"You can be anything you want to be—no limits."

UC DAVIS HEALTH | SCHOOL OF MEDICINE
Cardiac Risk Reduction Clinic

Today's Objectives (as usual)

- <u>**What is the evidence for the "blue" route to improve blood pressure, diabetes and life expectancy?**</u>

- <u>**What are the modifiable risk factors for cardiovascular health?**</u>

-

CDPH and CDC- Call to action

- How do we lower blood pressure and glucose in the blood?

High blood pressure   High glucose   ???

Knowledge is power

The power of preventing these:

Heart attacks
Heart Failure, Strokes, Obesity
Peripheral arterial disease
Amputations, Erectile Dysfunction
Dementia, Kidney failure
Premature Death

Personal Goals!

COVID19 Pandemic

via Vallejo - San Francisco Ferry Building — 32 h, 122 miles
⚠ This route includes a ferry.
⚠ This route has restricted usage or private roads.

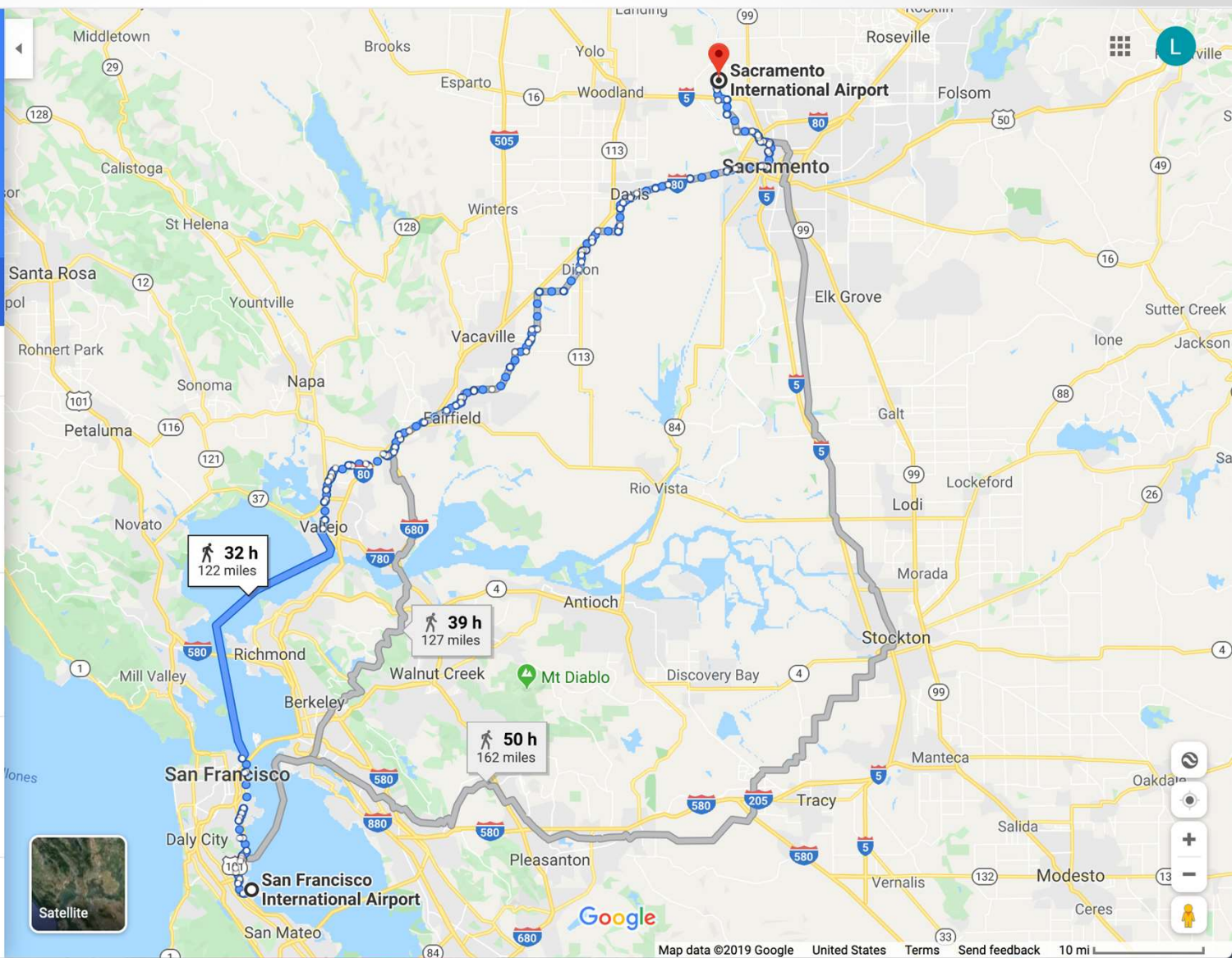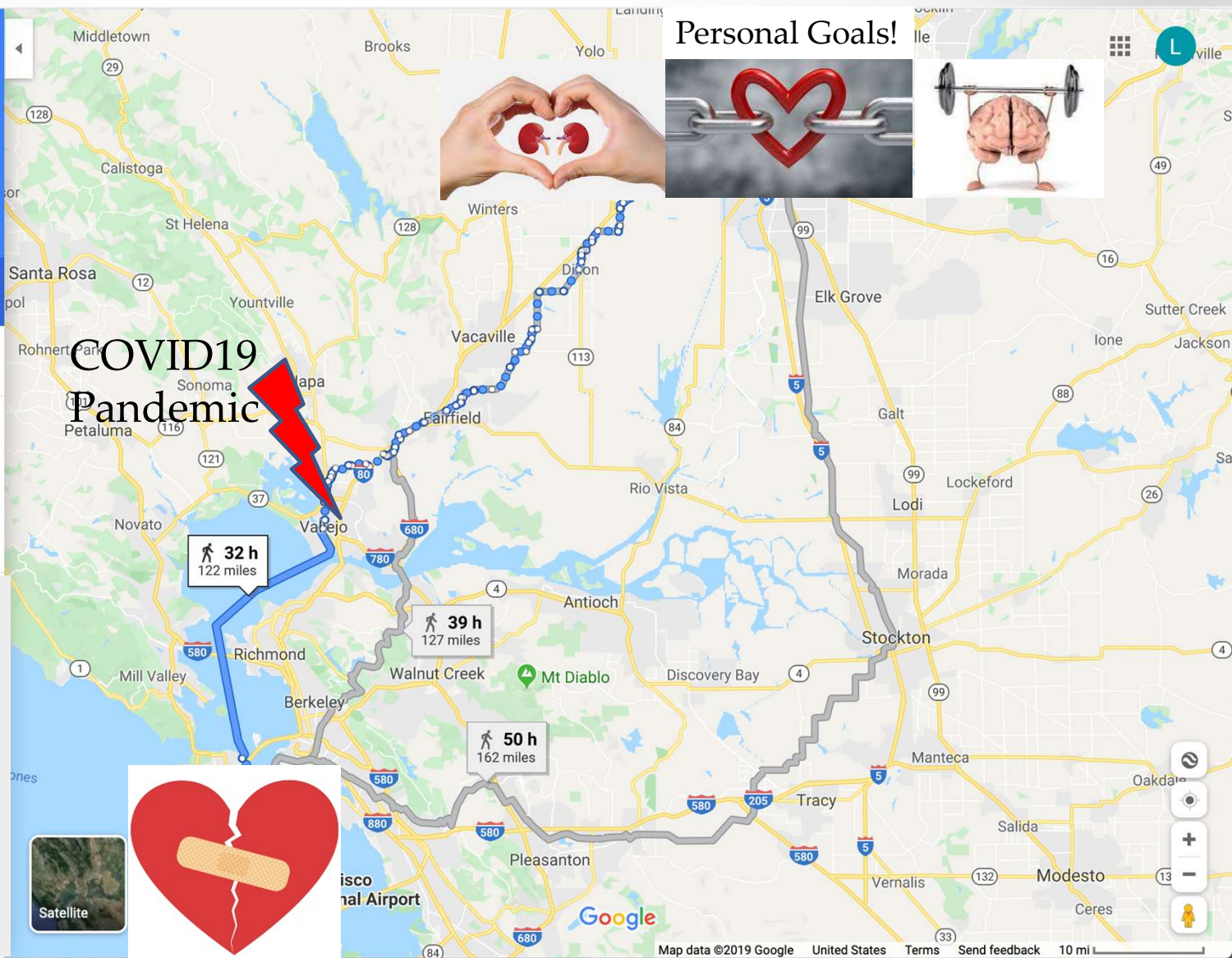- **Type 2 Diabetes**
- **High blood pressure**
- **High cholesterol**
- **Overweight/Obesity**
- Lack of Physical activity
- Stress?
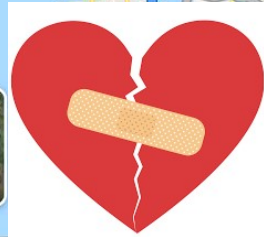
Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study

Salim Yusuf, Steven Hawken, Stephanie Ôunpuu, Tony Dans, Alvaro Avezum, Fernando Lanas, Matthew McQueen, Andrzej Budaj, Prem Pais,
John Varigos, Liu Lisheng, on behalf of the INTERHEART Study Investigators*

This was a large, international, standardized, case-control study (15,152 AMI cases and 14,820 controls from 262 hospitals) designed to determine the strength of association between modifiable risk factors and heart attacks, and to ascertain if this association varies by geographic region.

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Conditions:
Cholesterol build-up (atherosclerosis)
Coronary Stents
Heart attack
CABG surgery
Stroke
PAD
Dementia
Atrial Fibrillation
Acquired Kidney disease
Heart Failure
COVID-19/HF

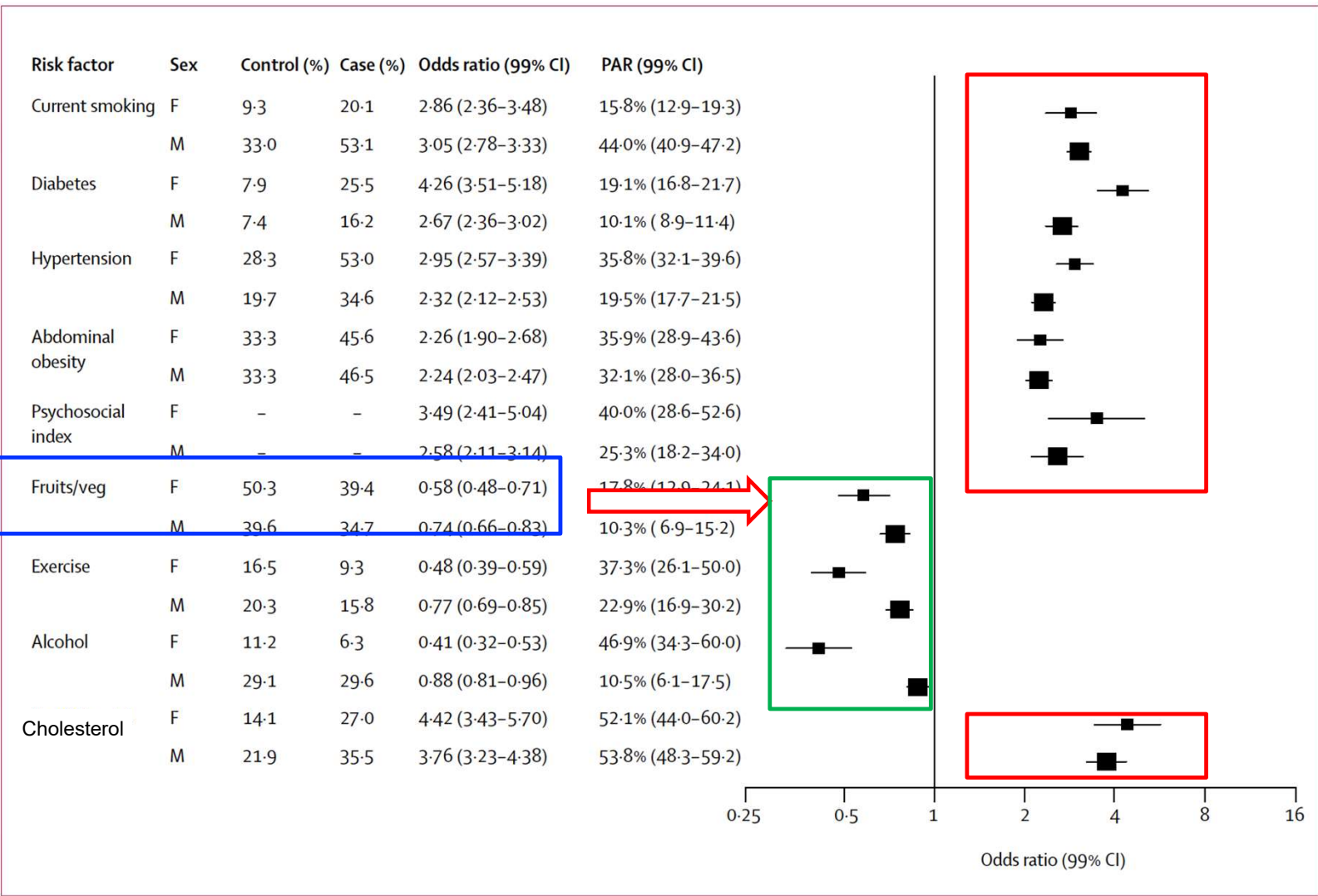| Risk factor	Sex	Control (%)	Case (%)	Odds ratio (99% CI)	PAR (99% CI)
Current smoking	F	9·3	20·1	2·86 (2·36–3·48)	15·8% (12·9–19·3)
	M	33·0	53·1	3·05 (2·78–3·33)	44·0% (40·9–47·2)
Diabetes	F	7·9	25·5	4·26 (3·51–5·18)	19·1% (16·8–21·7)
	M	7·4	16·2	2·67 (2·36–3·02)	10·1% (8·9–11·4)
Hypertension	F	28·3	53·0	2·95 (2·57–3·39)	35·8% (32·1–39·6)
	M	19·7	34·6	2·32 (2·12–2·53)	19·5% (17·7–21·5)
Abdominal obesity	F	33·3	45·6	2·26 (1·90–2·68)	35·9% (28·9–43·6)
	M	33·3	46·5	2·24 (2·03–2·47)	32·1% (28·0–36·5)
Psychosocial index	F	–	–	3·49 (2·41–5·04)	40·0% (28·6–52·6)
	M	–	–	2·58 (2·11–3·14)	25·3% (18·2–34·0)
Fruits/veg	F	50·3	39·4	0·58 (0·48–0·71)	17·8% (12·9–24·1)
	M	39·6	34·7	0·74 (0·66–0·83)	10·3% (6·9–15·2)
Exercise	F	16·5	9·3	0·48 (0·39–0·59)	37·3% (26·1–50·0)
	M	20·3	15·8	0·77 (0·69–0·85)	22·9% (16·9–30·2)
Alcohol	F	11·2	6·3	0·41 (0·32–0·53)	46·9% (34·3–60·0)
	M	29·1	29·6	0·88 (0·81–0·96)	10·5% (6·1–17·5)
Cholesterol	F	14·1	27·0	4·42 (3·43–5·70)	52·1% (44·0–60·2)
	M	21·9	35·5	3·76 (3·23–4·38)	53·8% (48·3–59·2)

Odds ratio (99% CI)

Figure 4: Association of risk factors with acute myocardial infarction in men and women after adjustment for age, sex, and geographic region
For this and subsequent figures, the odds ratios are plotted on a doubling scale. Prevalence cannot be calculated for psychosocial factors because it is derived from a model.
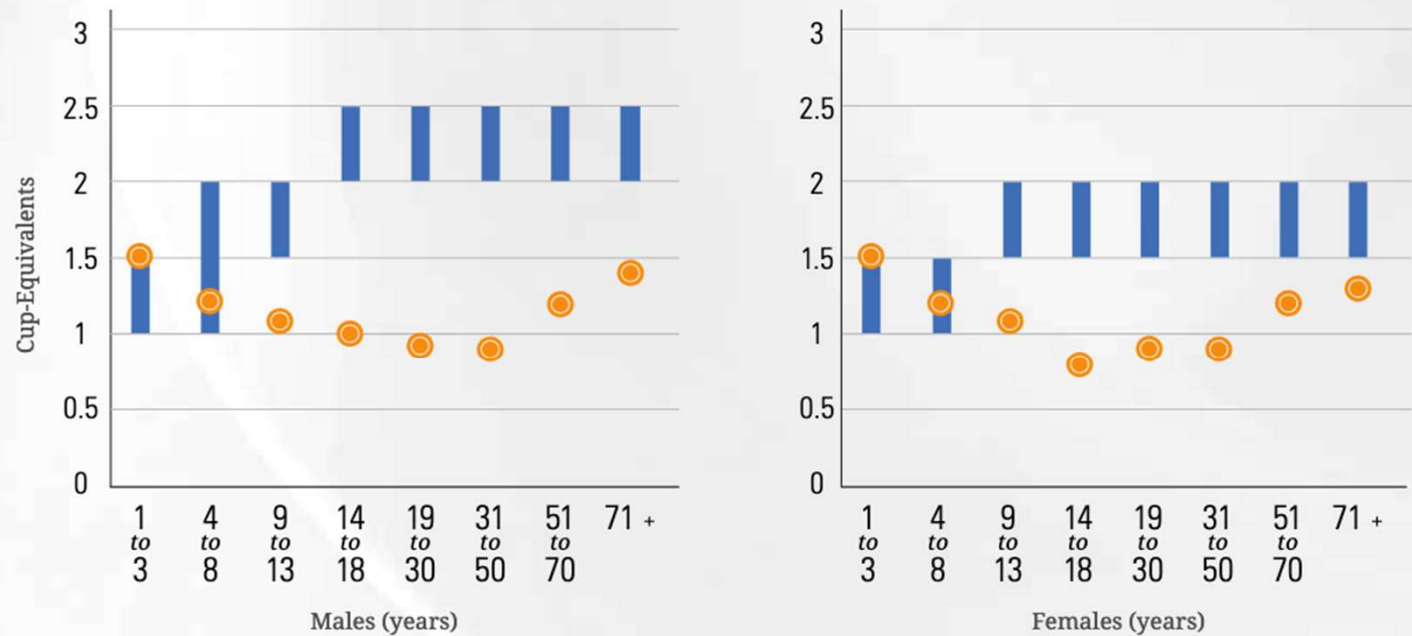
Figure 2-3.

Average Daily Food Group Intakes by Age-Sex Groups, Compared to Ranges of Recommended Intake

Recommended Intake Ranges
Average Intake

Fruits

Figure 2-3.

Average Daily Food Group Intakes by Age-Sex Groups, Compared to Ranges of Recommended Intake
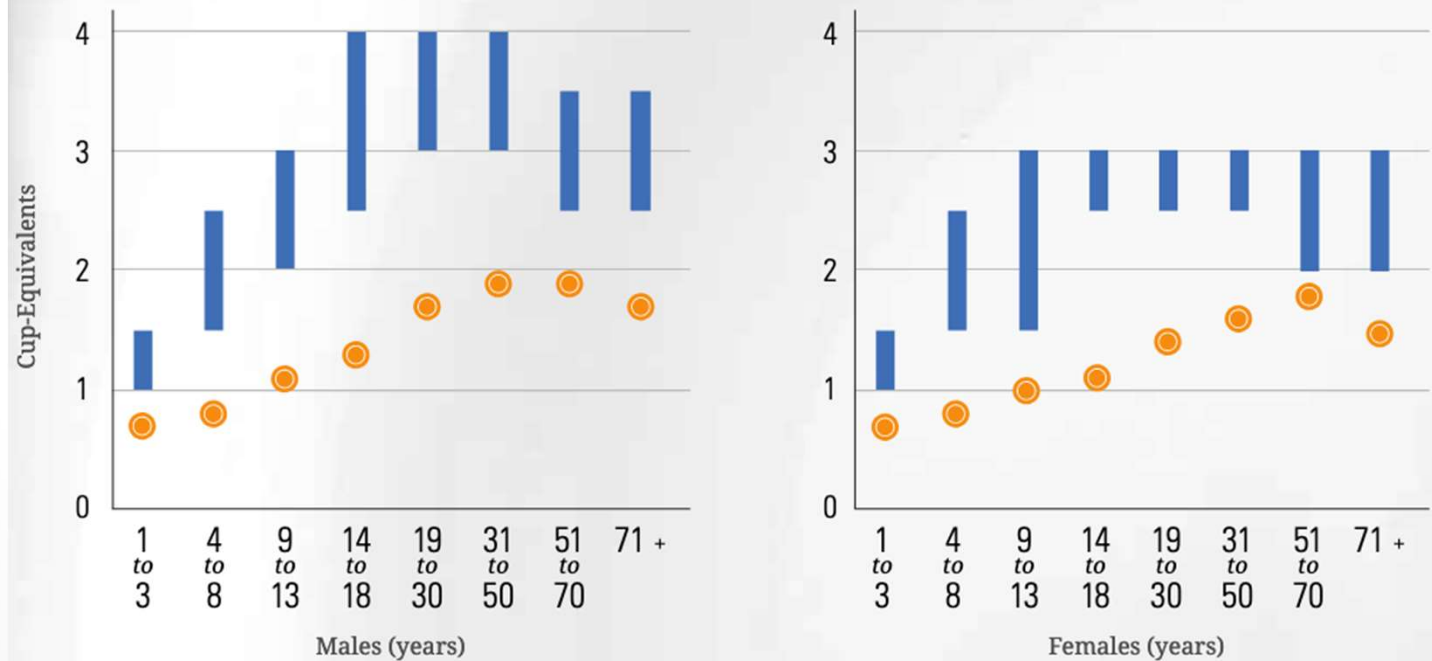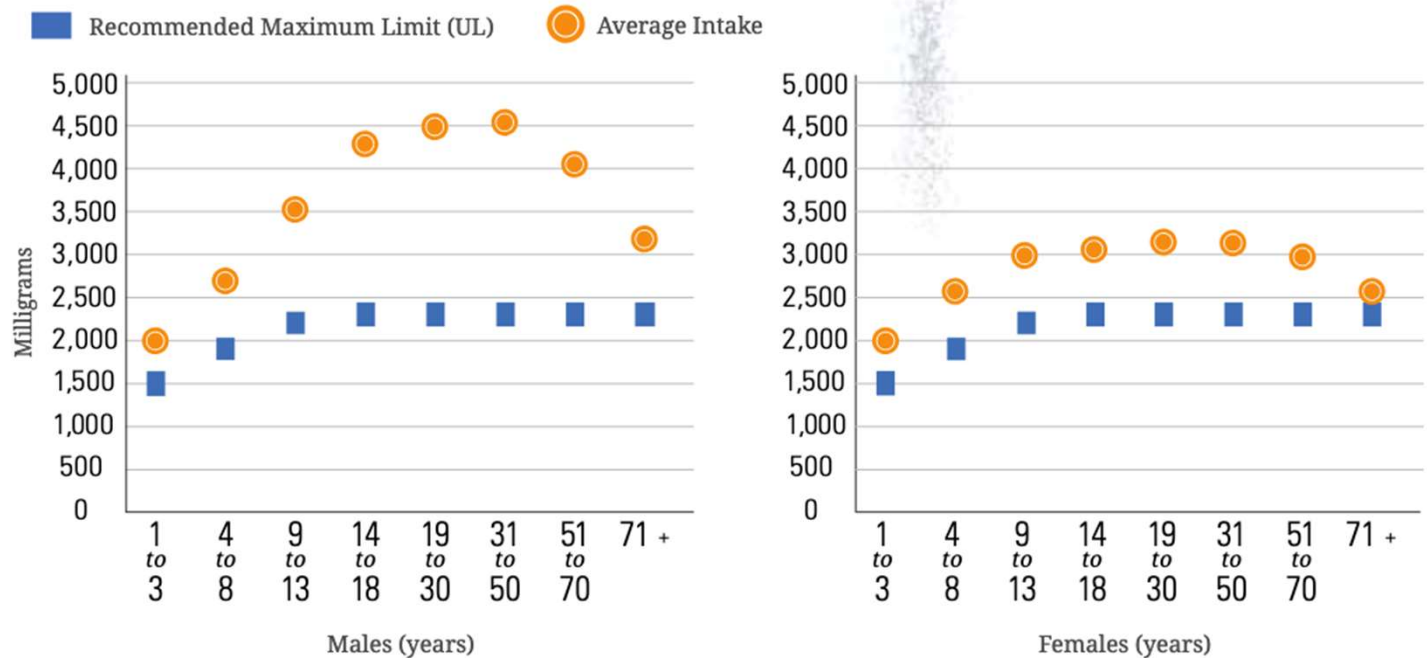
Vegetables

Figure 2-13.

Average Intake of Sodium in Milligrams per Day by Age-Sex Groups, Compared to Tolerable Upper Intake Levels (UL)

DATA SOURCES: What We Eat in America, NHANES 2007-2010 for average intakes by age-sex group. Institute of Medicine Dietary Reference Intakes for Tolerable Upper Intake Levels (UL).
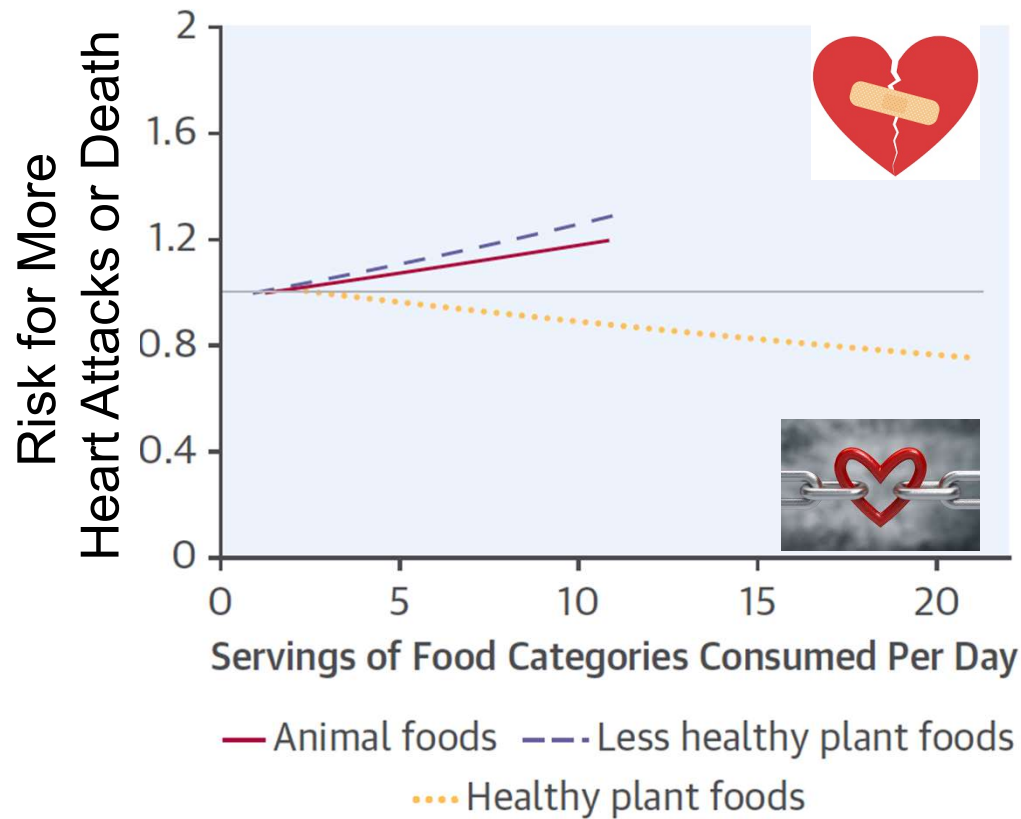
https://nutritionfacts.org/video/do-vegetarians-get-enough-protein/

3. LIFESTYLE FACTORS AFFECTING CARDIOVASCULAR RISK

3.1. Nutrition and Diet

		Recommendations for Nutrition and Diet Referenced studies that support recommendations are summarized in Online Data Supplements 4 and 5.
COR	**LOE**	**Recommendations**
I	B-R	1. A diet emphasizing intake of vegetables, fruits, legumes, nuts, whole grains, and fish is recommended to decrease ASCVD risk factors.[S3.1-1–S3.1-11]
IIa	B-NR	2. Replacement of saturated fat with dietary monounsaturated and polyunsaturated fats can be beneficial to reduce ASCVD risk.[S3.1-12,S3.1-13]
IIa	B-NR	3. A diet containing reduced amounts of cholesterol and sodium can be beneficial to decrease ASCVD risk.[S3.1-9,S3.1-14–S3.1-16]
IIa	B-NR	4. As a part of a healthy diet, it is reasonable to minimize the intake of processed meats, refined carbohydrates, and sweetened beverages to reduce ASCVD risk.[S3.1-17–S3.1-24]
III: Harm	B-NR	5. As a part of a healthy diet, the intake of *trans* fats should be avoided to reduce ASCVD risk.[S3.1-12,S3.1-17,S3.1-25–S3.1-27]

Whole-Foods Plant-Based
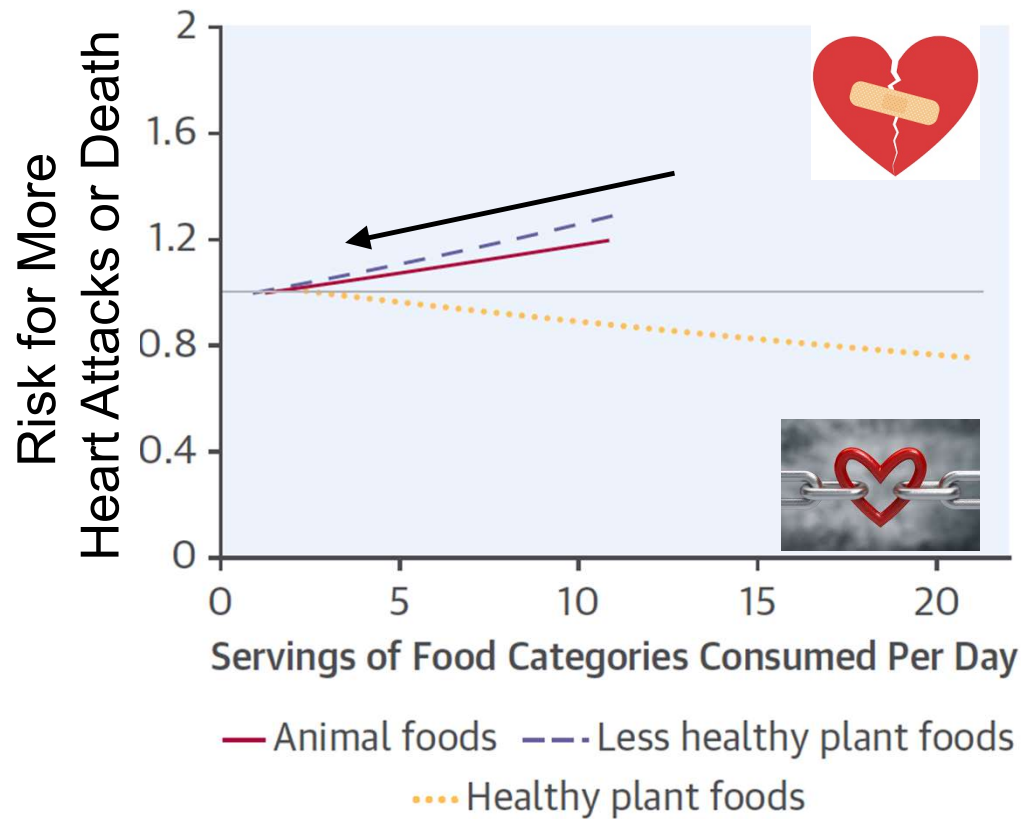
Evidence-based Nutrition (I)
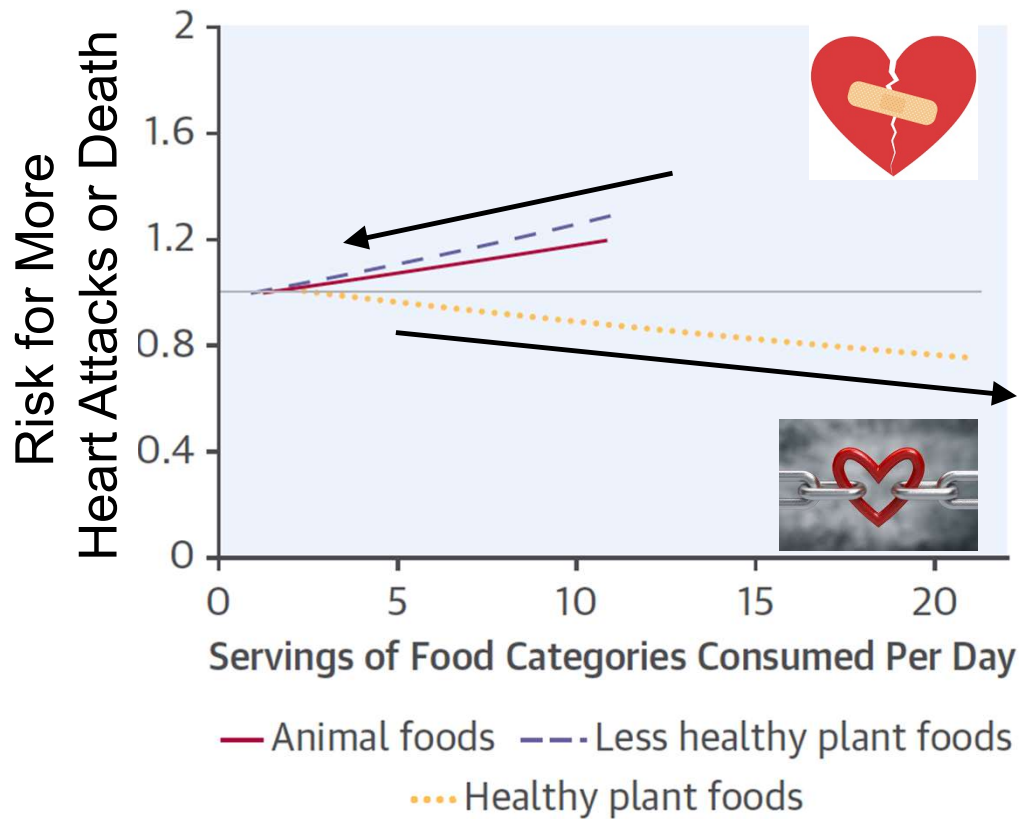
Satija et. al, JACC, 2017

TABLE 1 Examples of Food Items Constituting the 18 Food Groups (From the 1984 NHS FFQ)

		PDI	hPDI	uPDI
	Plant Food Groups			
Healthy				
Whole grains	Whole grain breakfast cereal, other cooked breakfast cereal, cooked oatmeal, dark bread, brown rice, other grains, bran, wheat germ, popcorn	Positive scores	Positive scores	Reverse scores
Fruits	Raisins or grapes, prunes, bananas, cantaloupe, watermelon, fresh apples or pears, oranges, grapefruit, strawberries, blueberries, peaches or apricots or plums	Positive scores	Positive scores	Reverse scores
Vegetables	Tomatoes, tomato juice, tomato sauce, broccoli, cabbage, cauliflower, brussels sprouts, carrots, mixed vegetables, yellow or winter squash, eggplant or zucchini, yams or sweet potatoes, spinach cooked, spinach raw, kale or mustard or chard greens, iceberg or head lettuce, romaine or leaf lettuce, celery, mushrooms, beets, alfalfa sprouts, garlic, corn	Positive scores	Positive scores	Reverse scores
Nuts	Nuts, peanut butter	Positive scores	Positive scores	Reverse scores
Legumes	String beans, tofu or soybeans, beans or lentils, peas or lima beans	Positive scores	Positive scores	Reverse scores
Vegetable oils	Oil-based salad dressing, vegetable oil used for cooking	Positive scores	Positive scores	Reverse scores
Tea and coffee	Tea, coffee, decaffeinated coffee	Positive scores	Positive scores	Reverse scores

TABLE 1 Examples of Food Items Constituting the 18 Food Groups (From the 1984 NHS FFQ)

		PDI	hPDI	uPDI
Plant Food Groups				
Less healthy				
Fruit juices	Apple cider (nonalcoholic) or juice, orange juice, grapefruit juice, other fruit juice	Positive scores	Reverse scores	Positive scores
Refined grains	Refined grain breakfast cereal, white bread, English muffins or bagels or rolls, muffins or biscuits, white rice, pancakes or waffles, crackers, pasta	Positive scores	Reverse scores	Positive scores
Potatoes	French fries, baked or mashed potatoes, potato or corn chips	Positive scores	Reverse scores	Positive scores
Sugar sweetened beverages	Colas with caffeine and sugar, colas without caffeine but with sugar, other carbonated beverages with sugar, noncarbonated fruit drinks with sugar	Positive scores	Reverse scores	Positive scores
Sweets and desserts	Chocolates, candy bars, candy without chocolate, cookies (home-baked and ready-made), brownies, doughnuts, cake (home-baked and ready-made), sweet roll (home-baked and ready-made), pie (home-baked and ready-made), jams or jellies or preserves or syrup or honey	Positive scores	Reverse scores	Positive scores

TABLE 1 Examples of Food Items Constituting the 18 Food Groups (From the 1984 NHS FFQ)

		PDI	hPDI	uPDI
Animal Food Groups				
Animal fat	Butter added to food, butter or lard used for cooking	Reverse scores	Reverse scores	Reverse scores
Dairy	Skim low fat milk, whole milk, cream, sour cream, sherbet, ice cream, yogurt, cottage or ricotta cheese, cream cheese, other cheese	Reverse scores	Reverse scores	Reverse scores
Egg	Eggs	Reverse scores	Reverse scores	Reverse scores
Fish or seafood	Canned tuna, dark meat fish, other fish, shrimp or lobster or scallops	Reverse scores	Reverse scores	Reverse scores
Meat	Chicken or turkey with skin, chicken or turkey without skin, bacon, hot dogs, processed meats, liver, hamburger, beef or pork or lamb mixed dish, beef or pork or lamb main dish	Reverse scores	Reverse scores	Reverse scores
Miscellaneous animal-based foods	Pizza, chowder or cream soup, mayonnaise or other creamy salad dressing	Reverse scores	Reverse scores	Reverse scores

FFQ = food frequency questionnaire; hPDI = healthful plant-based diet index; NHS = Nurses' Health Study; PDI = overall plant-based diet index; uPDI = unhealthful plant-based diet index.

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Original Investigation

ONLINE FIRST

February 3, 2020

Associations of Processed Meat, Unprocessed Red Meat, Poultry, or Fish Intake With Incident Cardiovascular Disease and All-Cause Mortality

Victor W. Zhong, PhD[1,2]; Linda Van Horn, PhD[2]; Philip Greenland, MD[2]; et al

» Author Affiliations

Key Points

Question Is consuming processed meat, unprocessed red meat, poultry, or fish associated with incident cardiovascular disease and all-cause mortality?
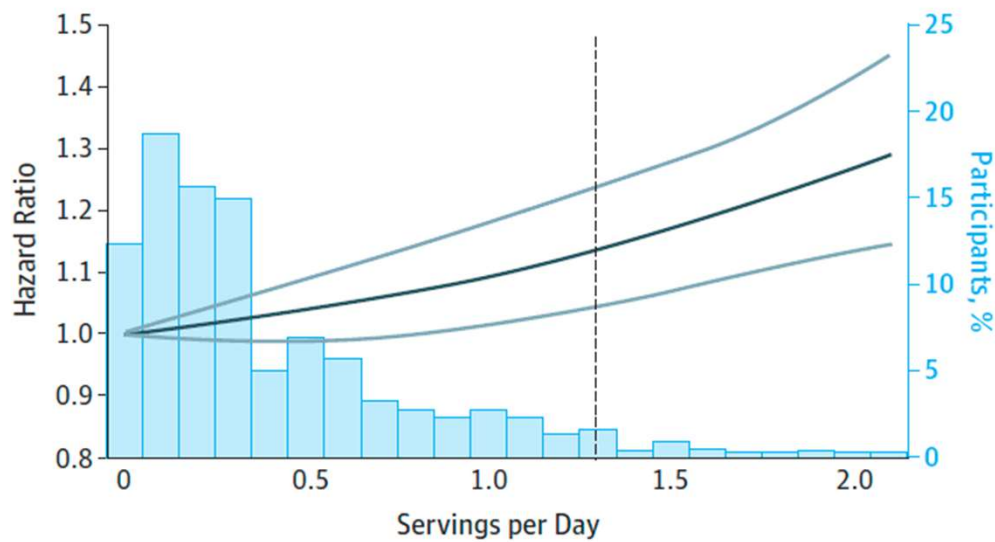
Findings In this cohort study of 29 682 US adults pooled from 6 prospective cohort studies, intake of processed meat, unprocessed red meat, or poultry was significantly associated with incident cardiovascular disease, but fish intake was not. Intake of processed meat or unprocessed red meat was significantly associated with all-cause mortality, but intake of poultry or fish was not.

Meaning The findings of this study appear to have critical public health implications given that dietary behaviors are modifiable and most people consume these 4 food types on a daily or weekly basis.

30 year- composite end point (coronary heart disease, stroke, heart failure, and CVD deaths) and all-cause mortality

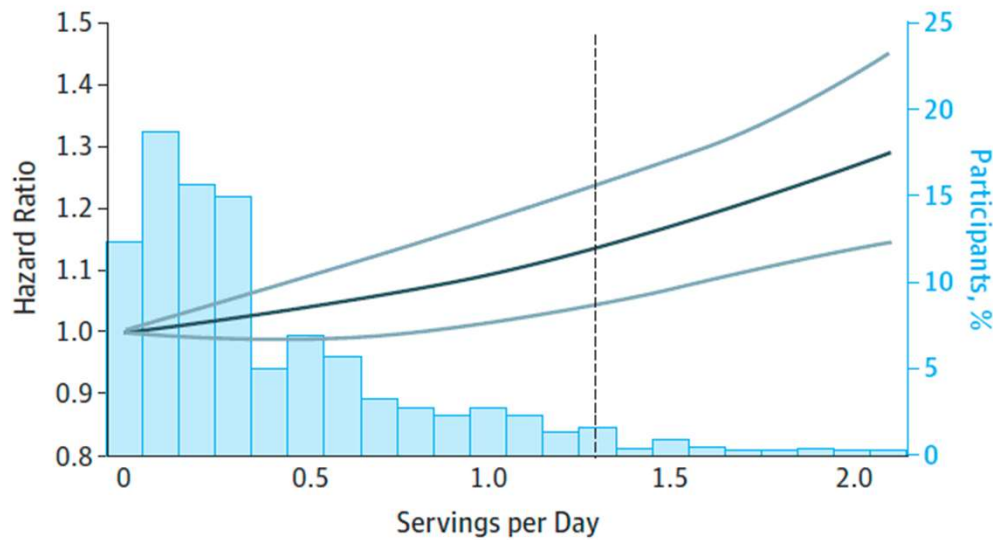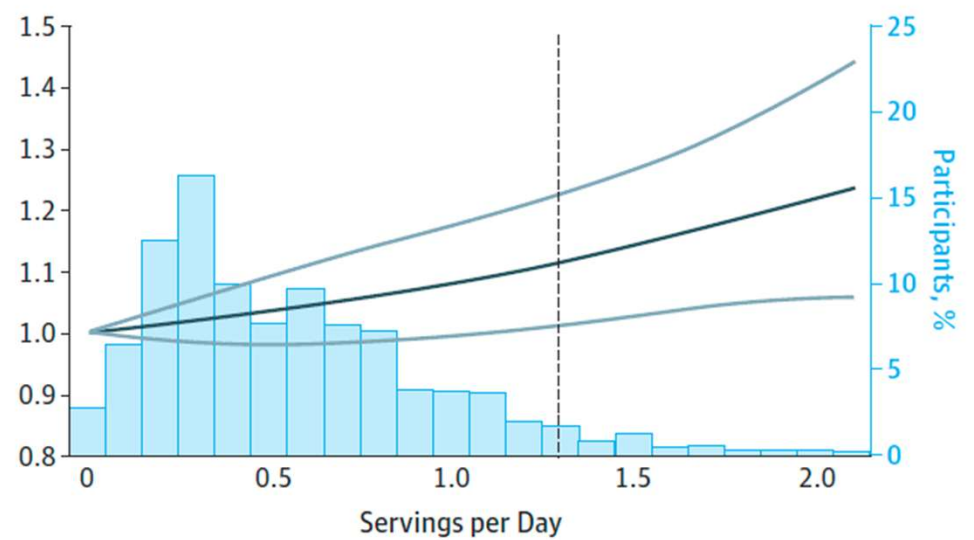29 682 US adults pooled from 6 prospective cohort studies,

For processed meat, 1 serving consisted of 2 slices of bacon, 2 small links of sausage, or 1 hot dog.

One serving was equivalent to 4 oz of unprocessed red meat or poultry or 3 oz of fish.
For processed meat, 1 serving consisted of 2 slices of bacon, 2 small links of sausage, or 1 hot dog.

Figure 2. Associations of Meat, Poultry, or Fish Intake With Incident Cardiovascular Disease (CVD)
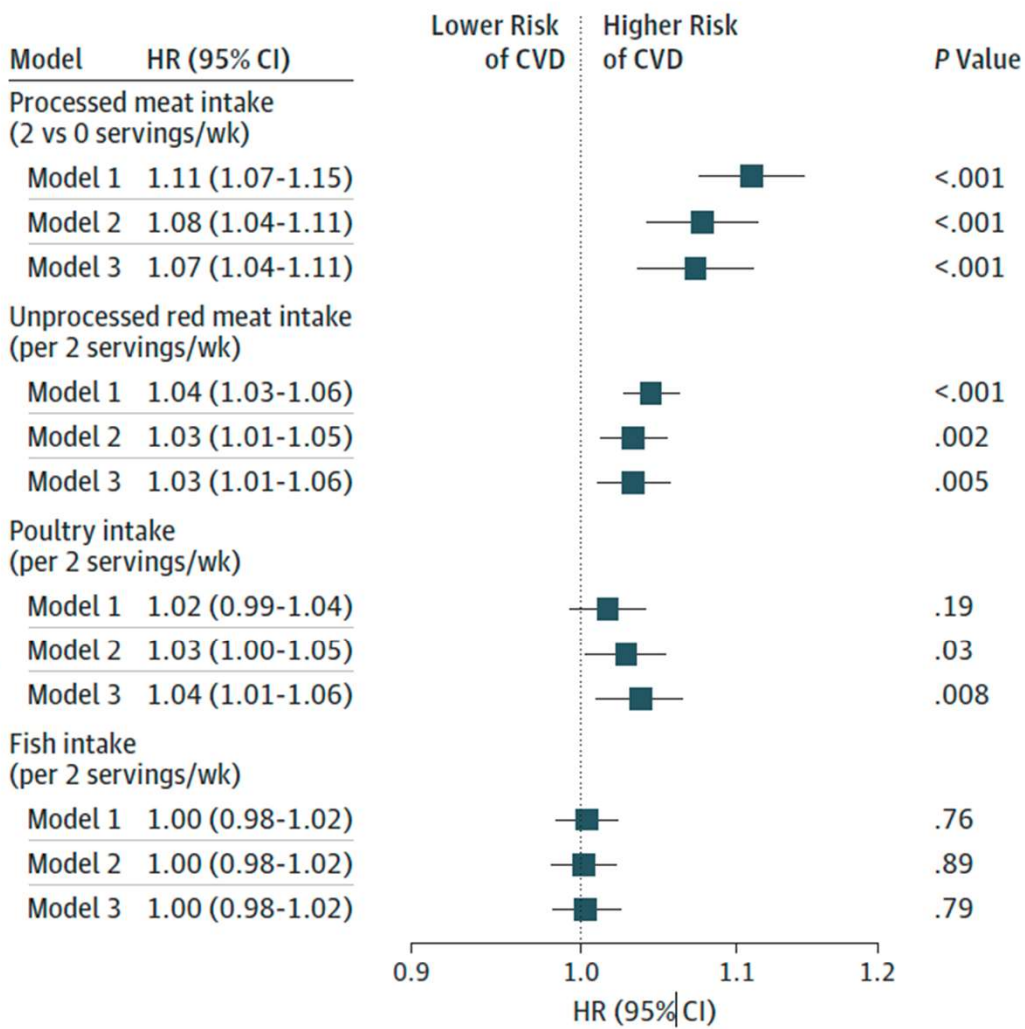
All models were stratified by cohort. Model 1 was adjusted for age, sex, race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Chinese, or other), and educational level (less than high school, high school, or some college or higher). Model 2 was adjusted for model 1 variables plus total energy, smoking status (current, former, or never), smoking pack-years (0, 0.1-4.9, 5.0-9.9, 10-19.9, 20-29.9, 30-39.9, or ≥40), cohort-specific physical activity z score, alcohol intake (grams), and hormone therapy (yes or no). Model 3 was adjusted for model 2 variables plus fruits, legumes, potatoes, other vegetables excluding legumes and potatoes, nuts and seeds, whole grains, refined grains, low-fat dairy products, high-fat dairy products, sugar-sweetened beverages, eggs, and 3 of the 4 food types (processed meat, unprocessed red meat, poultry, and fish); a term of processed meat squared was also included. HR indicates hazard ratio.

JAMA Network | Open.

Association of Seafood Consumption and Mercury Exposure With Cardiovascular and All-Cause Mortality Among US Adults

Yangbo Sun, MD, PhD; Buyun Liu, MD, PhD; Shuang Rong, PhD; Jing Zhang, PhD; Yang Du, MD, MS; Guifeng Xu, MD; Linda G. Snetselaar, PhD; Robert B. Wallace, MD; Hans-Joachim Lehmler, PhD; Wei Bao, MD, PhD

Table 2. Association of Usual Seafood Intake With All-Cause and CVD-Related Mortality Among 17 294 Participants From the 2003 to 2012 Cycles of the National Health and Nutrition Examination Survey

Mortality	HR per 1 oz equivalent per day increase (95% CI)
All cause	
Model 1[a]	0.60 (0.47-0.77)[b]
Model 2[c]	0.84 (0.66-1.06)
Model 3[d]	0.84 (0.66-1.07)
CVD related	
Model 1[a]	0.54 (0.30-0.98)[b]
Model 2[c]	0.87 (0.52-1.47)
Model 3[d]	0.89 (0.54-1.47)

In this cohort study of 17 294 US adults (5 separate studies), no association was found between an increase in seafood consumption of 1 oz equivalent per day and all-cause and CVD-related mortality.

Abbreviations: CVD, cardiovascular disease; HR, hazard ratio.

[a] Model 1 was adjusted for age, sex, and race and ethnicity.

[b] Statistically significant.

[c] Model 2 was adjusted for the variables in model 1 plus educational level, family income-to-poverty ratio, smoking status, alcohol intake, physical activity, total energy intake, and consumption of whole grains, total fruits, total vegetables, red meat, and poultry.

[d] Model 3 was adjusted for the variables in model 2 plus body mass index, history of diabetes, history of hypertension, family history of CVD, and total cholesterol levels.

Summary

- Do not add the butter to the shrimp-

- One tablespoon of butter has 104 calories of fat and over 7 grams of saturated fat; There are 84 calories and 18 grams of lean protein in seven medium-sized pieces of shrimp.

- That's nearly 50% of the daily recommended serving of protein for only 10% of the day's needed calories.

- Learning how to eat plant-based foods can lead to a reduction in cardiovascular disease.

- Opportunities like CWP programs offers a "blue route" for you to get to your personal goals when those are aligned with cardiovascular wellness.

Questions?