

Meat Intake and Health

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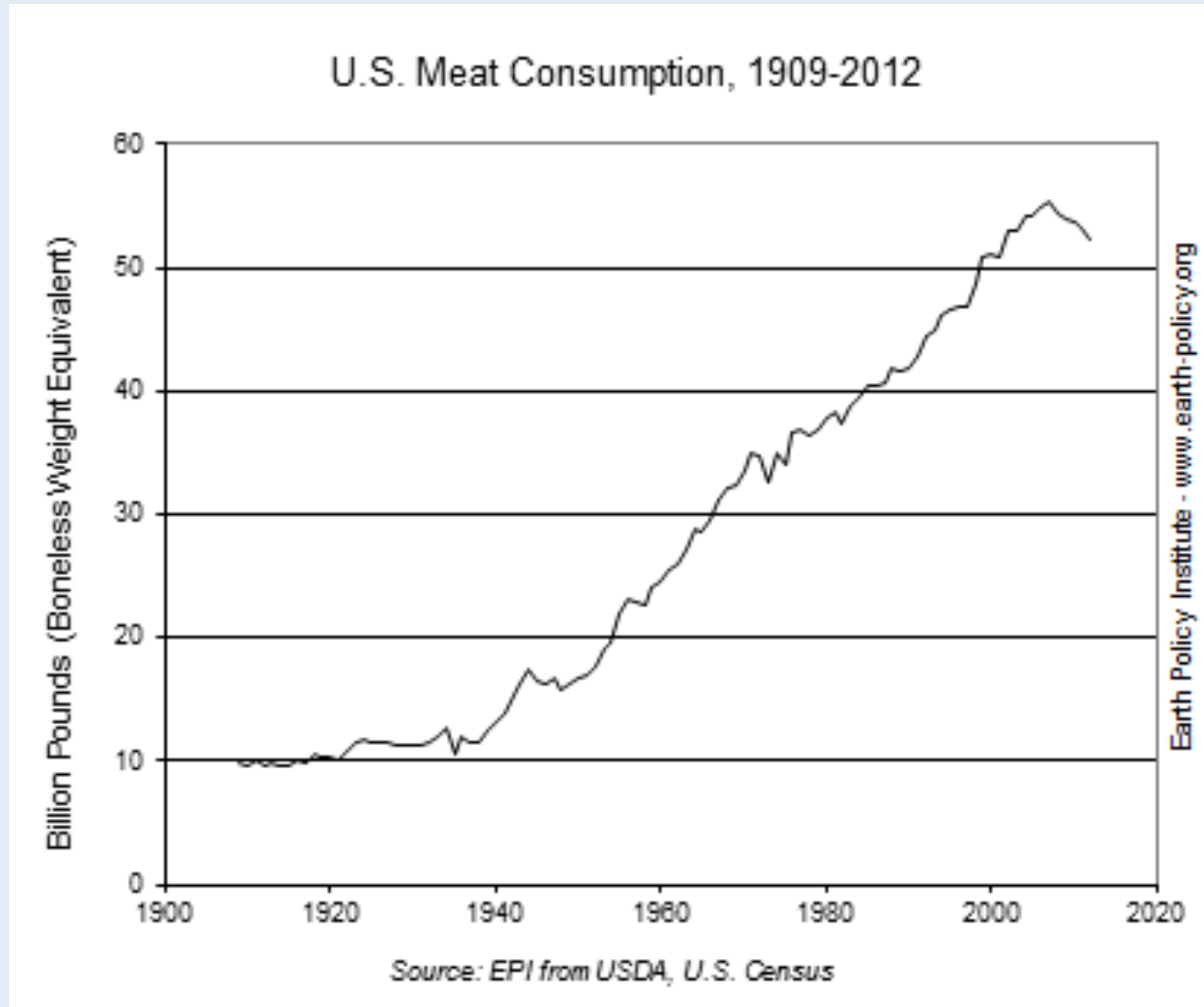
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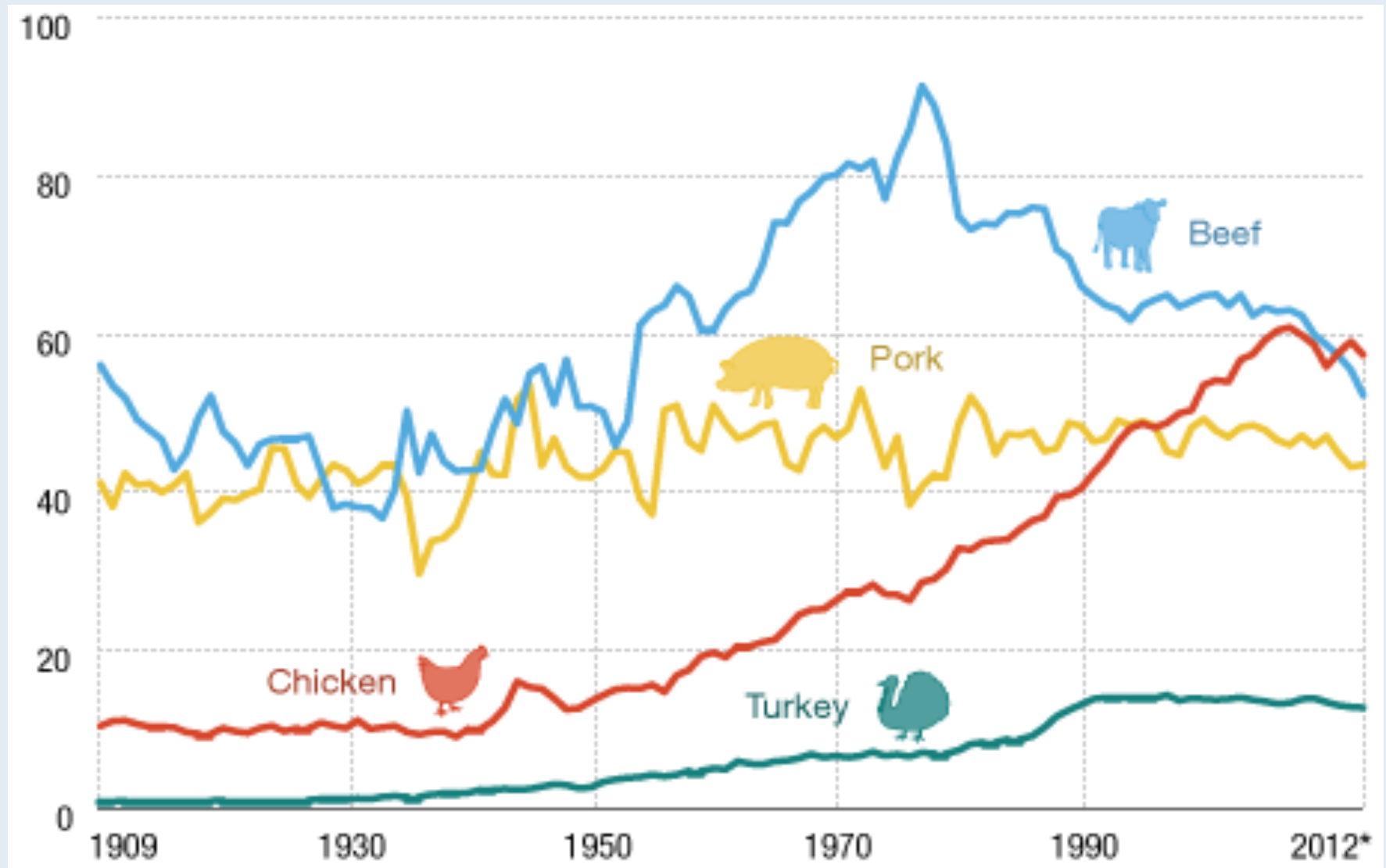
Meat Intake



Overall U.S. Meat Consumption



Annual Per Capita U.S. Meat Consumption



The average American consumes 92 pounds of red meat per year, equivalent to 140 double burgers.

The Environmental Impact of Meat

What It Takes To Make A Quarter-Pound Hamburger



feed

6.7

Pounds of
grains and forage



water

52.8

Gallons for drinking water
and irrigating feed crops



land

74.5

Square feet for grazing
and growing feed crops



fossil fuel
energy

1,036

Btus for feed production and
transport. That's enough to power a
typical microwave for 18 minutes.



Source: J.L. Capper, *Journal of Animal Science*, July, 2011.

Credit: Producers: Eliza Barclay, Jessica Stoller-Conrad; Designer: Kevin Uhrmacher/NPR

Health Consequences

- In Western countries, red meat is strongly linked with increased risk of:

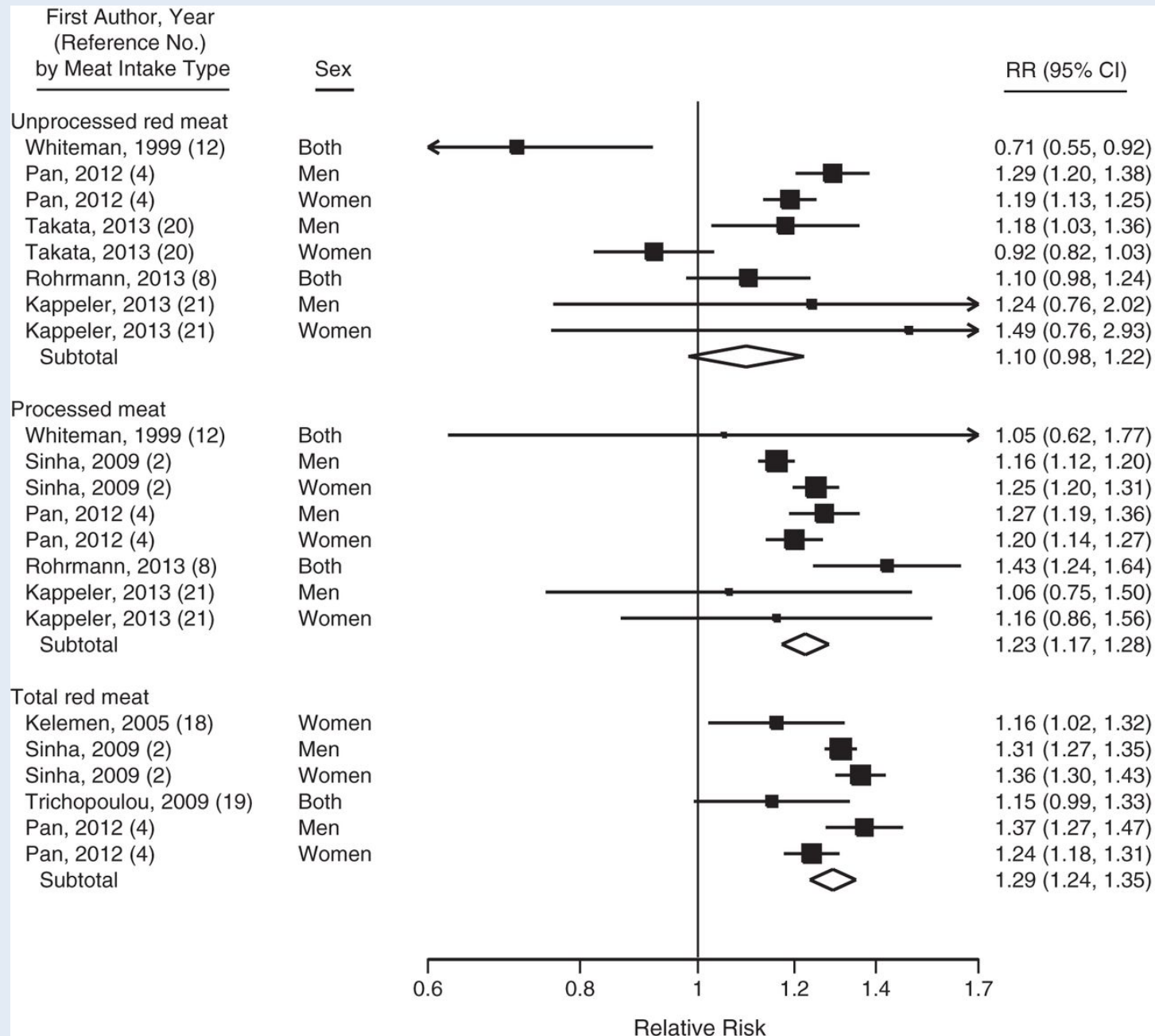
diabetes

cancer-specific death

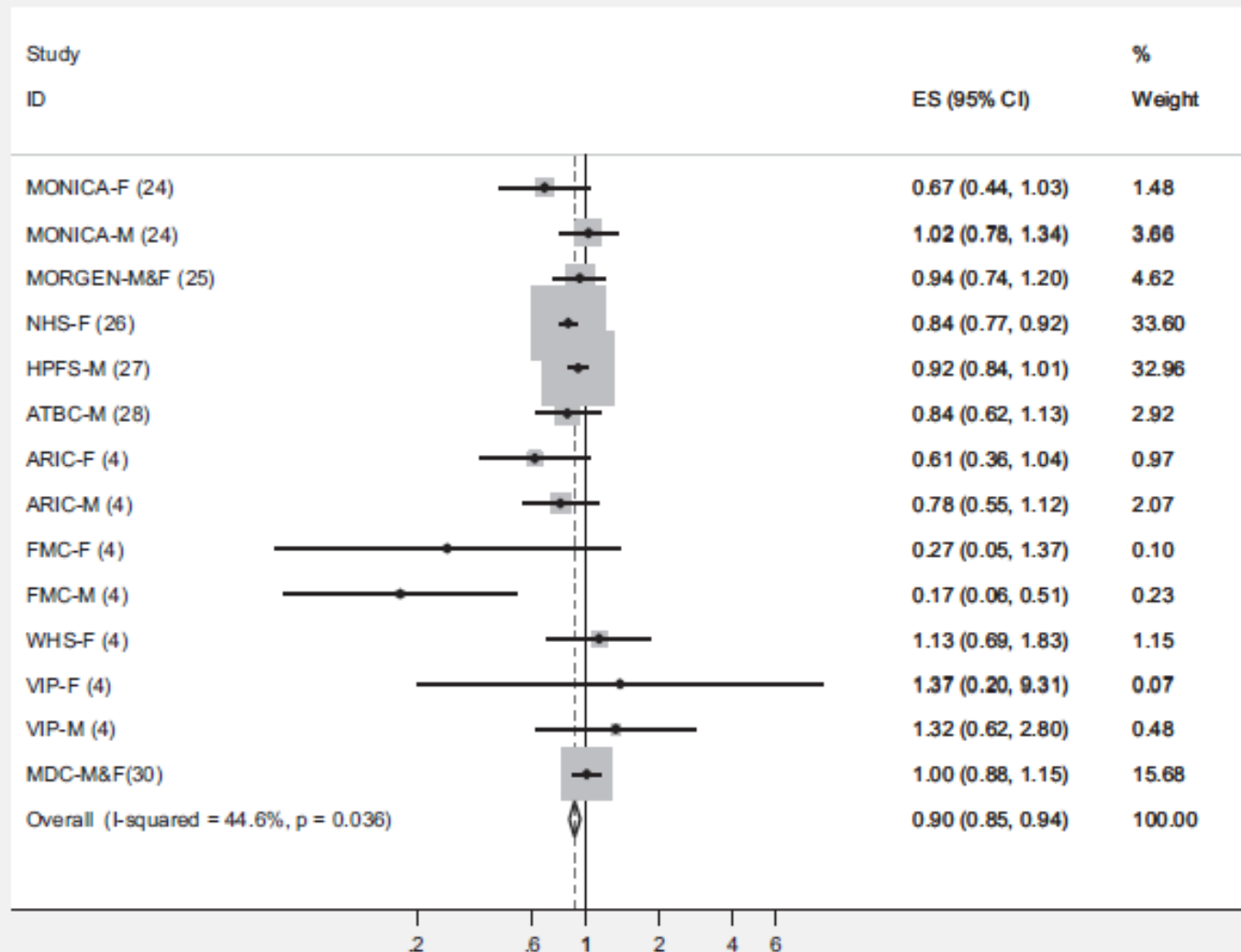
cardiovascular-related death

all-cause mortality

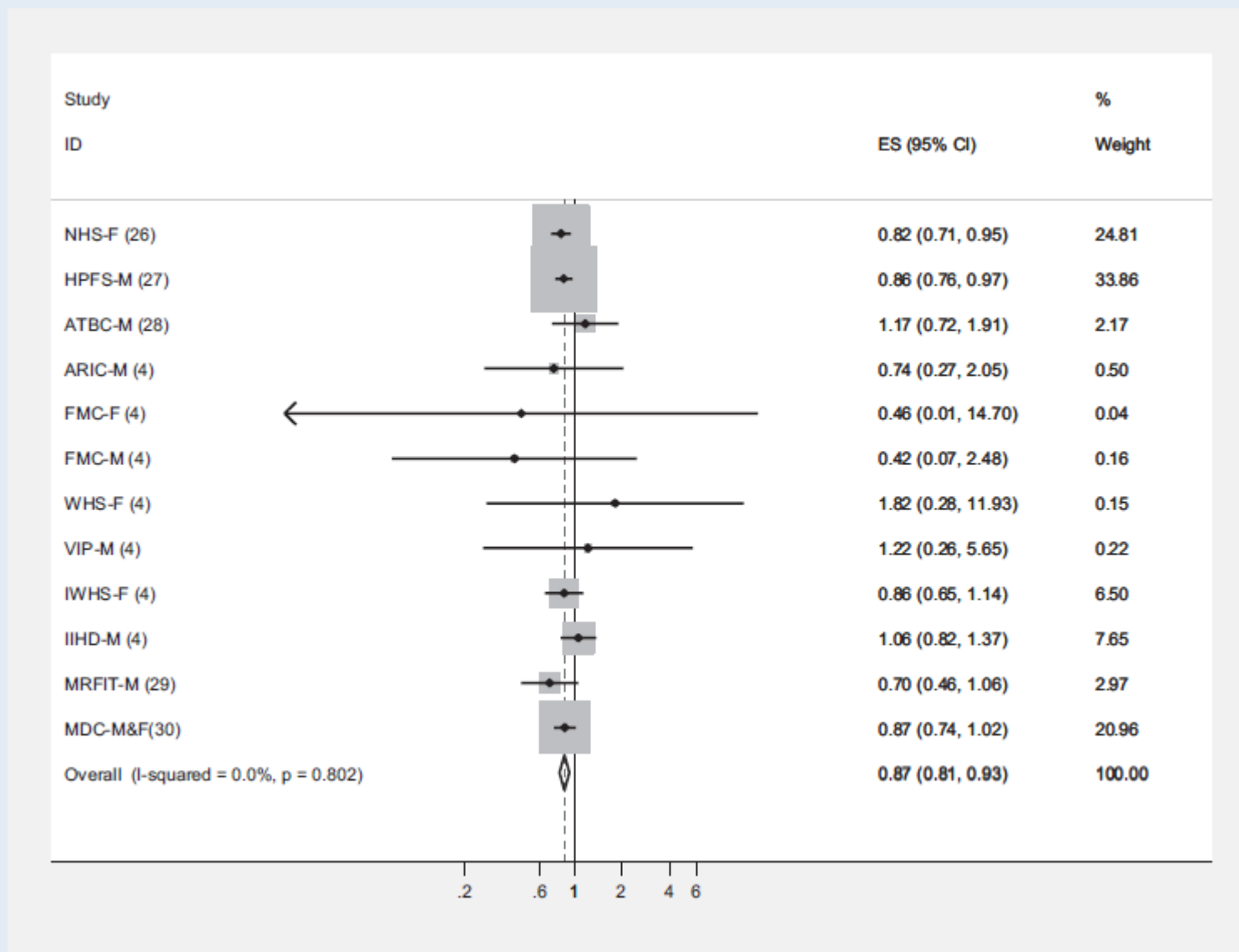
Relative risk (RR) of all-cause mortality for the highest versus lowest category of unprocessed red meat, processed meat, and total red meat consumption.



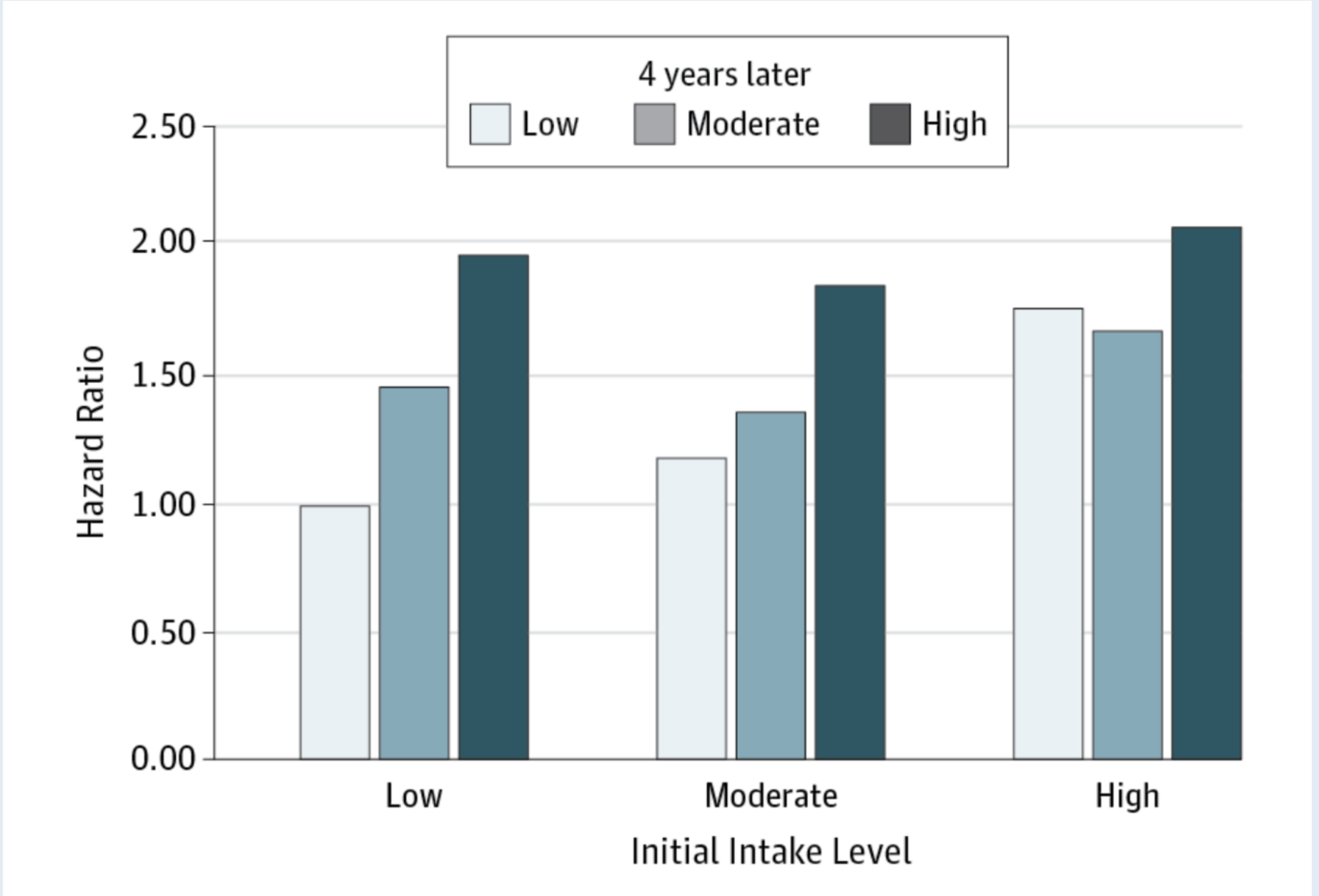
5% of energy increment in linoleic acid intake replacing energy from saturated fat associated with 10% lower risk of CHD events



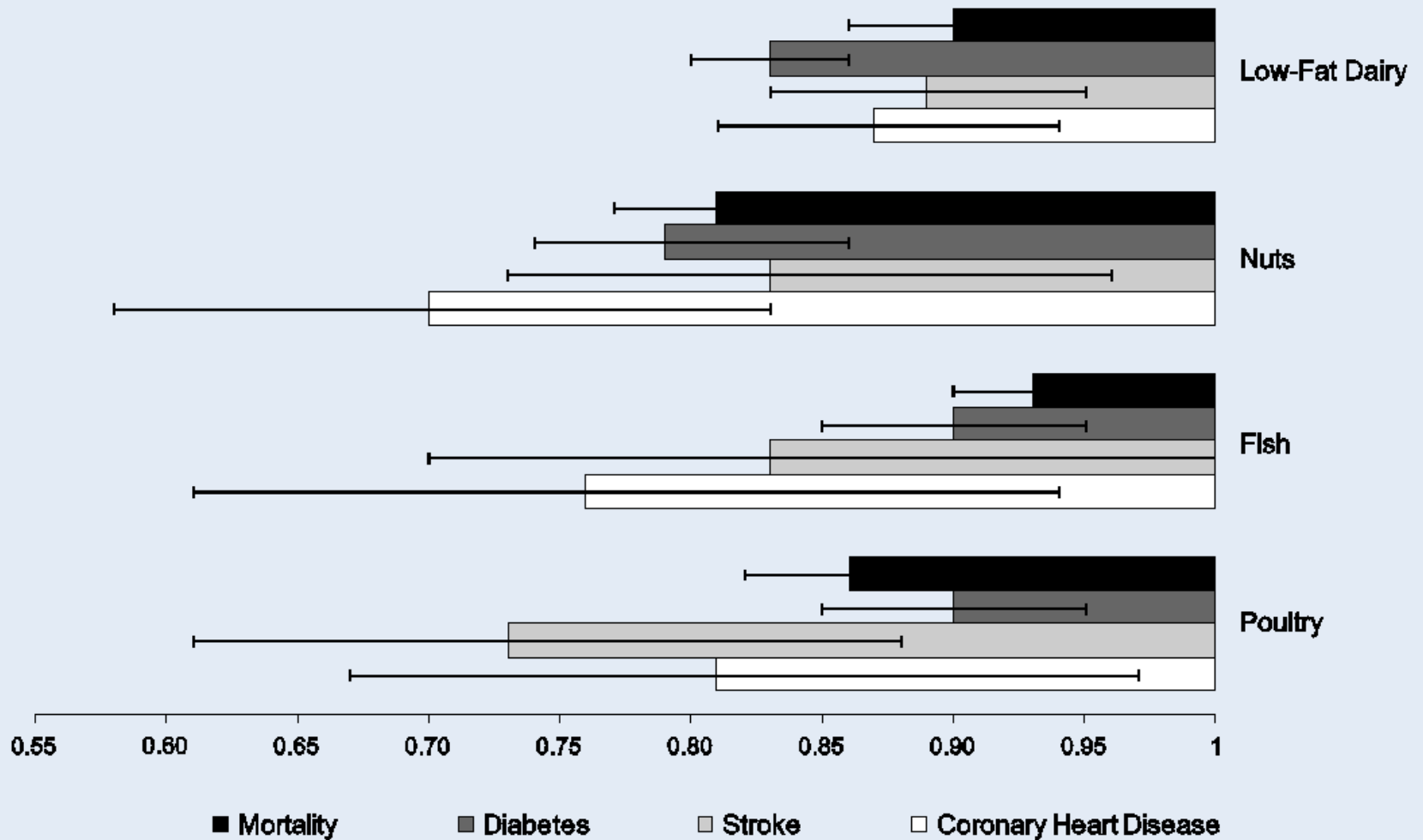
5% of energy increment in linoleic acid intake replacing energy from saturated fat associated 13% lower risk of CHD deaths



Changes in Red Meat Consumption and Subsequent Risk of Diabetes: Three US Cohorts

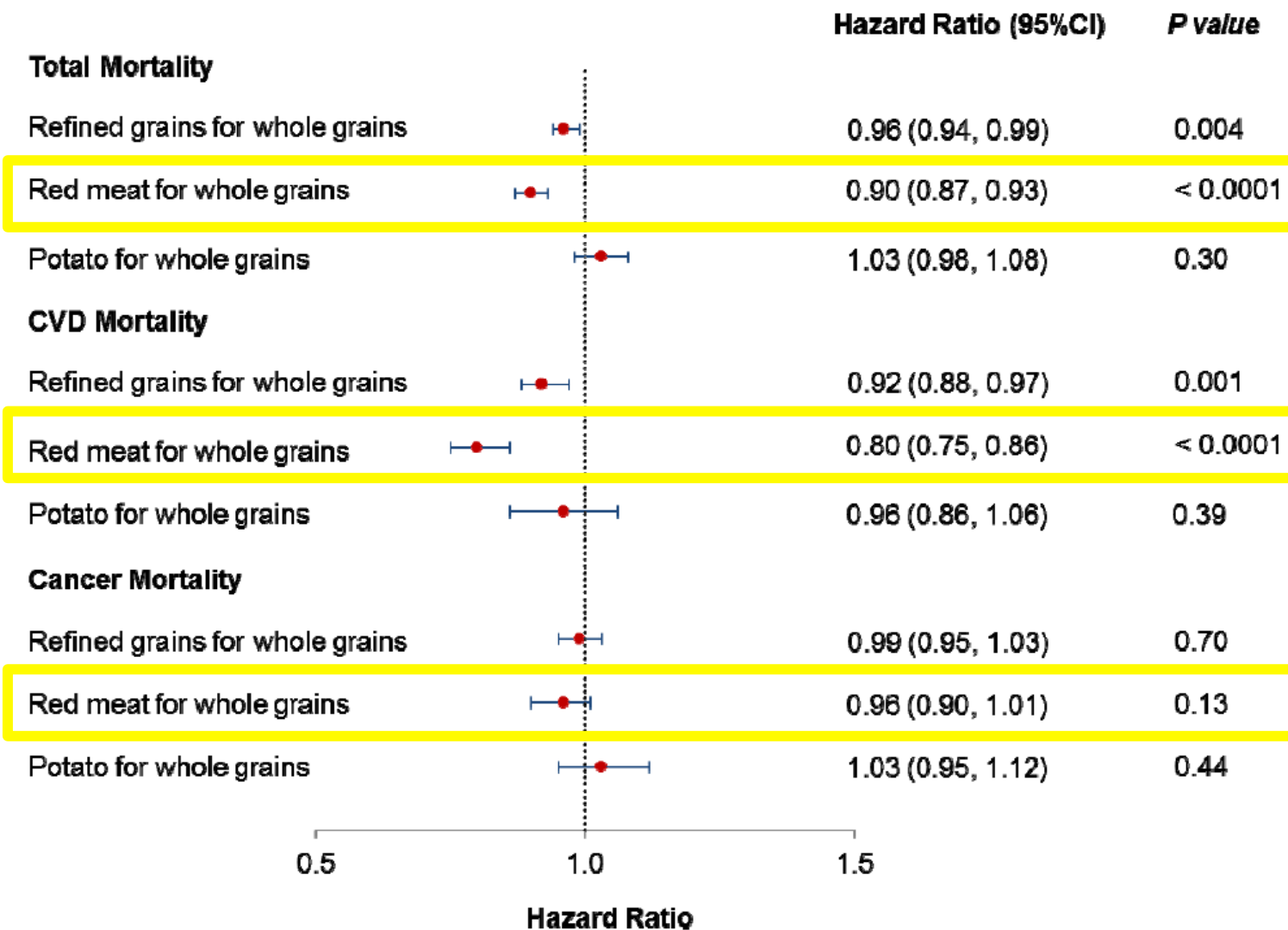


Reduction in Mortality Risk from Replacing Red Meat with Low-Fat Dairy, Nuts, Fish, or Poultry



Red Meat and Refined Grain Replacement with Whole Grains and Mortality

eFigure. Pooled Hazard Ratio (95% CI) of Mortality with Serving-to-Serving Replacements Between Foods



Meat Intake: East vs. West

- Pooled analysis of studies in Asian populations found no association between red meat and risk of cancer-specific or all-cause mortality
- Potential Explanations:
 - Overall meat intake is lower
 - Current levels of red meat intake unreflective of overall intake, conflated with socioeconomic status

New WHO Classifications on Red and Processed Meat

- **WHO now classifies consumption of processed meat as “carcinogenic to humans” (Group 1)**
 - ...”on the basis of sufficient evidence for colorectal cancer. Additionally, a positive association ... was found for stomach cancer.”
- **WHO now classifies consumption of red meat as “probably carcinogenic to humans” (Group 2A).**
 - “Substantial epidemiological data ...[for] colorectal cancer and the strong mechanistic evidence. ...also positively associated with pancreatic and prostate cancer.”

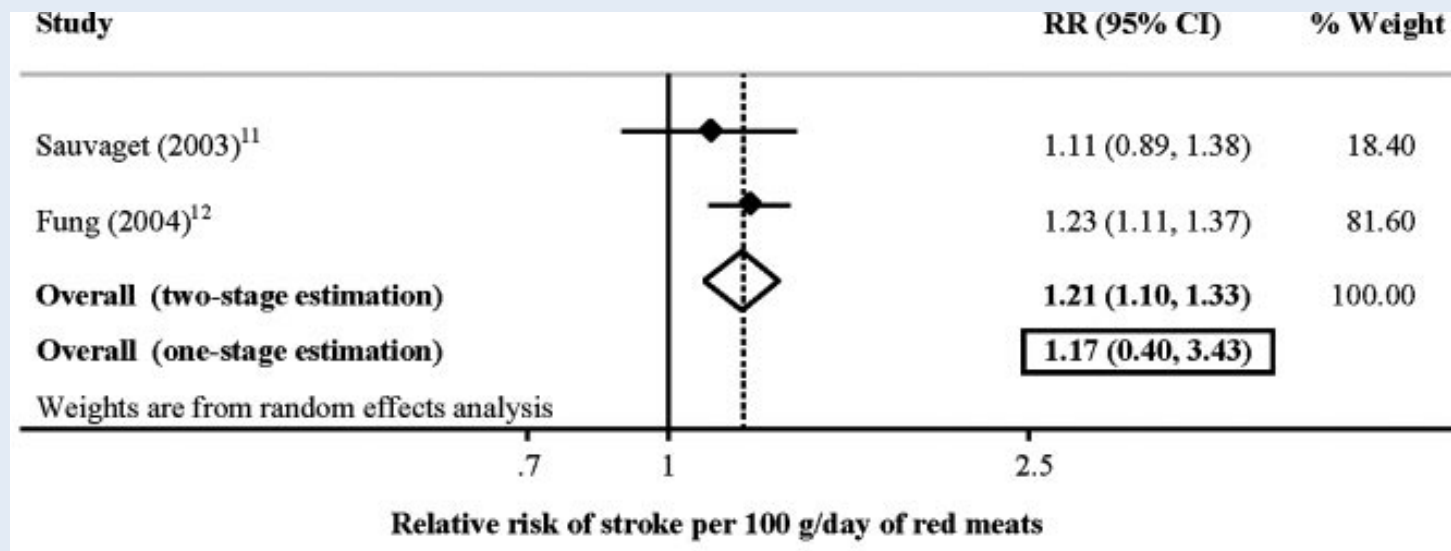
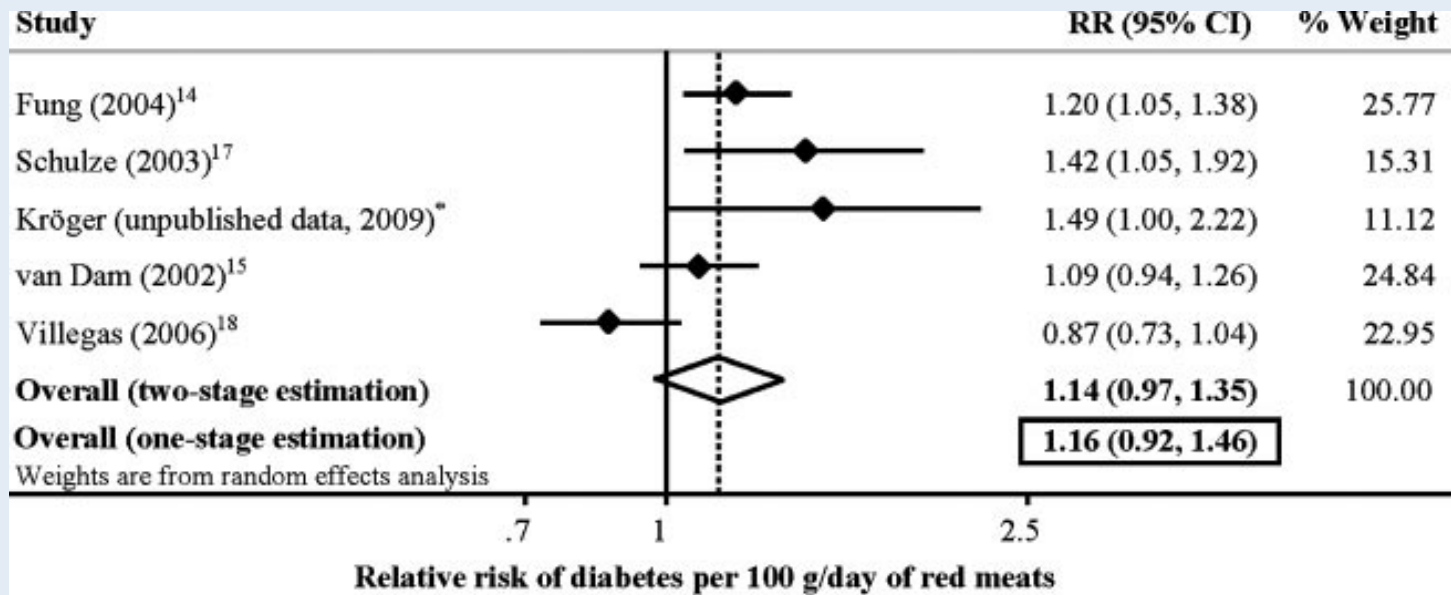
Meat Intake: Takeaway Messages

- Protein is critical to a balanced diet that also contains sufficient iron, zinc, vitamin B12 and other nutrients
- When possible, protein should be obtained from fish, poultry, and legumes rather than red meat
- Protein consumption should be in balance with a diet rich in fruit, nuts, and whole grains

Conclusions

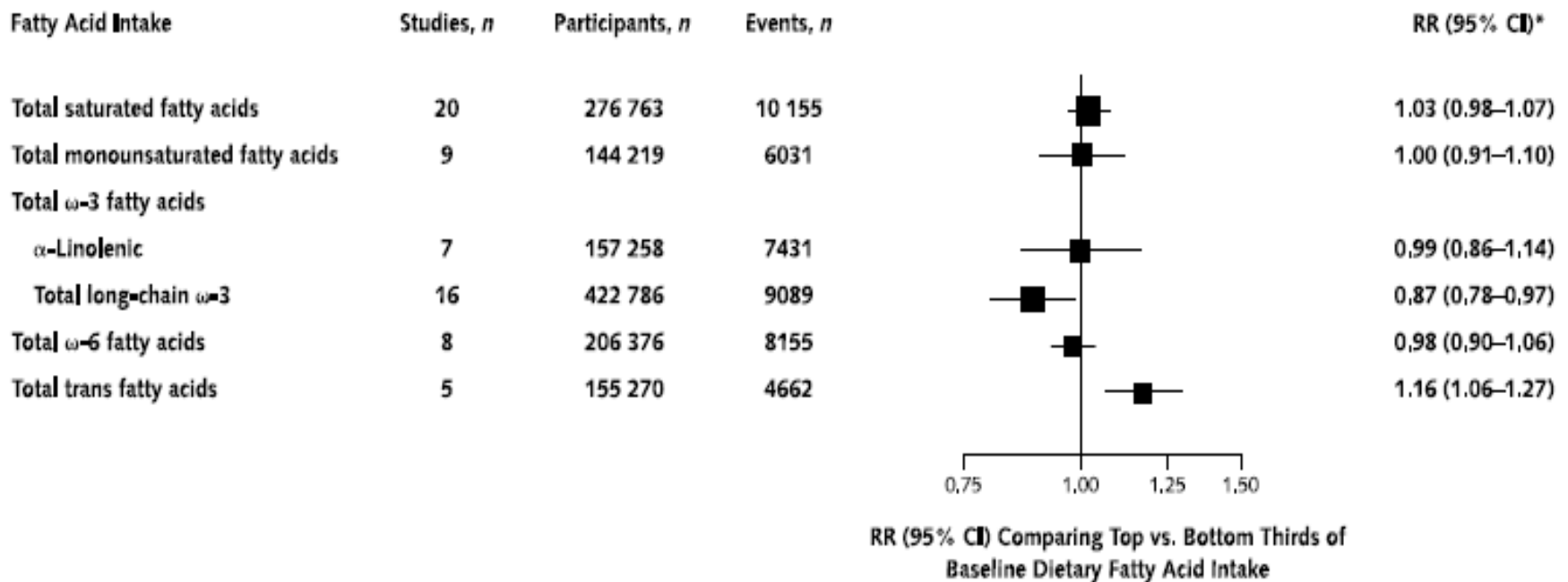
Dietary protein should be obtained primarily from plant sources, and from fish and poultry, rather than red meat

Comment: Micha et.al report red meat is *not* associated with higher incidence of CHD and Diabetes?



Comment: Association of Dietary, Circulating, and Supplement Fatty Acids With Coronary Risk: A Systematic Review and Meta-analysis (Chowdhury, et.al, 2013)

Figure 1. RRs for coronary outcomes in prospective cohort studies of dietary fatty acid intake.



Comment: Association of Dietary, Circulating, and Supplement Fatty Acids With Coronary Risk: A Systematic Review and Meta-analysis (Chowdhury, et.al, 2013)

Figure 2. RRs for coronary outcomes in prospective cohort studies of circulating fatty acid composition.

