Evidence-Based Dietary Policies

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Oldways Finding Common Ground, Boston MA

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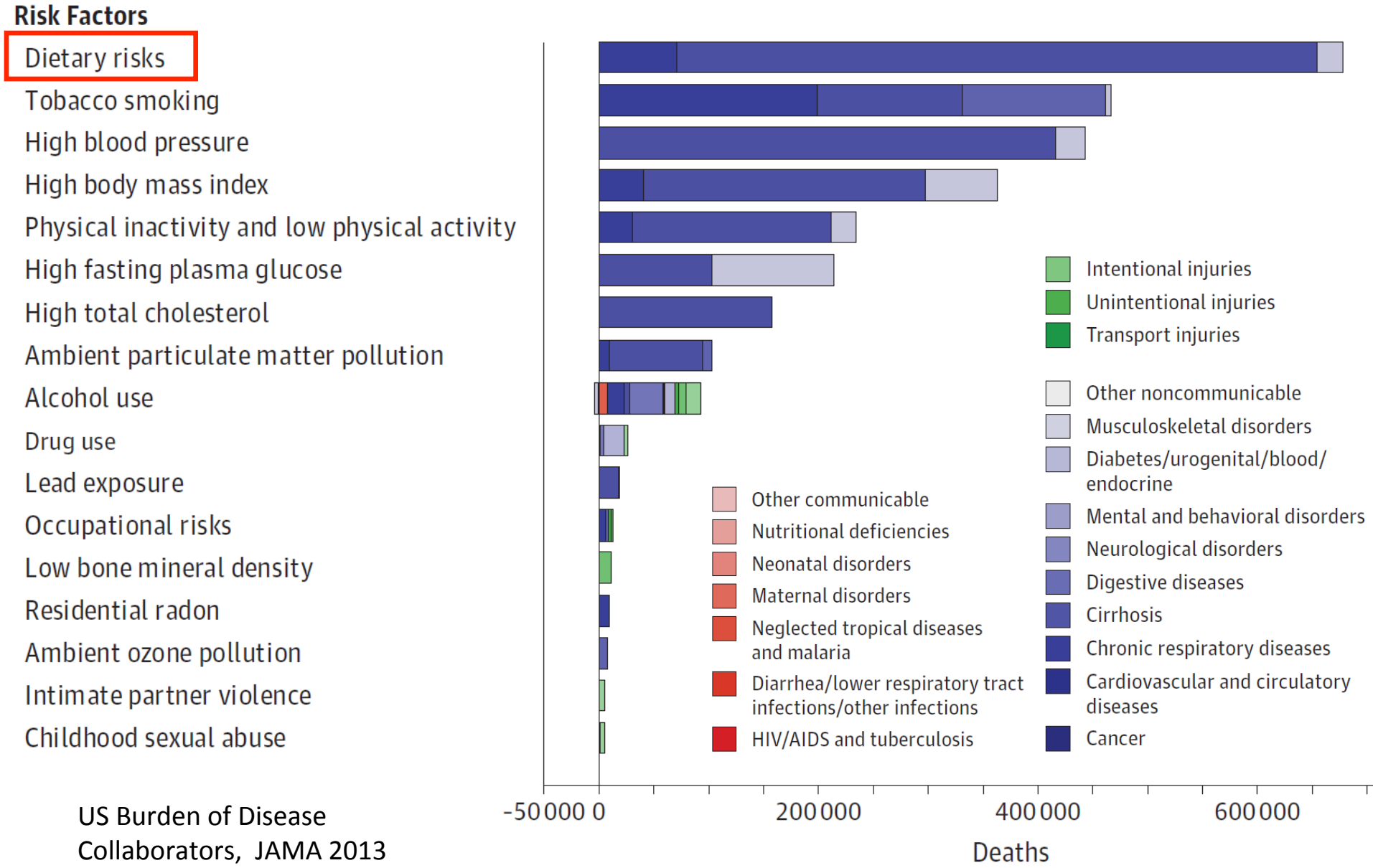
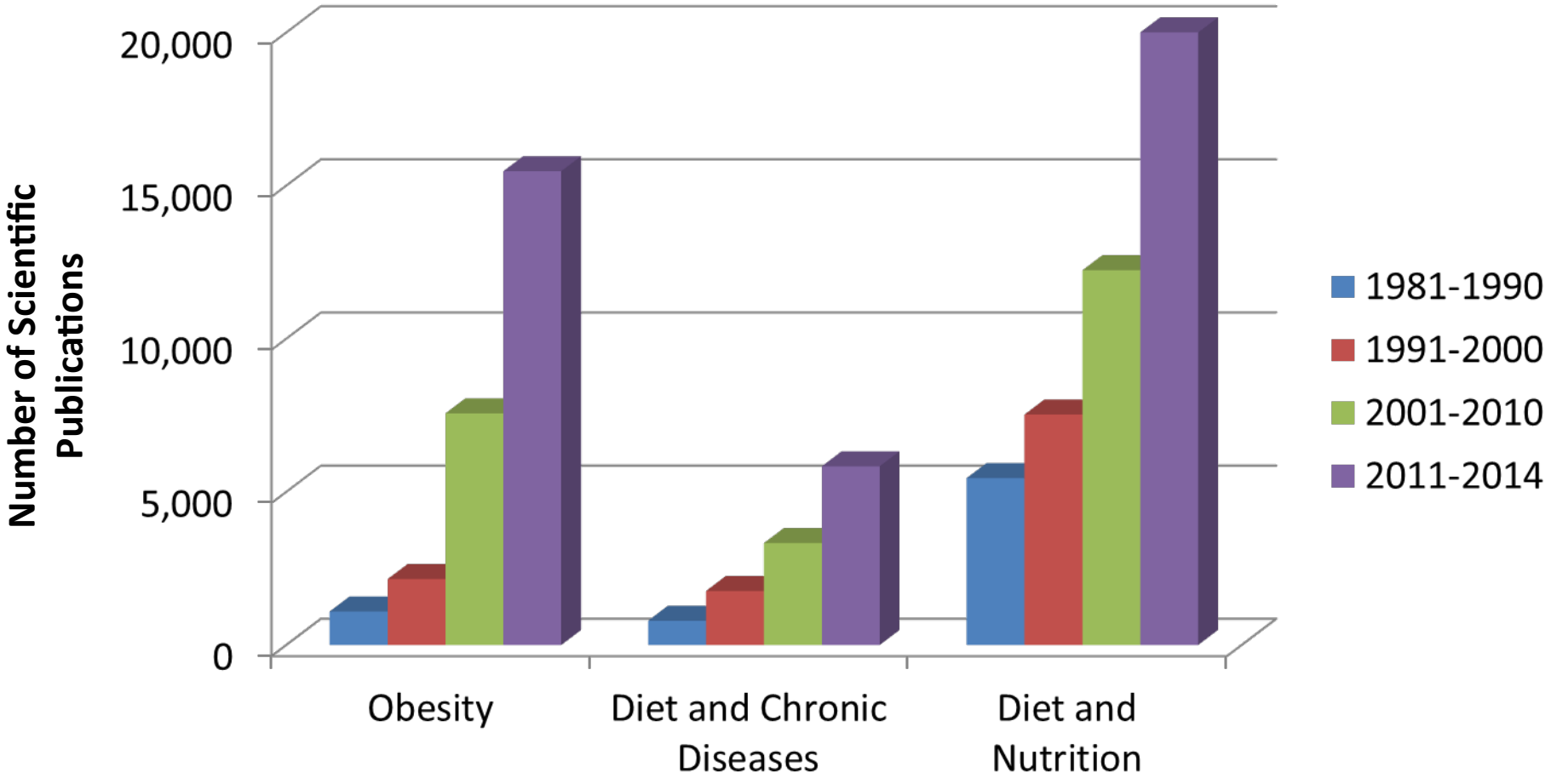
- Scientific advisory board: Unilever North America (former).

Nutrition and Health



US Burden of Disease Collaborators, JAMA 2013

Explosion of Nutrition & Policy Science



Source: Pubmed/Medline

Calorie/Fat Focus Dominates Current Policy

- **Dietary Guidelines**: Extensive focus on "portion sizes", "calorie control," "low-fat", "lean" choices.
- **Affordable Care Act (Obamacare)**: Mandated total calorie labeling on restaurants menus nationwide.
- **UK Front-of-Pack:** Total calories, total fat are first two items.
- **US FDA**: Far greater emphasis on calories in new Nutrition Facts; violations to nut-rich "Kind" bars for being "high-fat."
- **National School-Lunch Program**: Banned whole milk, allows sugar-sweetened skim milk.
- **NIH Dietary Guidelines For Kids**: *Recommend* fat-free salad dressing, diet soda, trimmed beef; *caution* for eggs, vegetables with added fat, whole milk, nuts, tuna in oil.

Fat/Calorie Focus: Recipe for Confusion

Food Group	GO (Almost Anytime Foods)	SLOW (Sometimes Foods)	WHOA (Once in a While Foods)
	Nutrient-Dense ← Nutrient- and Calorie-Dense → Calorie-Dense		
Vegetables	Almost all fresh, frozen, and canned vegetables without added fat and sauces	All vegetables with added fat and sauces; oven-baked French fries; avocado	Fried potatoes, like French fries or hash browns; other deep-fried vegetables
Meats, Poultry, Fish, Eggs, Beans, and Nuts	Trimmed beef and pork; extra lean ground beef; chicken and turkey without skin; tuna canned in water; baked, broiled, steamed, grilled fish and shellfish; beans, split peas, lentils, tofu; egg whites and egg substitutes	Lean ground beef, broiled hamburgers; ham, Canadian bacon; chicken and turkey with skin; low-fat hot dogs; tuna canned in oil; peanut butter; nuts; whole eggs cooked without added fat	Untrimmed beef and pork; regular ground beef; fried hamburgers; ribs; bacon; fried chicken, chicken nuggets; hot dogs, lunch meats, pepperoni, sausage; fried fish and shellfish; whole eggs cooked with fat
Sweets and Snacks*		Ice milk bars; frozen fruit juice bars; low-fat or fat-free frozen yogurt and ice cream; fig bars, ginger snaps, baked chips; low-fat microwave popcorn; pretzels	Cookies and cakes; pies; cheese cake; ice cream; chocolate; candy; chips; buttered microwave popcorn
Fats/Condiments	Vinegar; ketchup; mustard; fat-free creamy salad dressing; fat-free mayonnaise; fat-free sour cream	Vegetable oil, olive oil, and oil-based salad dressing; soft margarine; low-fat creamy salad dressing; low-fat mayonnaise; low-fat sour cream**	Butter, stick margarine; lard; salt pork; gravy; regular creamy salad dressing; mayonnaise; tartar sauce; sour cream; cheese sauce; cream sauce; cream cheese dips
Beverages	Water, fat-free milk, or 1 percent low-fat milk; diet soda; unsweetened ice tea or diet iced tea and lemonade	2 percent low-fat milk; 100 percent fruit juice; sports drinks	Whole milk; regular soda; calorically sweetened iced teas and lemonade; fruit drinks with less than 100 percent fruit juice

www.nhlbi.nih.gov/health/public/heart/obesity/wecan/downloads/go-slow-whoa.pdf

Foods and Obesity: Complex Influences

- Hunger, fullness
- Glucose, insulin, other hormonal responses
- Liver *de novo* fat synthesis (conversion of starch and sugar to fat)
- Brain reward, craving
- Gut microbiome (bacteria) responses
- Body's metabolic rate (energy *out*)

All Calories are *Not* Created Equal

e.g., Browning AJCN 2011; Bjermo AJCN 2012; Ebbeling JAMA 2012; Poutahidis PlosOne 2013; Lennerz AJCN 2013; Ludwig JAMA 2014; Rosqvist Diabetes 2014

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Calories, Fat, Single Nutrients: Misleading

Diet & Health: Modern Science

Refined Grains, Starches, Sugars

Fruits, Vegetables, Nuts

Whole grains, Beans

Yogurt, Cheese, Milk

Fish, Shellfish

Processed Meats, Red Meats

Vegetable Oils, Specific Fatty Acids

Coffee, Tea, Alcohol

Sugary Drinks, Juice

Minerals, Antioxidants, Phenolics, Phytochemicals

Food-Based Dietary Patterns

Food Processing, Preparation Methods

Blood Pressure

Glucose-Insulin Homeostasis

Liver Fat Synthesis

Blood Lipids, Apolipoproteins

Endothelial Function

Systemic Inflammation

Brain Reward, Craving

Gut Microbiome

Satiety, Hunger, Obesity

Adipocyte Function

Cardiac Function

Thrombosis, Coagulation

Vascular Adhesion

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Mozaffarian D. Circulation 2016 *in press*

Preventing Chronic Diseases: Food Patterns

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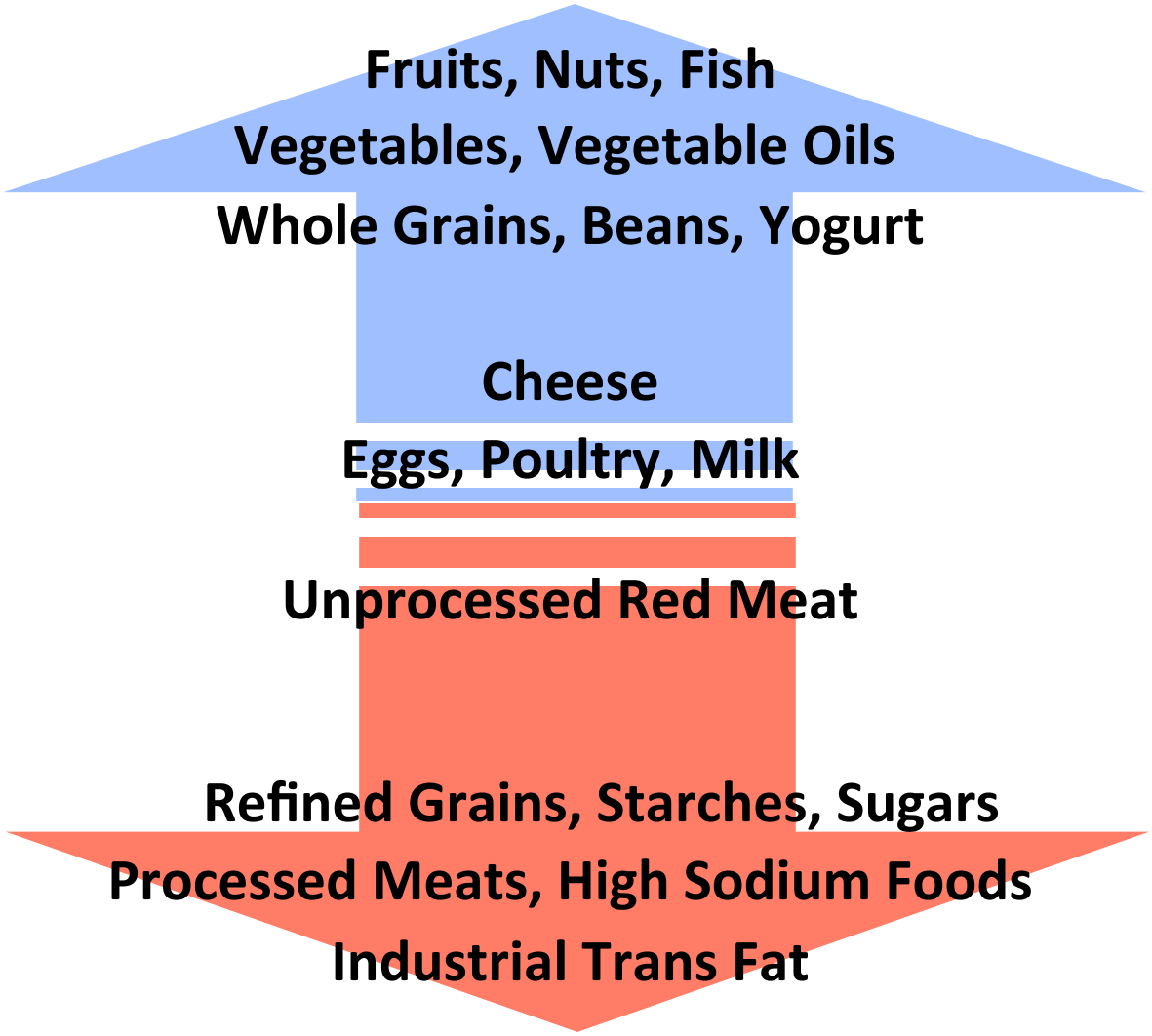
Policy Priorities: Healthy Food Patterns



Mozaffarian D.
Circulation 2016 *in press*

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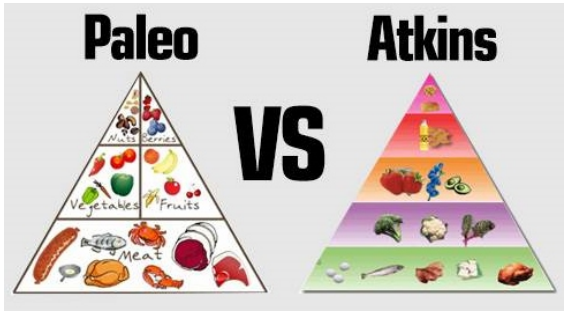
Nutrition: Passion and Confusion



CENTER FOR Science IN THE Public Interest

BIGGEST LOSER

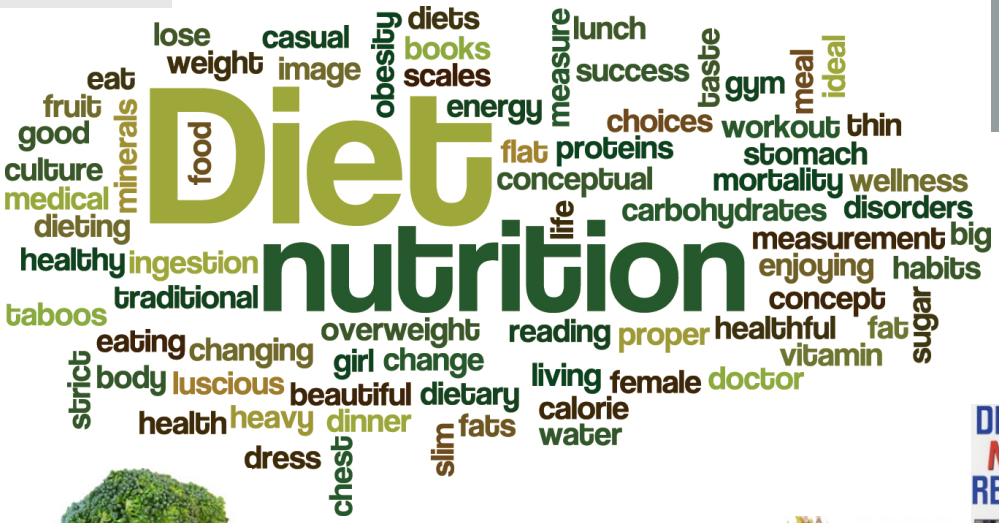
Weight Watchers

Nutrisystem

Jenny Craig

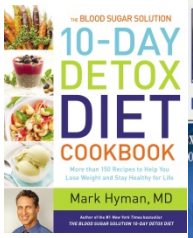
ATKINS

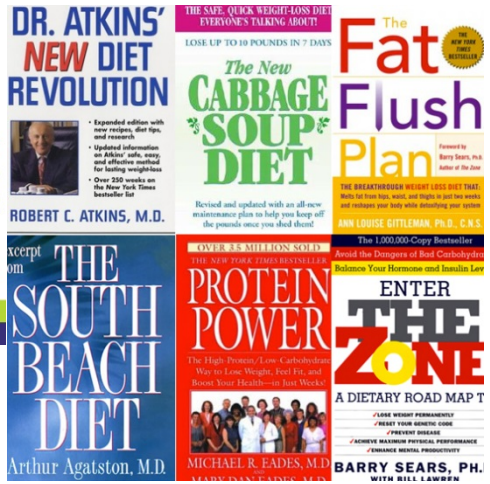
SOUTH BEACH diet



FOOD BABE

THE DR. OZ SHOW





Source: Google images

What is Driving Public Choices ?

- Clean labels
- Gluten-free
- Organic
- Local
- Paleo
- Low-carb
- Vegetarian, vegan
- Mediterranean

Individual Behavior Change

- Targeted, shared, proximal goals (Class IA)
- Self-monitoring (Class 1A)
- Verbal, written, or electronic feedback (Class 1A)
- Planned regular follow-up, including individual or group visits or electronic follow-up (Class 1A)
- Family/peer support (Class 1A)

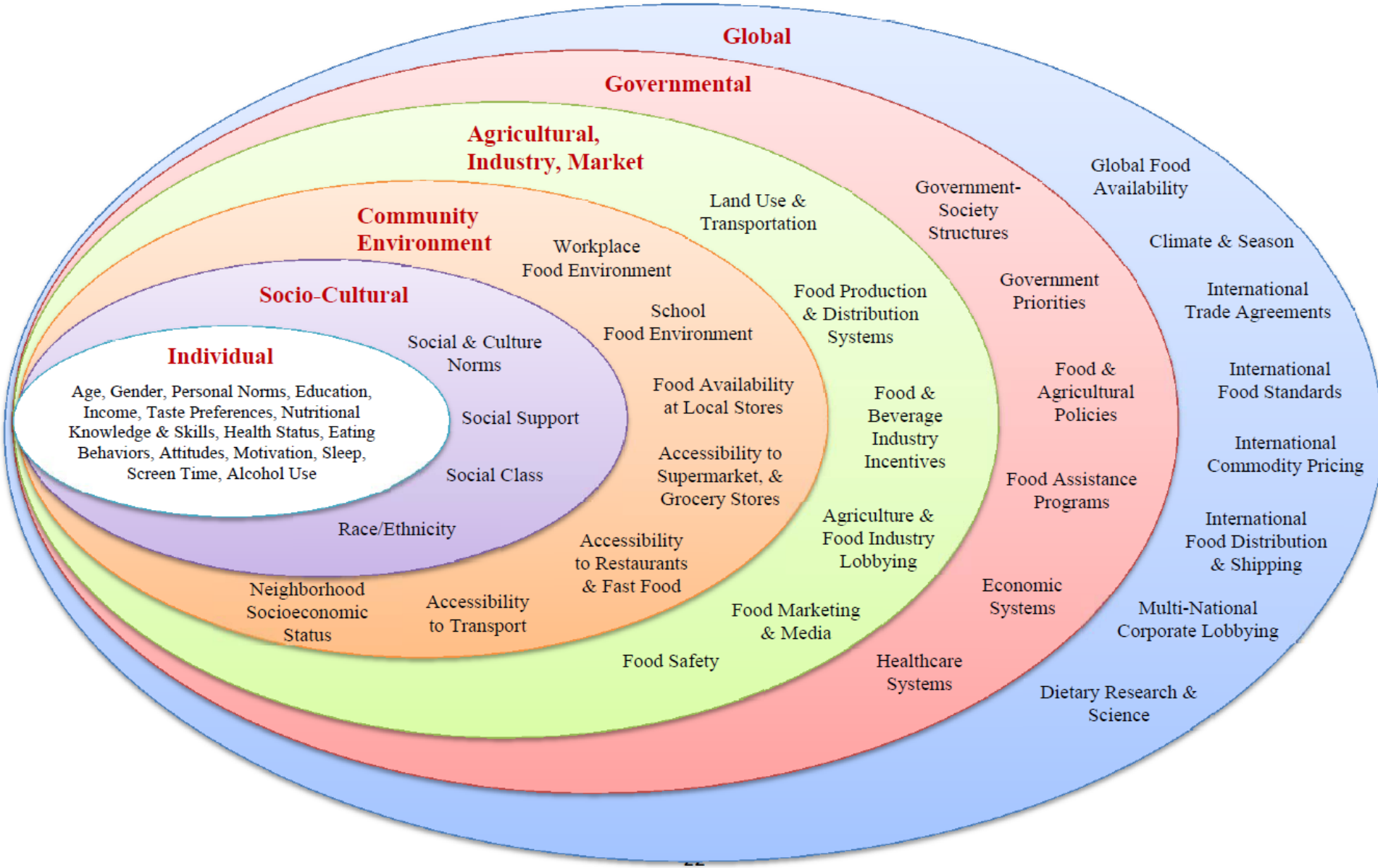
AHA Scientific Statement: Interventions to Promote Physical Activity and Dietary Lifestyle Changes for Cardiovascular Risk Factor Reduction in Adults. Artinian et al, Circulation 2010

Health Care: *Systems* for Lifestyle Change

- **Education:** Multiple approaches (live, video, online) to improve clinician knowledge on lifestyle and use of behavior change.
- **Electronic Health Record (EHR):** Efficient electronic methods to monitor diet quality, activity, adiposity, smoking. (**ACA**)
- **Follow-up:** Regular scheduling of individual or group visits for education and behavioral support.
- **Feedback:** Clinic, phone, and electronic approaches for individualized feedback on patients' behavior change efforts.
- **Peer support:** Involvement of family, friends, other patients.
- **Standards/Reimbursement**: Quality benchmarks and reimbursement guidelines to focus on health behaviors, including diet quality and physical activity. (**ACOs**)

Mozaffarian et al., Circulation 2012
Spring et al., Circulation 2013

Healthy Eating: Challenges and Opportunities



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Afshin A et al, The Handbook for Global Health Policy, 2014

Policy Domains

- Media, Education
- Labelling, Information
- Schools
- Workplaces
- Local Built Environment
- Economic Incentives
- Quality Standards
- Agricultural Policies

Dietary Policy Priorities

- **National tax / subsidy framework to reflect real costs of food.**
- **Health-aligned standards and incentives in food assistance programs (e.g., SNAP).**
- **Industry incentives (and discentives) to develop and market healthier foods.**
- **School and workplace programs.**
  - **Comprehensive, multi-component wellness programs.**
  - **School procurement policies for healthier foods**
  - **Quality standards for competitive foods/beverages.**
- **Quality standards on additives (salt, trans fat).**
- **Quality standards on marketing to children.**

AHA Scientific Statement: Population Approaches to Improve Diet, Physical Activity, and Smoking Habits. Mozaffarian et al., Circulation 2012

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Dietary Policy Priorities

- **Long-term agricultural policies for production, storage, transport, and sales of healthier foods.**
- **Harmonization of diet priorities and policies across diverse agencies (USDA, HHS, CDC, FDA).**
- **Standing national nutrition advisory board to the US government.**

AHA Scientific Statement: Population Approaches to Improve Diet, Physical Activity, and Smoking Habits. Mozaffarian et al., Circulation 2012

Examples of Diet Strategies with Less Evidence

Media and Education	• Shorter-term, community media/education efforts that target multiple behaviors and risk factors simultaneously. (IIb B)
Labeling Information	• Detailed nutrition facts panels, front-of-pack labels, or menu labelling as a means to influence consumer behavior. (III B)
Schools	• School-based education alone, without other components. (IIb A) • Restricted access (times, locations) to vending machines. (IIb B) • Promotion of water use alone. (IIb B)
Workplaces	• Worksite cafeteria or vending labels or prompts alone. (IIb B)

AHA Scientific Statement: Population Approaches to Improve Diet, Physical Activity, and Smoking Habits. Mozaffarian et al., Circulation 2012

Examples of Diet Strategies with Less Evidence

Local Built Environment	• **Greater availability of supermarkets near homes. (IIa B)** • Greater availability of grocery stores. (IIb B) • Reduced availability of convenience stores. (IIb B) • Reduced availability of fast food restaurants. (IIb B) • Greater availability of farmers markets or community gardens. (IIb B)
Economic Incentives	• **Changes in agricultural subsidies alone to either encourage or reduce crops as a means to alter price or consumption. (IIb C)** • Nonsustained individual financial disincentives or incentives related to obesity or diet. (IIb A) • Sustained individual financial disincentives for adiposity or poor diets (e.g., higher insurance premiums). (IIb C)
Quality Standards	• Mandates to support production of healthier foods. (IIa C)

AHA Scientific Statement: Population Approaches to Improve Diet, Physical Activity, and Smoking Habits. Mozaffarian et al., Circulation 2012

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Emerging Policy Options

- **Novel technologies for behavior change: e.g., personal apps with self-monitoring, feedback, peer support, rewards.**

- **Comprehensive, sustained financial and behavioral reward systems (e.g., John Hancock-Vitality).**

The Real Cost of Food – Dietary Tax / Subsidy Framework to Improve Public Health

	Packaged and supermarket foods	Restaurant and other food service establishments
Simple Flat Tax (10 to 30%)	Most packaged foods (e.g., nearly all foods with a label).	Most chain restaurants, large cafeteria vendors, and other similar food service establishments.
Subsidy (from tax revenue)	Minimally processed healthful foods, such as fruits, nuts, vegetables, beans, seafood, plain yogurt, vegetable oils, and minimally processed whole grains.	School lunch and afterschool programs.

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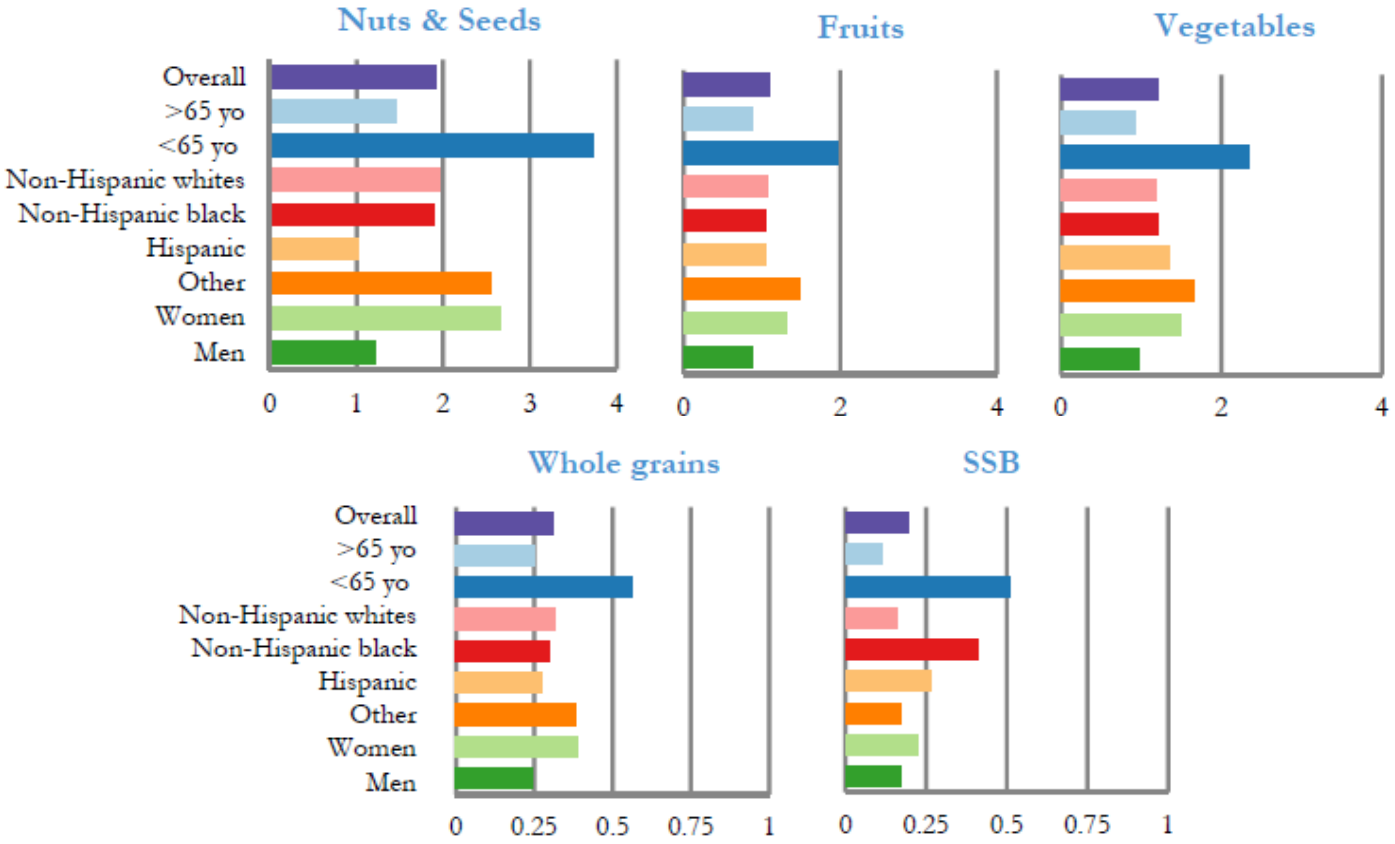
Mozaffarian, Rogoff, & Ludwig, JAMA 2014

Proportional Reduction in US Cardiometabolic Deaths Attributable to a 10% Subsidy or Tax



- **10% price change in 7 foods would reduce cardiometabolic mortality by 4.95% (joint PAF).**
- **30% price change: prevent 86,000 cardiometabolic deaths, or 14.2% of all CMD deaths.**

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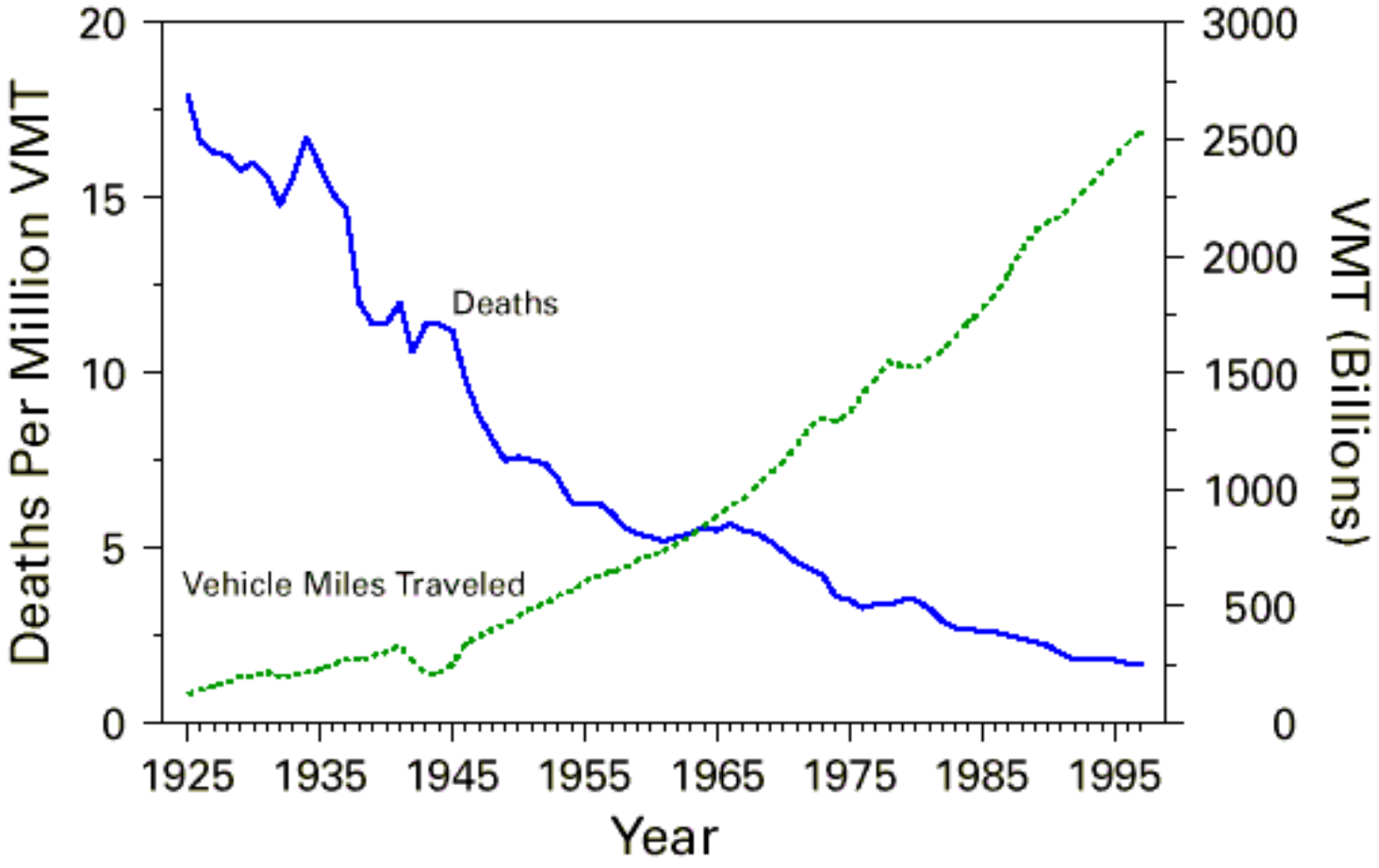
Penalvo et al., Spring AHA 2015 (abstract)

Lessons From Past Public Health Successes

FIGURE 1. Motor-vehicle–related deaths per million vehicle miles traveled (VMT) and annual VMT, by year — United States, 1925–1997



US Centers for Disease Control and Prevention, MMWR Morb Mortal Wkly Rep, 1999

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Lessons From Past Public Health Successes

- **Driver:**
  - Education.
  - Licensing.
  - Limits on phone use, texting.
- **Car:**
  - Active: seat belts, child seats, motorcycle helmets.
  - Passive: padded interiors, collapsible steering columns, shatterproof glass, air bags.
  - Crash safety standards.
  - Safety inspections.

Road:

- Road engineering, guard rails, rumble strips.
- Speed limits.
- Stop signs, stop lights, caution signs.

- **Culture:**
  - Designated driver campaign.
  - Drunk-driving legislation.
  - Private advocacy, e.g. MADD.

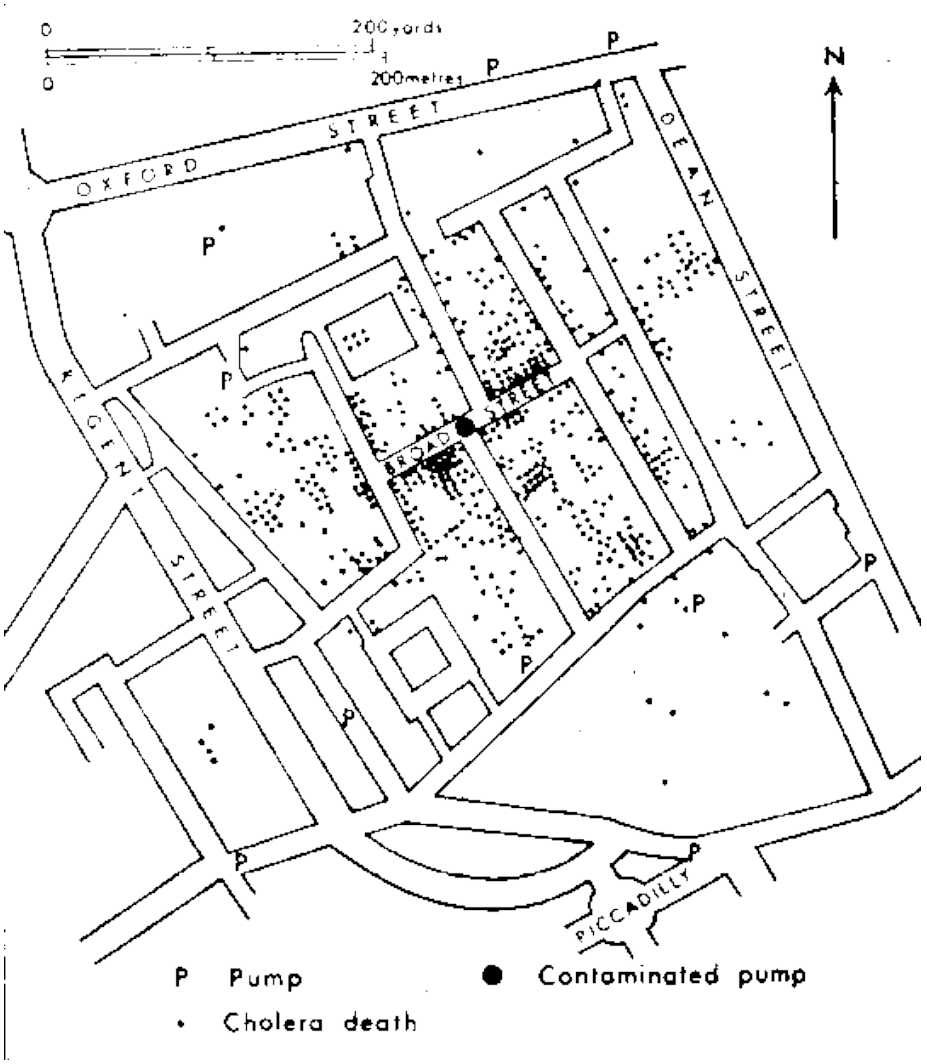
Adapted from Mozaffarian, Hemenway, & Ludwig, JAMA 2013

Lessons from Soft Power: Promise of Soft Healing

- "**Hard power**" – direct military intervention. Well recognized limitations to achieve foreign policy goals.
- "**Soft power**" – preventive policy. Crucial to address multi-faceted, upstream causes of conflict and instability.
  - Examples: diplomacy, economic development, trade agreements, sanctions, democracy promotion, foreign aid, education, women's rights.
- These lessons provide parallels for another major industrial complex: healthcare.
  - Currently "**Hard healing**": Reactive, individualized, technological, expensive.
- Need "**Soft healing**": Education, media, advocacy, quality standards, neighborhood design, school/workplace programs, economic incentives, long-term agricultural policy.
- Not more "precision medicine," but "**population medicine**." Major current imbalances in dollars, strategic planning, and minds.

Mozaffarian, Blashek, & Stavridis, BMJ 2015

John Snow, London Cholera Epidemic, 1854



Snow, J. *On the Mode of Communication of Cholera*, C.F. Cheffins, London 1855

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