long lead time.

Trans Content of a Crunchy Corn Puff Snack Before and After Reformulation

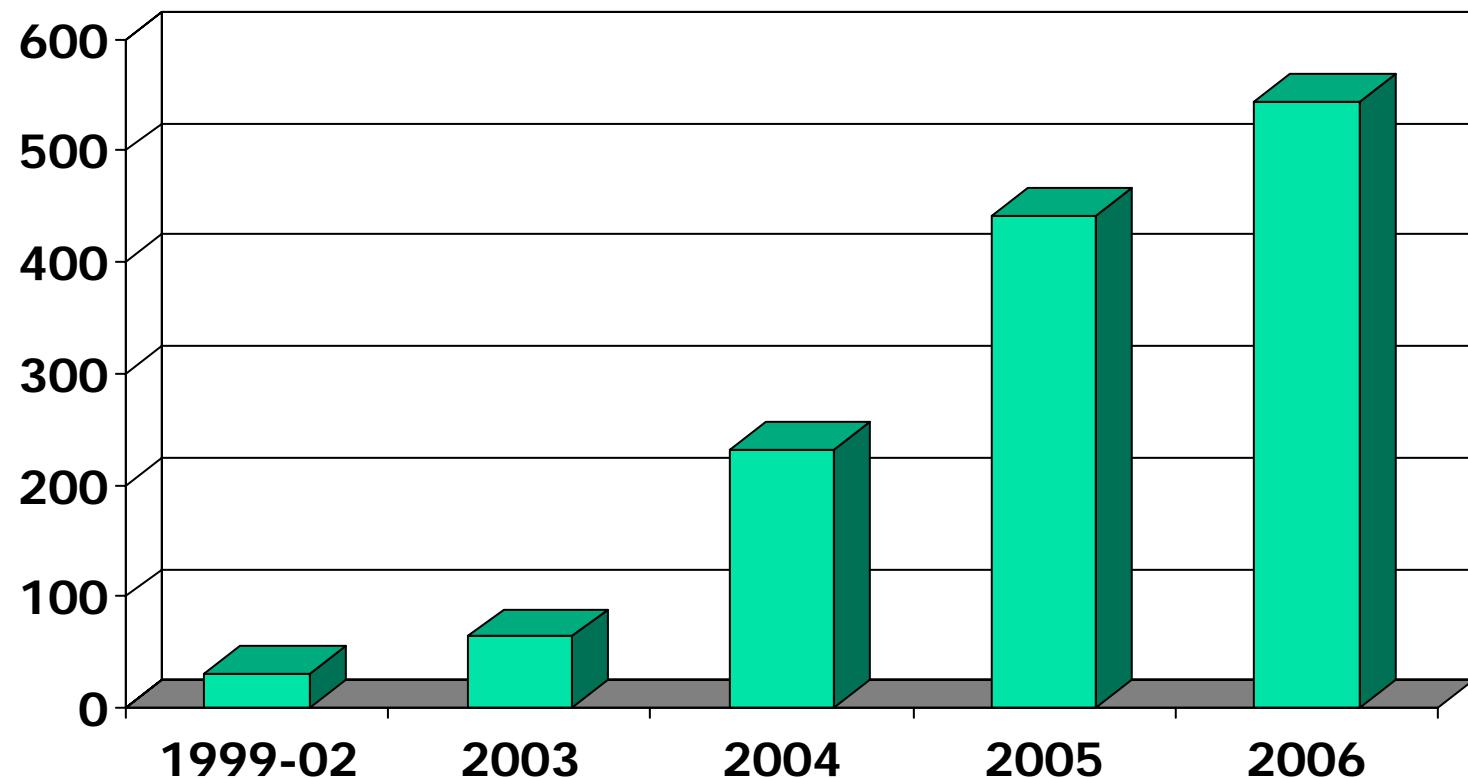


Total <i>trans</i> g/100 g		Total <i>trans</i> g/28g	
Before	After	Before	After
10.8	0.84	3.024	0.03

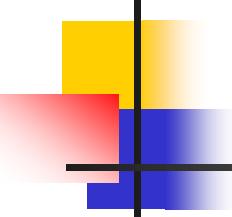


Source: David Klurfeld, USDA/ARS

Packaged Foods with “No Trans Fat” Label Claim



Number of new products claiming “No Trans Fats”
These were 10% of all food product introductions in 2005-06



Packaged Foods: Which Product Categories?

Number of products in each category claiming "no trans fat"

2004	2005	2006
Snack bars (26)	Snack bars (68)	Chips (65)
Cookies (26)	Cookies (46)	Snacks (59)
Breads (24)	Breads (42)	Cookies (54)
Chips (19)	Snacks (33)	Breads (50)
Crackers (18)	Crackers (31)	Meals (45)
Snacks (16)	Sandwiches (26)	Snack Bars (41)
Pastry (14)	Pastry (16)	Crackers (23)
32 categories	39 categories	48 categories

Pastry category has seen limited introductions relative to its importance as a source of trans fats.

<u>Dietary Sources of Transfats</u>	<u>Grams Trans Fat</u>	<u>2004-06 New Products</u>
		<u>Percent</u>
		<u>Number</u>
Cake, doughnuts, pastry	1.391	7.4
Margarine	0.967	1.1
Cookies and Crackers	0.571	36.3
French-fried potatoes	0.486	0.0
Yeast bread	0.404	9.7
Potato Chips, Corn Chips, Popcorn	0.281	11.8
Household shortening	0.250	2.0
Salad dressing	0.159	1.8
Breakfast cereal	0.084	2.6
Candy	0.044	3.2
Uncategorized	24.3	291

Packaged Foods: Which Companies?

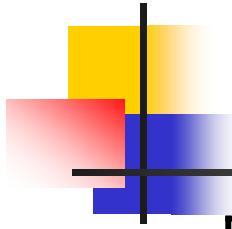
Number of products claiming "no trans fat"

2004	2005	2006
Hain (16)	Altria (28)	PepsiCo (23)
Altria (11)	Hain (13)	Nestle (15)
Kellogg (7)	Conifer (12)	Altria (14)
Atkins (7)	PepsiCo (11)	Snyder's (9)
HealthHandful (6)	NaturesPath(8)	ConAgra (8)
PepsiCo (5)	Kellogg (7)	Hain (6)
ClifBar (5)	Campbells (7)	Campbells (6)
139 companies	262 companies	318 companies

Packaged Foods: What ingredients?

Palm oil and butter are important but not dominant; use of part hydrog reflects 0.5 gm/serving allowed under regulation.

Oil Ingredient	Percent of 2005-06 "No Trans Fat" Products Using
Canola Oil	15
Soybean Oil	14
Sunflower Oil	12
Palm Oil	12
Corn/Cottonseed/Safflower	11
Partially Hydrogenated Oils	9
Olive Oil	8
Butter	8
High Oleic	4

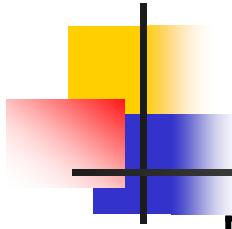


Cookies: Before and After

All New Cookies in 2001-02	
Ingredient	% of Products Using
Part Hydrog Oils	35
Veg oils	16
Butter	15
Palm or Coconut	12

"No Trans fat" Cookies in 2005-06	
Ingredient	% of Products Using
Palm Oil	29
Butter	37
Canola Oil	27
Soybean Oil	22

Palm oil and Butter are more often used for this category, suggesting that saturated fat has replaced partially hydrogenated oils. Pastry was another category that used palm oil and butter in no trans fat products.

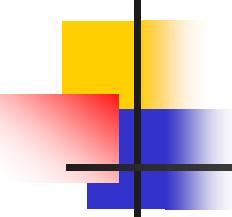


Chips: Before and After

All New Chips, 2001-02	
Ingredient	% of Products Using
Partially Hydrogenated Oils	37
Corn Oil	21
Sunflower Oil	20
Vegetable Oil	19

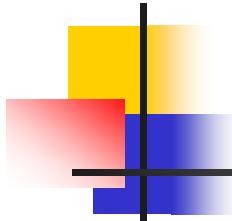
No Trans Fat Chips, 2005-06	
Ingredient	% of Products Using
Sunflower Oil	37
Corn Oil	23
Canola Oil	21
Vegetable Oil	20

Sunflower, corn, and canola are most often used in place of partially hydrogenated oils. Breads are another category that used mainly healthy oils in no trans products.



Story #2: Summary of Product Introductions

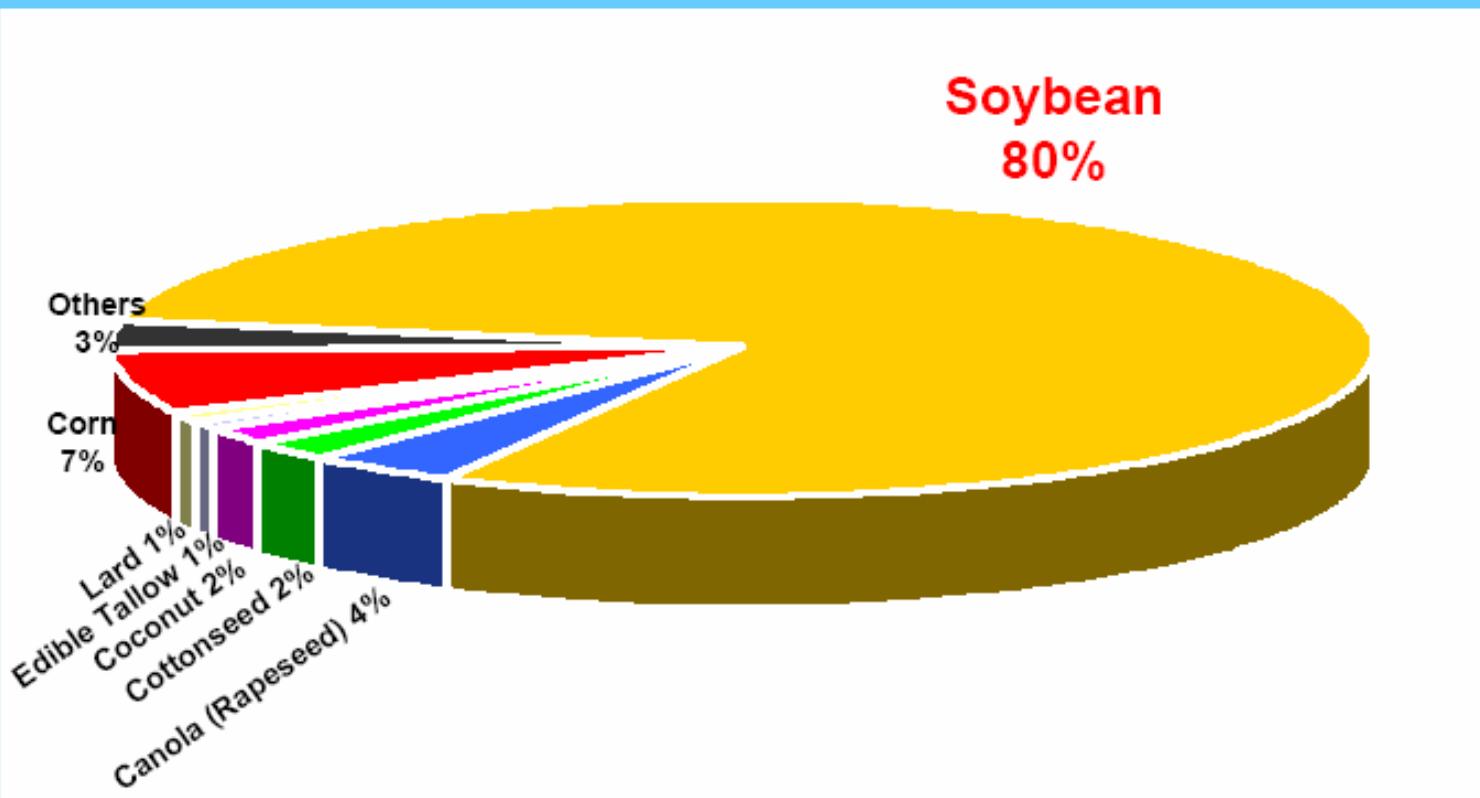
- Big surge in new products claiming “no trans fat” since the final rule
- Lag in addressing some sources of trans fat, eg., pastry
- Substitute oils vary by product category with some (chips) using healthier oils but others (cookies) not



Story #3: Supply Chain Response

- Use alternative oils or blends
 - Eg. cottonseed oil provides stability
- Develop soy/canola/sunflower with different profiles
 - Eg. low lino; hi oleic; hi stearic from Monsanto, Dupont, DowAgro, Cargill
- Process oils to provide different characteristics
 - Eg. interesterification: ADM “NovaLipid” oil

Edible Oil Use, United States

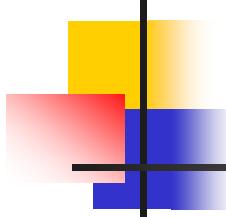


Total = 9.8 Million Metric Tons

Source: American Soybean Association, 2005

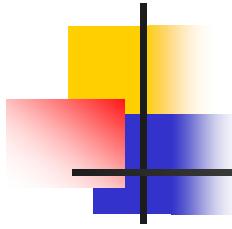


There are limited supplies of oils other than Soybeans in the U.S. in short run.



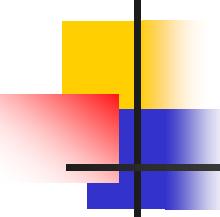
Low Lino Soy Example

- Low lino soy gene variant discovered in 1980s
- Low lino variety introduced by Pioneer in 1990s and finds no market
- Monsanto starts work in 2001 on low lino and releases *Vistive* in 2005 (similar varieties from other companies a little later)
- Development speeded by MAS technology but low lino trait not GM; variety has GM GR gene so that costs of production comparable to RoundupReady



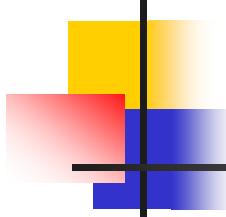
Low Lino Soy Example

- Estimated 1.5 million acres in 2007; producing 1 billion lbs of oil
- Premium at 8% of market price
- 3 year horizon for meeting emerging demand– expanding rapidly
- Supply still small relative to the 3 billion lbs of hydrogenated oils that have been used in U.S. food service



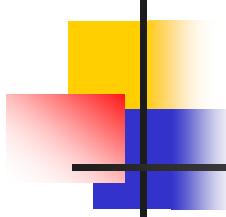
Low Lino Soy Example

- Low lino has greater stability but not “drop in” solution; must try new blends for any specific application
- Early adopters include Kellogg’s, KFC
- Farmers contracted through cooperatively owned crushing mill and dedicated oil supplier



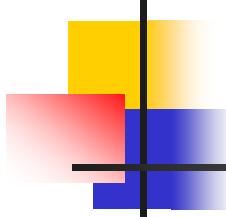
Lessons: What's Going Right

- Trans fats in diet are clearly being reduced by combined incentives
- Trans fats not replaced with saturated fat in many instances (eg., fry oils, chips)
- Label reg and publicity spurred innovation but also allows market to determine time required for adaptation



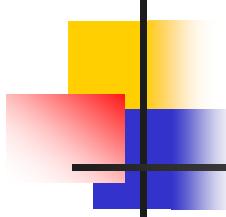
Lessons: What's Going Right

- Policies created market incentives that are reflected all the way back through the marketing chain
- Development of new varieties and use of modern biotechnology for public health benefit
- Positive example for other nutrition issues?



Lessons: What's Troubling

- Foods formerly containing trans fats are among those that should have limited intake; will “no trans” give illusion of health?
- Some trans fats replaced by sat fats; some new oils have unknown health effects (eg., Will hi stearic soy be better than palm?)



Lessons: What's Troubling

- Substitutions:
 - Increase cost (at least in short run)
 - Take time to fully implement
 - Lead to industry and consumer "fatigue"?
- Label regulation alone would not have accomplished as much– what are the lessons for future policy?



The cookie monster and I

Thank you!

