

Mis-Information In E-Cigarette Markets

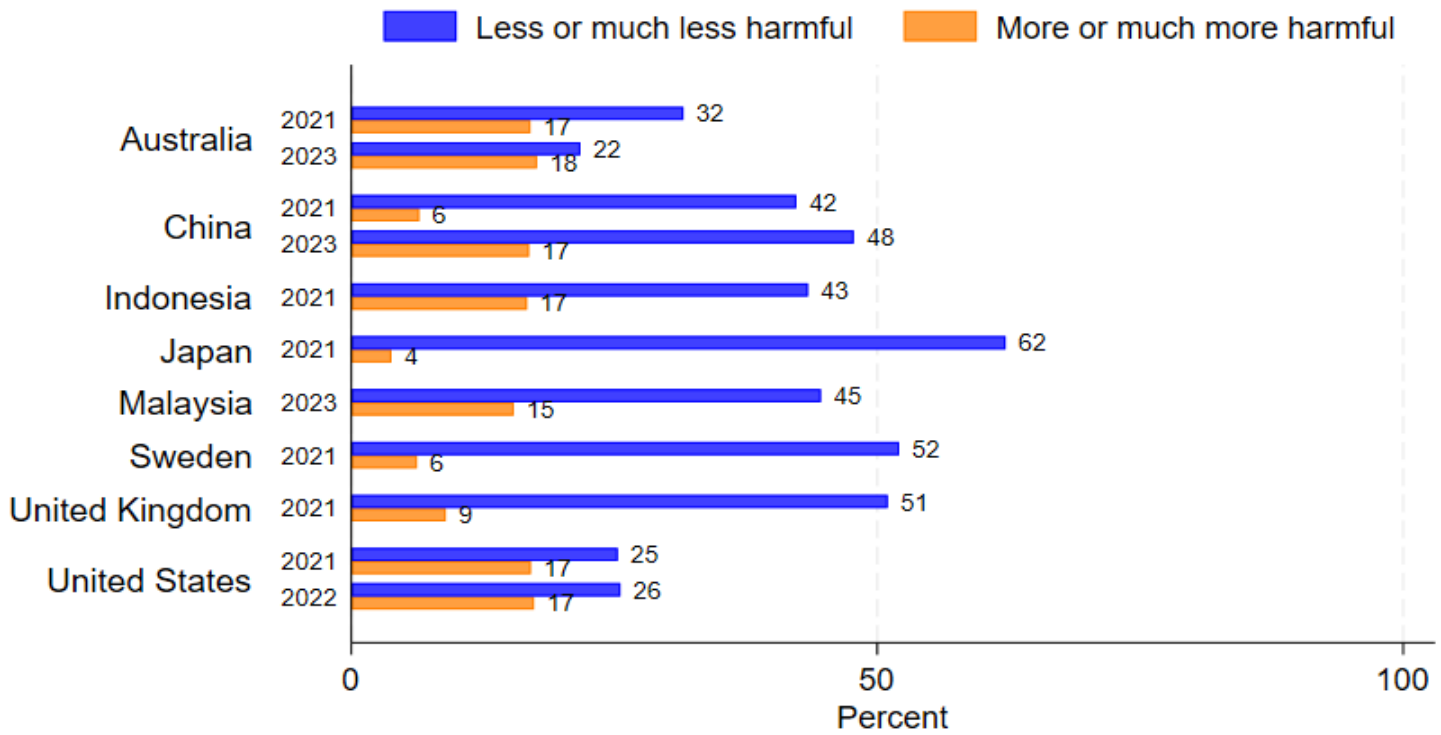
Presentation by Alan Mathios - October 2024

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Organization of the Presentation

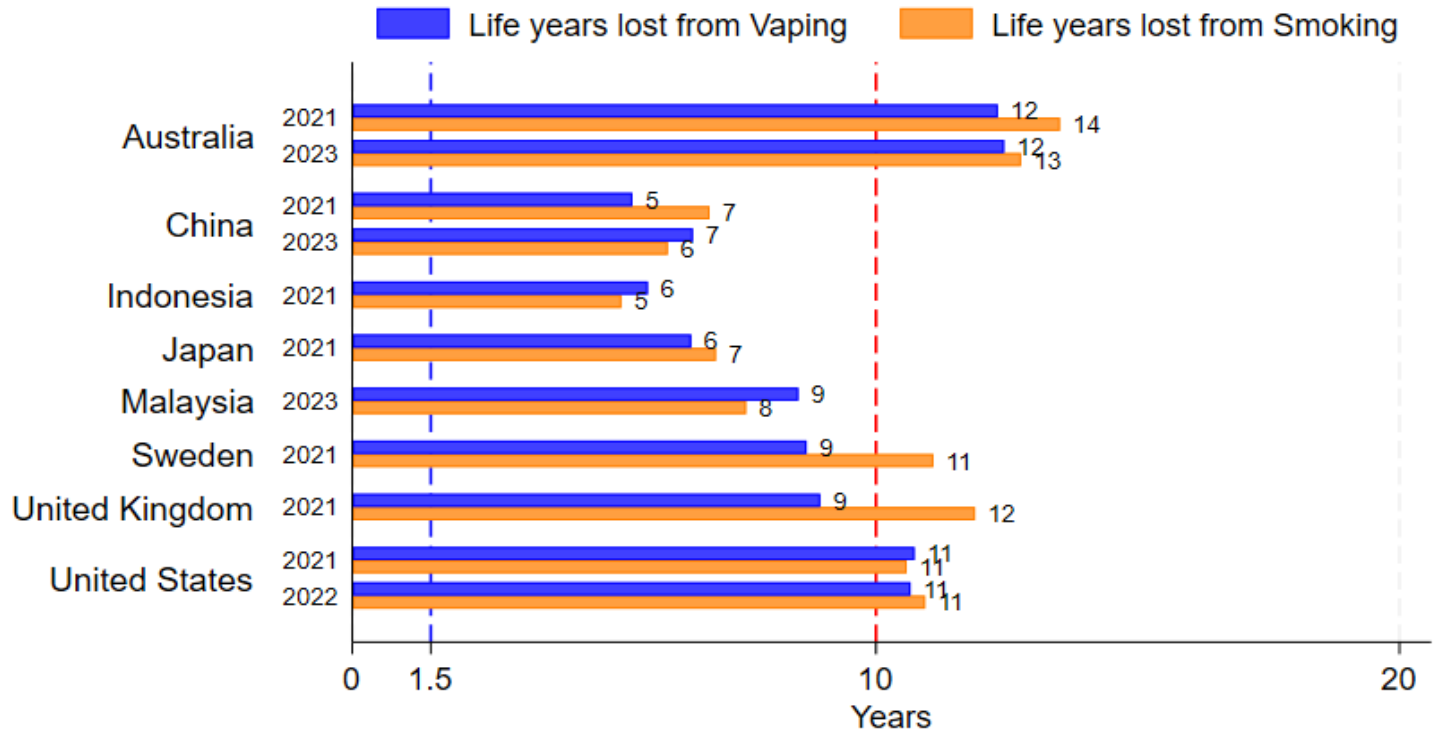
- Discuss Cross Country Risk Perceptions of E-Cigarettes Relative to Cigarettes
- Discuss Cross Country Perceptions of Expected Life Years Lost from Smoking Versus E-Cigarettes
- Main Takeaways from these Data
- Results From an Experiment Where We Vary Government Provided Information and Measure Impact on Risk Perceptions
- A New Possible Hope: Reflections on The History of Harm Reduction Policies for Food Products and the dramatic changes in that marketplace when private sector advertising was allowed.

Misperceptions of E-Cigarette Risk Relative to Cigarettes is Pervasive and International



Source: Cornell online cross-country surveys 11/2021-4/2023. Heated sticks for JP. N is between 600-650 for all samples except 2021 US (1,202) or 2023 MY (693).

Perceived Life Years Lost Due to Smoking and Vaping



Source: Cornell online cross-country surveys 11/2021-4/2023.
 N is between 600-650 for all samples except 2021 US (1,202) or 2023 MY (693).

Take Aways From These Risk Perception Data

- US and Australia Have the Lowest Percentage of Consumers Perceiving E-Cigarettes to be Less or Much Less Harmful than Cigarettes
- US and Australia Have the Highest Perceived Live Years Lost Due to Vaping (Way Above What the Science Suggests)
- Perceptions of Life Years Lost from Vaping are Very Correlated with Perceptions of the Life Years Lost from Smoking (Bayesian Model)
- The UK has the Largest Gap (In the Correction Direction) Between Perceptions of Life Years Lost From Vaping and Life Years Lost From Smoking
- Asian countries Perceive Lower Life Years Lost from Smoking – which then correlates with Lower Life Years Lost from Vaping
- Might these results be impacted by Government Messaging?

Government Messaging in Australia

- E-cigarettes, also known as vapes, are devices that make vapour for inhalation, simulating cigarette smoking. They are not safe and use can lead to serious health outcomes. They are sometimes marketed as a way to quit smoking, but there is limited evidence to show that they help – or are safe.
- All e-cigarettes, even those that don't contain nicotine, can contain dangerous substances in the liquids and the aerosol. These can include a number of known cancer-causing agents, such as:
 - formaldehyde (used in industrial glues and for preserving corpses in hospitals and funeral homes)
 - acetone (generally found in nail polish remover)
 - acetaldehyde (used in chemicals, perfumes, and plastics)
 - acrolein (commonly found in weedkiller)

Government Messaging in Australia

They can also contain:

- propylene glycol – a solvent used in fog/smoke machines
- polyester compounds
- anti-freeze – used in the coolant of a car
- vegetable glycerin – a liquid from vegetable fat.
- Some chemicals in e-cigarette aerosols can also cause DNA damage.
- *E-cigarettes do not produce the tar found in conventional cigarettes which is the main cause of lung cancer.* However, many scientists are concerned that vaping could increase risk of lung disease, heart disease and cancer.

Government Messaging in United States

Selected Statements from CDC website

- No tobacco products, including e-cigarettes, are safe.
- Most e-cigarettes contain nicotine, which is highly addictive and is a health danger for pregnant people, developing fetuses, and youth.
- Aerosol from e-cigarettes can also contain harmful and potentially harmful substances. These include cancer-causing chemicals and tiny particles that can be inhaled deep into lungs.[1](#)
- E-cigarettes should not be used by youth, young adults, or people who are pregnant. *E-cigarettes may have the potential to benefit adults who smoke and are not pregnant if used as a complete substitute for all smoked tobacco products.*

Government Messaging in United States

- Most e-cigarettes, or vapes, contain nicotine, which has known adverse health effects.[1](#)
- Nicotine is highly addictive.[1](#)
- Nicotine is toxic to developing fetuses and is a health danger for pregnant people.
- Acute nicotine exposure can be toxic. Children and adults have been poisoned by swallowing, breathing, or absorbing vaping liquid through their skin or eyes. More than 80% of calls to U.S. poison control centers for e-cigarettes are for children less than 5 years old.
- Nicotine poses unique dangers to youth because their brains are still developing.

Government Messaging in United States

- Nicotine can harm brain development which continues until about age 25.
- Youth can start showing signs of nicotine addiction quickly, sometimes before the start of regular or daily use.[1](#)
- Using nicotine during adolescence can harm the parts of the brain that control attention, learning, mood, and impulse control.
- Adolescents who use nicotine may be at increased risk for future addiction to other drugs.
- Youth who vape may also be more likely to smoke cigarettes in the future.

Government Messaging in the UK

- *Nicotine vaping is substantially less harmful than smoking. It's also one of the most effective tools for quitting smoking.*
- Vaping is not completely harmless and we only recommend it for adult smokers, to support quitting smoking and staying quit.
- *The routines and rituals of smoking can be hard to stop, so vaping can help you gradually let go of these while immediately reducing the health risks of smoking cigarettes.*
- *Nicotine itself is not very harmful and has been used safely for many years in medicines to help people stop smoking.*
- *Some people find vaping helps them because the hand-to-mouth action is like smoking, plus you get similar sensations, like throat hit (the "kick" in the back of your throat when you inhale).*

Government Messaging in the UK

- Any smoking is harmful and you will only get the full benefits of vaping if you stop smoking completely. Some people manage to make a full switch very quickly, while for others it can take a bit longer.
- *You're roughly twice as likely to quit smoking if you use a nicotine vape compared with other nicotine replacement products, like patches or gum.*
- *Evidence shows that vaping is substantially less harmful than smoking. Vaping exposes users to far fewer toxins and at lower levels than smoking cigarettes.*
- *Switching to vaping significantly reduces your exposure to toxins that can cause cancer, lung disease, and diseases of the heart and circulation like heart attack and stroke. These diseases are not caused by nicotine, which is relatively harmless to health.*
- However, vaping is not risk-free. Non-smokers and [young people under 18](#) should not take up vaping.
- *In 2022, UK experts reviewed the international evidence and found that "in the short and medium term, vaping poses a small fraction of the risks of smoking".*

Suggestive of Relationship Between Government Messaging and Perceptions

Designed an Experiment to Test Whether Government Statements Changes Risk Perceptions

- Expose UK consumers to the US Messaging about EVALI
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- Measure Risk Perceptions After Exposure to Experimental Variation

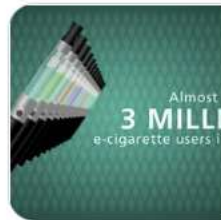
UK Government Tweets on EVALI



UK Health Security Agency ✓
@UKHSA



Our advice on e-cigarettes remains unchanged - vaping isn't completely risk free but is far less harmful than smoking tobacco. There is no situation where it would be better for your health to continue smoking rather than switching completely to vaping



ukhsa.blog.gov.uk

Clearing up some myths around e-cigarettes

Not surprisingly, there are lots of inaccuracies and misconceptions about e-cigarettes and vaping. This blog ...

12:11 AM · Sep 13, 2019 · Twitter Web App

US Government Tweets on EVALI



...

Lung injury assoc. w/ e-cigarette product use/vaping was recently reported in most states. CDC & others continuing to investigate. CDC recommends considering refraining from using e-cigarette/vaping products, especially those with THC. New @CDCMMWR : bit.ly/MMWRLungInjury



11/12/2019 12:00:00 PM

US Relative Risk Perceptions in Response to US and UK Messaging

	Much less harmful	Less harmful	Just as harmful	More harmful	Much more harmful	I don't know
US sample with UK HSA EVALI message	0.0046	0.074***	-0.072**	0.016	-0.015	-0.0091
US sample with US CDC EVALI message	0.0088	0.014	-0.069**	0.048**	0.0034	-0.0057
Mean	.07	.22	.40	.13	.14	.03

UK Relative Risk Perceptions in Response to US and UK Messaging

	Much less harmful	Less harmful	Just as harmful	More harmful	Much more harmful	I don't know
UK sample with UK HSA EVALI message	0.0024	0.047*	-0.042**	-0.0081	-0.0025	0.0036
UK sample with US CDC EVALI message	-.019	0.024	0.0045	-0.012	0.0019	0.0014
Mean	.12	.41	.33	.06	.04	.03

Take Away from Experiment with Pollfish Data

- Percent of UK respondents that believe e-cigarettes to be less harmful than cigarettes is 53% (Compared to 29% in US)
- Percent of UK respondents that believe e-cigarettes to be more harmful than cigarettes is 10% (Compared to 27% in US)
- Government messaging can move risk perceptions

US respondents seeing the UK EVALI message have significant increase in less harmful responses and decrease in equally harmful compared with those exposed to the CDC message. These are quite large changes relative to the means.

UK respondents seeing the UK EVALI have significant increase in less harmful responses and significant decrease in equally harmful compared with those exposed to the CDC message.

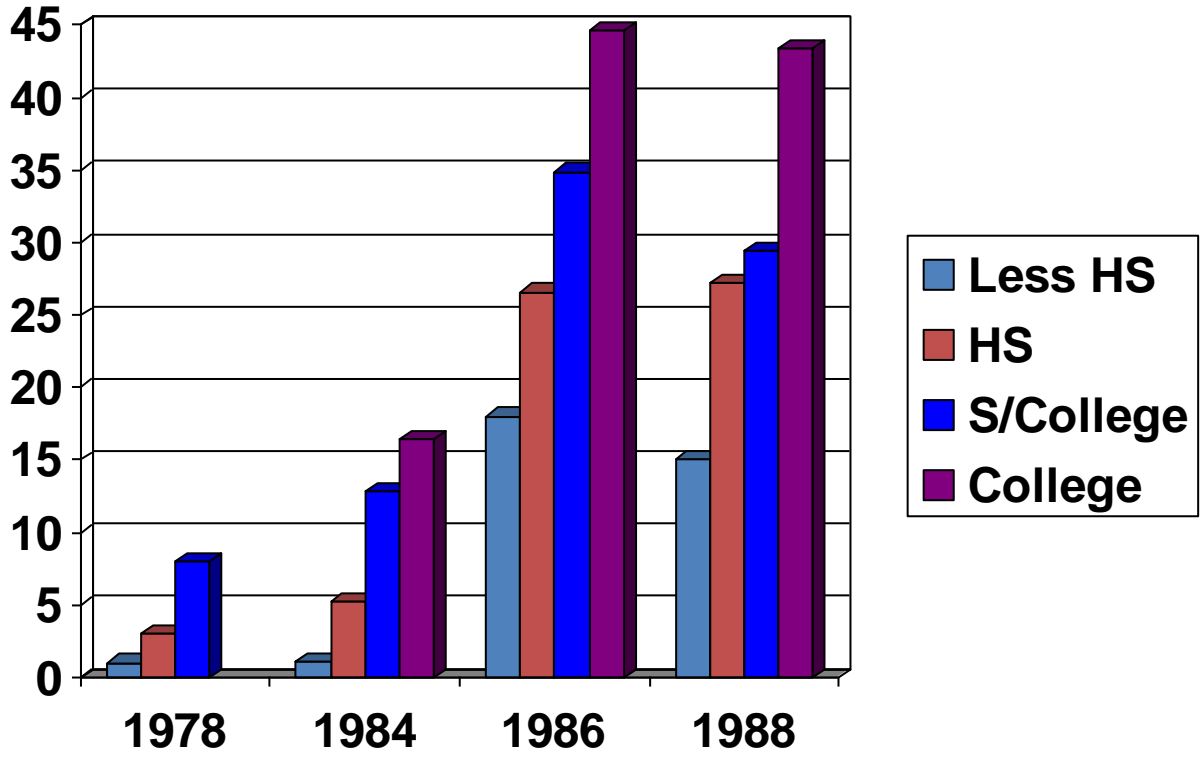
Other Ways Perceptions Can be Changed – Lessons From Harm Reduction Policies for Food Products

- History of Other Harm Reduction Products Suggests that Private Sector Advertising is Very Important in Informing Consumers about Relative Risk
- In the early 1980s the FDA restricted any private sector dissemination of the relationship between reduced fat products, or higher fiber products and reduced risks of heart disease (Despite the fact that science established these relationships in the 1960s).
 - Private sector food firms would attempt to deceive consumers
 - Nutrition educators and public sector entities are the ones that should educate consumers about the relative disease risks of different foods.
 - Even reduced fat products still have significant harm

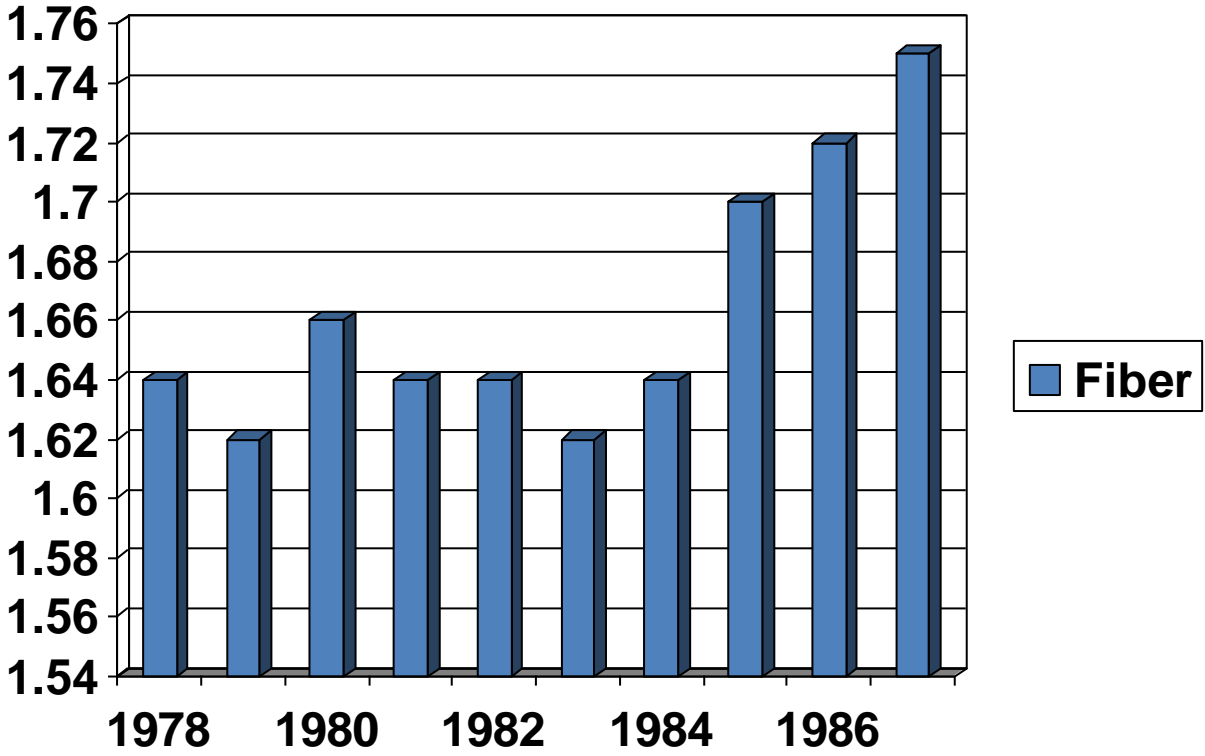
Federal Trade Commission Argues to Use the Substantiation Doctrine for Health Claims –

- Health claims by firms linking the consumption of reduced saturated fat, reduced fat, and higher fiber food products to reduced risk of heart disease and cancer were banned for two decades but finally permitted in the marketplace beginning in 1984/1985.
- Truthful claims substantiated with scientific findings would be permitted.
- Became well known for my work documenting impact of this change in policy – a few examples.

Widespread Increase in Knowledge of Fiber-Cancer Link After Private Sector Advertising of Health Claims



Increase in the Fiber Content of Cereals After Private Sector Disease Prevention Advertising



Rapid Reduction in Fat and Saturated Fat in U.S. Diet After Private Sector Disease Prevention Advertising

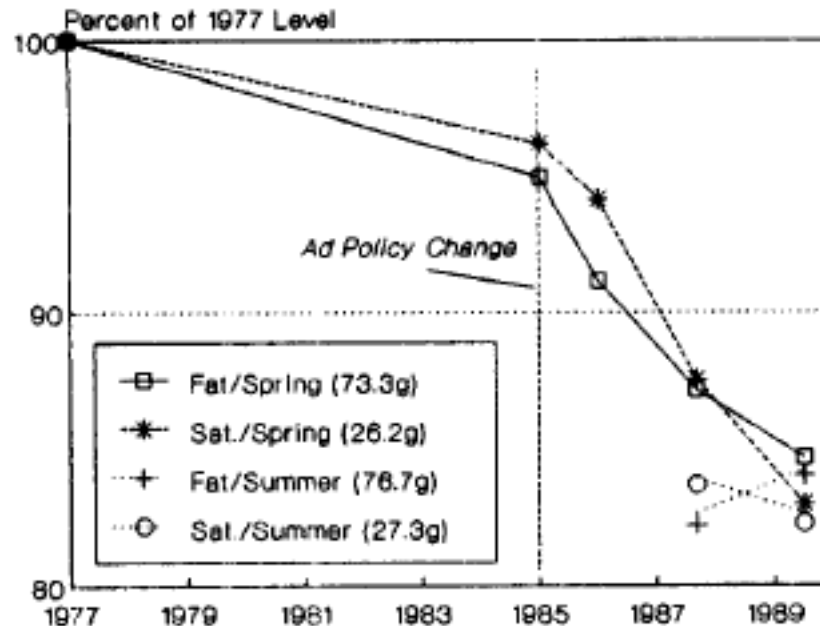
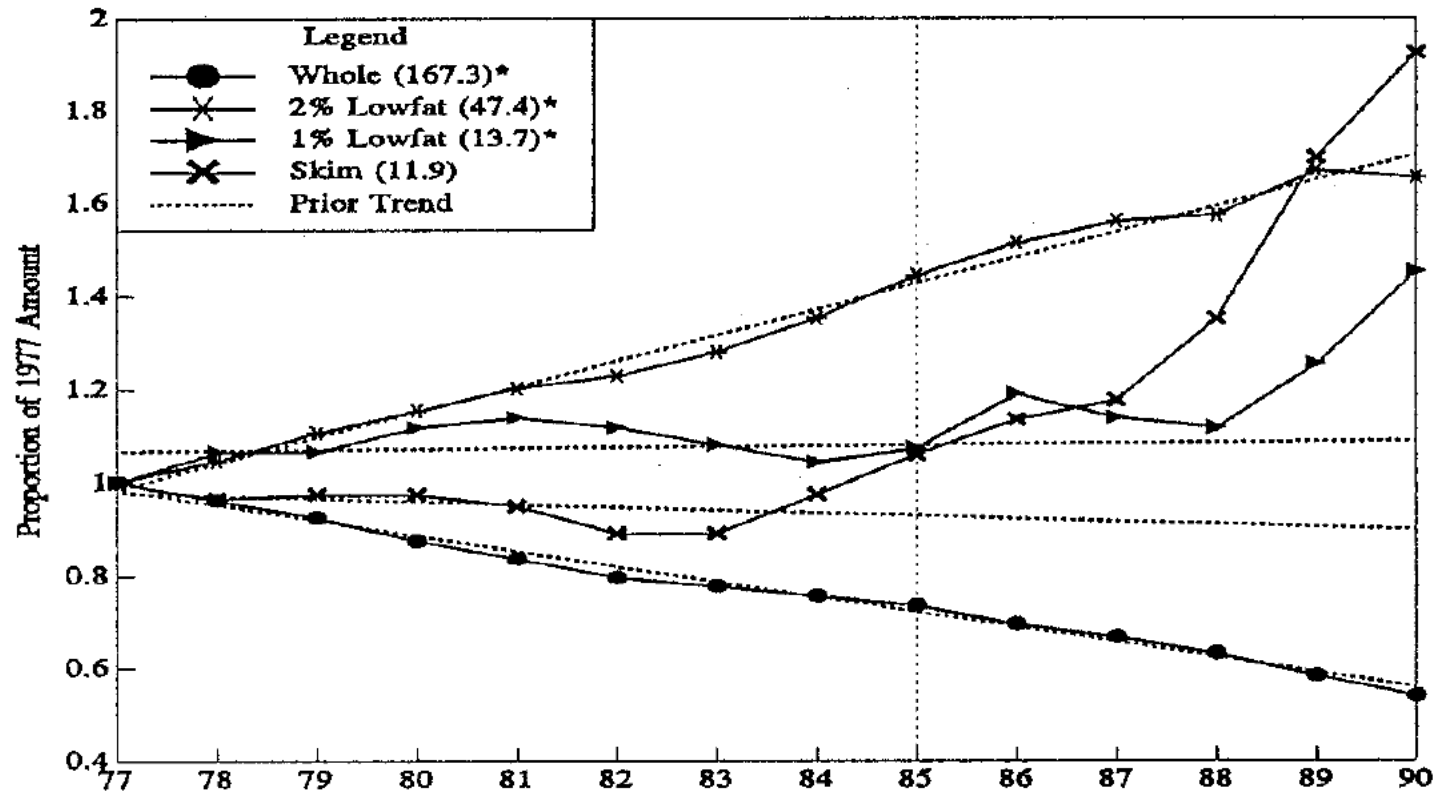


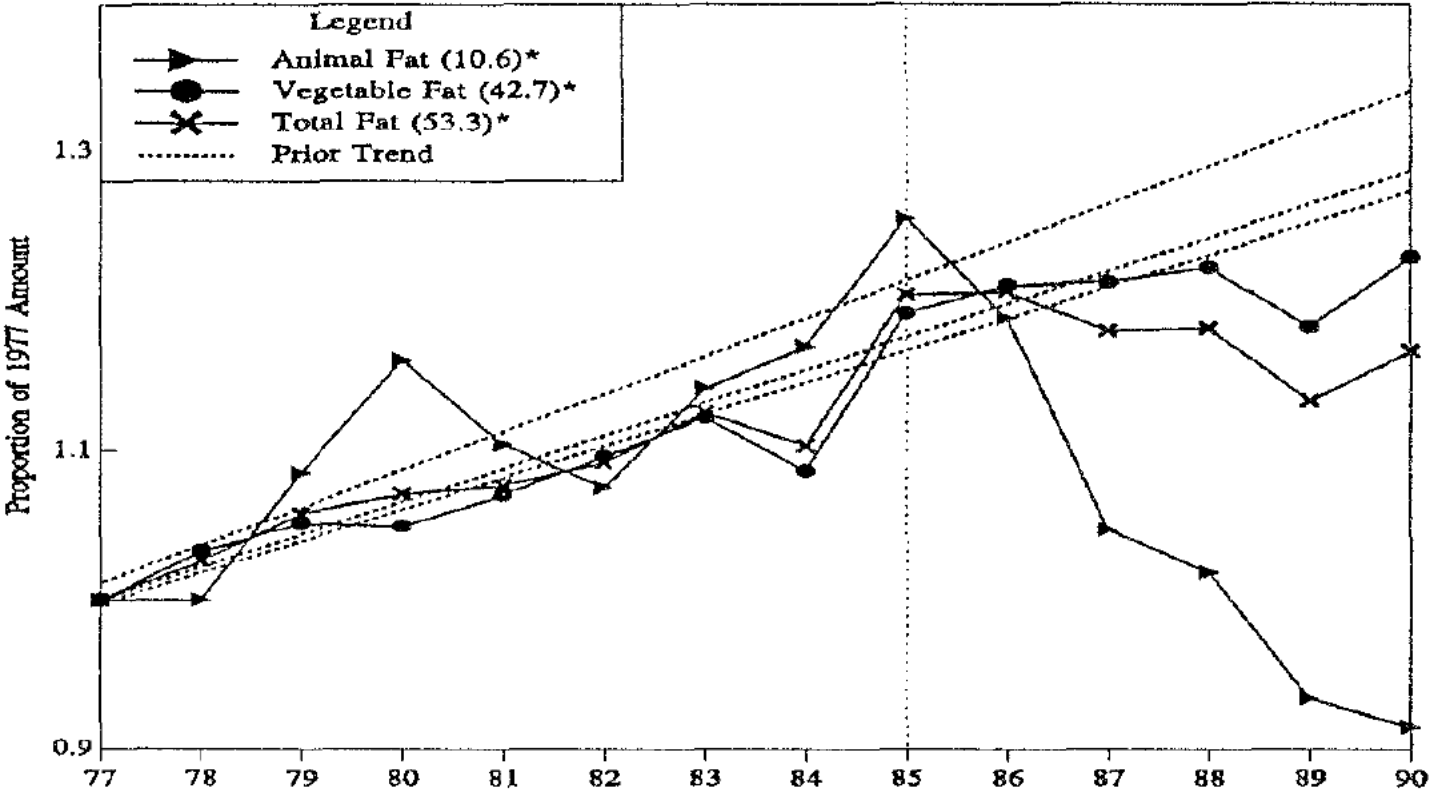
FIGURE 1. FAT AND SATURATED-FAT ("SAT.") CONSUMPTION, WOMEN AGED 19-50, SPRING AND SUMMER

Note: Grams consumed in 1977 are shown in parentheses.

Increased Production of Skim and 1% Fat in Milk After Private Sector Advertising



Reductions in the Worst Types of Fat After Private Sector Disease Prevention Advertising



Private Sector Advertising and Promotion of Truthful Relative Harm Claims Can Make a Difference

- While it seems remote given current regulatory environment things looked equally bleak when the same issues revolved around relative harm reduction in foods.
- Regulatory actions evolve over time
- Important role of researchers to identify conditions under which private sector information provision improves health outcomes
- Investigate appropriate regulations to prevent deception.