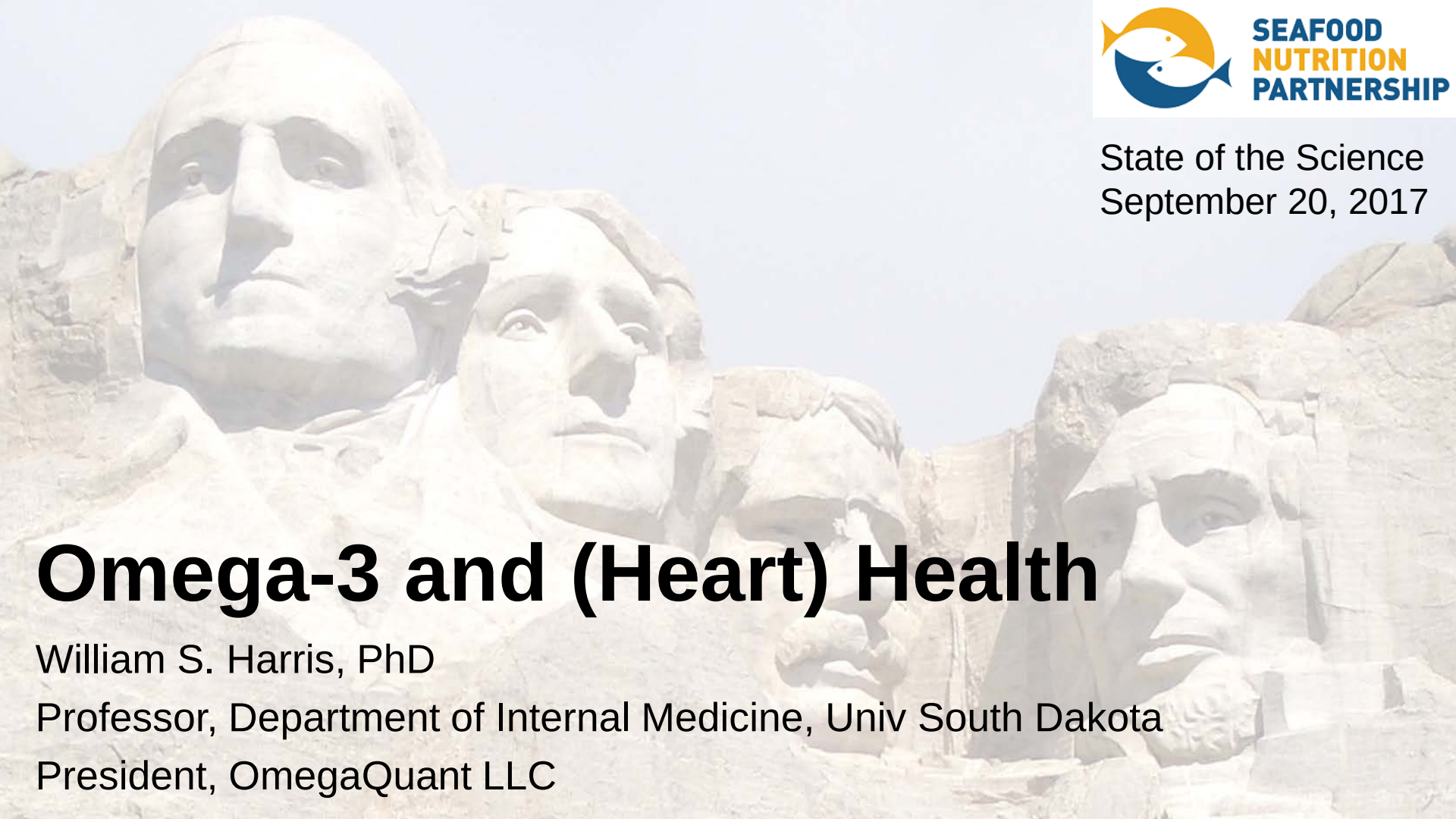

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State of the Science
September 20, 2017

Omega-3 and (Heart) Health

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President, OmegaQuant LLC

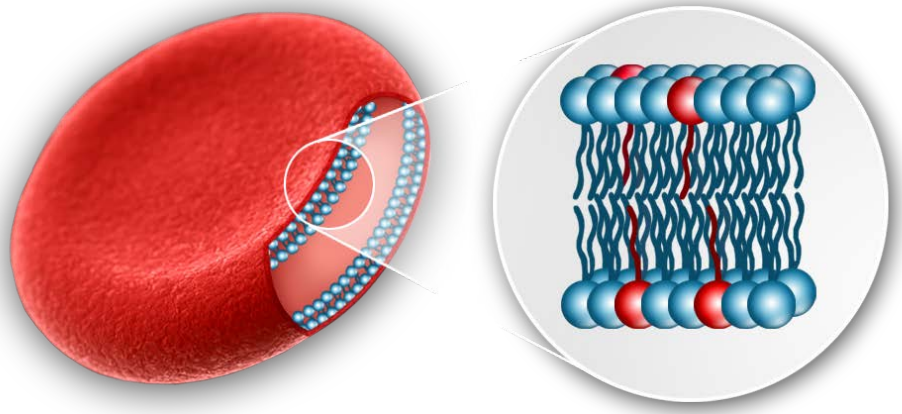
Meta-analysis on Human Omega-3 Randomized Controlled Trials - CHD Deaths

Meta-Analysis	Studies Included	Coronary Death Risk Reduction
Alexander et al. 2017	14 (59,000)	3% (<1g/d) and 11% (>1g/d) (NS)
Maki et al. 2017	14 (n=71,899)	8% (p=0.015)
Del Gobbo et al. 2016	19 (n=45,637)	10% (p=0.05)
Wen et al. 2014	14 (n=16,338)	12% (p=0.003)
Casula et al. 2013	11 (n=15,348)	32% (p<0.05)
Delgado-Lista et al. 2012	13 (n=46,737)	9% (p=0.03)
Kotwal et al. 2012	20 (n=63,030)	14% (p=0.03)
Rizos et al. 2012	20 (n=68,680)	9% (p=0.01)
Kwak et al. 2012	14 (n=20,485)	9% (p<0.05)
Chen et al. 2011	10 (n= 33,429)	19% (p<0.05)
Marik et al. 2009	11 (n=39,044)	13% (p=0.02)
Zhao et al. 2009	8 (n=20,997)	29% (p=0.05)
Leon et al. 2008	11 (n=32 779)	20% (p=0.02)
Wang et al. 2006	4 (n=21 930)	35% (p<0.05)

Association Between Blood Omega-3 Levels and Heart Health

The Omega-3 Index

A measure of the amount of EPA+DHA in red blood cell membranes expressed as the percent of total fatty acids



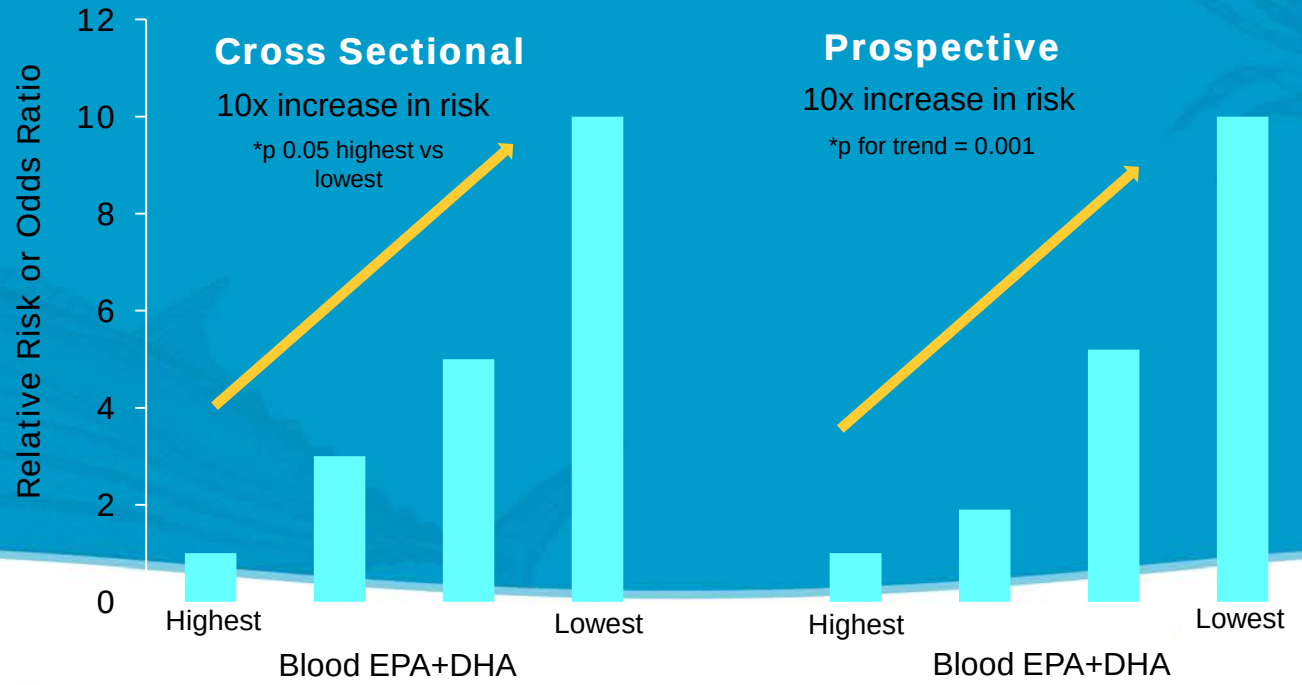
There are 64 fatty acids in this model membrane; 4 are EPA or DHA
4/64 = 6.3%

Omega-3 Index = 6.3%

Harris WS and von Schacky C.
Prev Med 2004;39:212-220.

RISK FOR PRIMARY CARDIAC ARREST AND RED BLOOD CELL EPA+DHA LEVEL

Adapted from Siscovick et al. *JAMA* 1995;274:1363-1367.



Adapted from Albert et al. *N Engl J Med* 2002:346:1113-1118.

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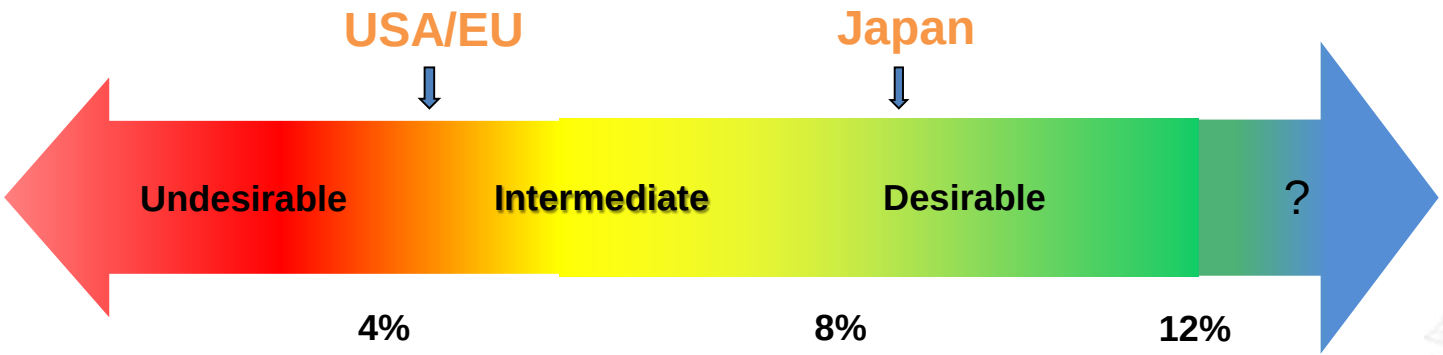
Risk for Sudden Cardiac Death is 10x higher in people with a low vs a high Omega-3 Index

Omega-3 Index Risk Zones



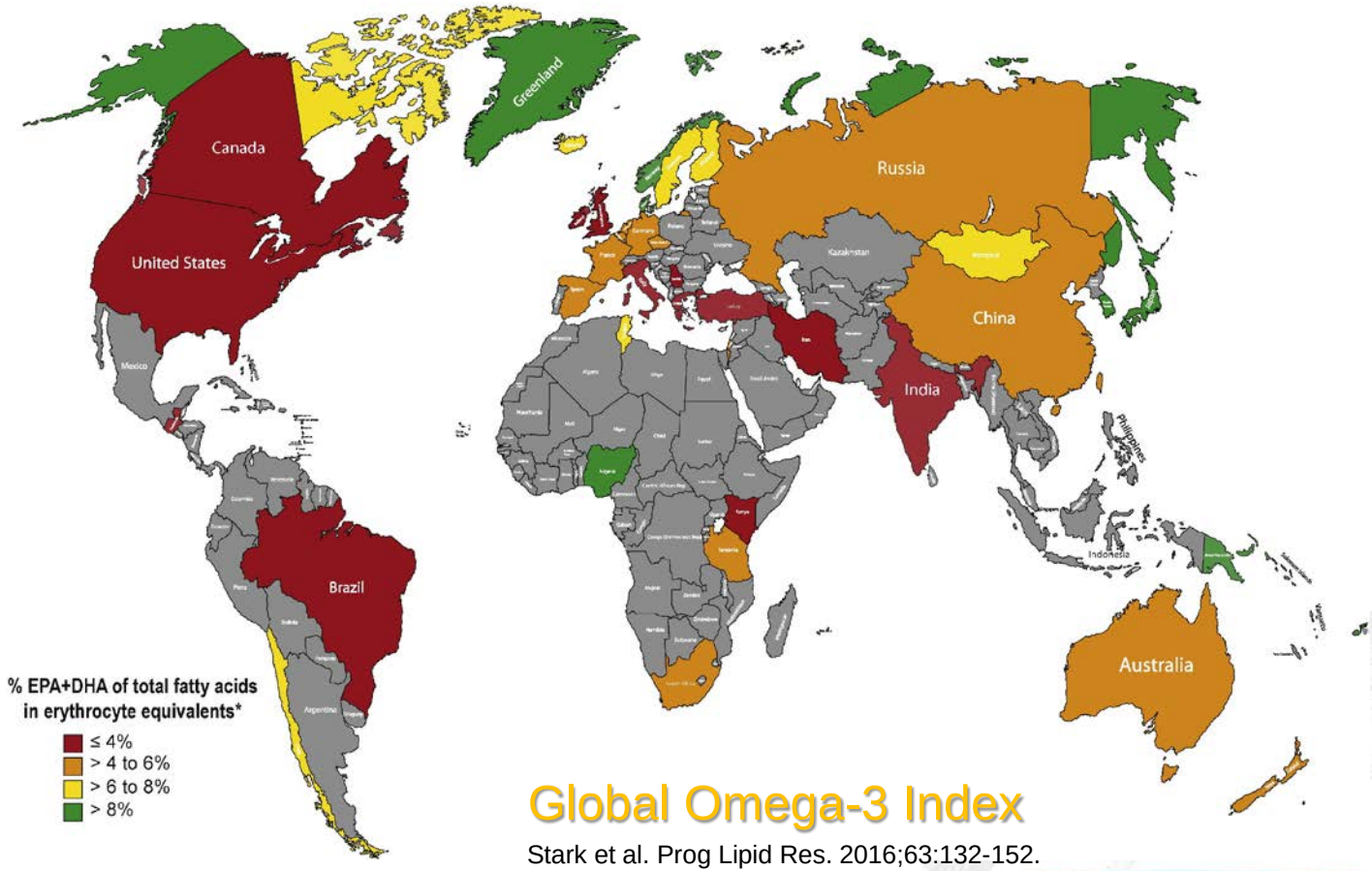
Percent of EPA+DHA in RBC

Harris and von Schacky. *Prev Med* 2004;39:212-220.

Itomura, *in vivo* 2008;22:131-136.

Circulating EPA+DHA levels taken from

- 24,129 individual subjects
- 54 countries
- 398 data sets
- Converted to Omega-3 Index equivalents[b]



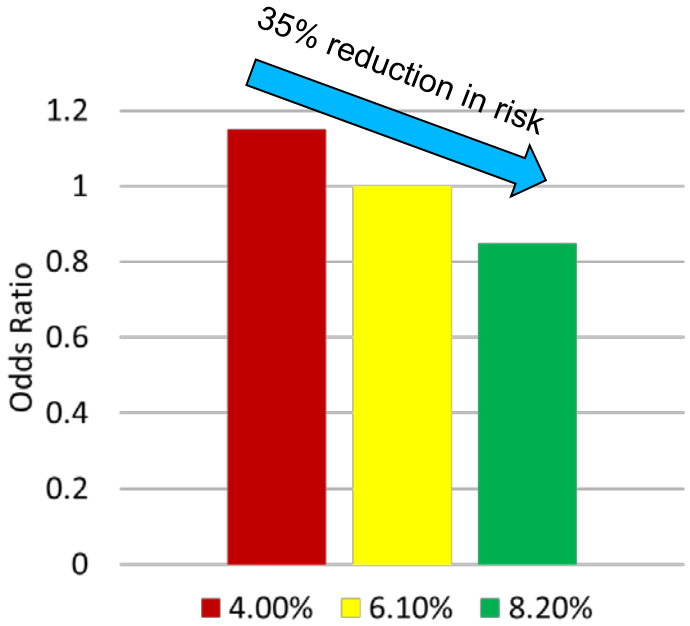
Global Omega-3 Index

Stark et al. Prog Lipid Res. 2016;63:132-152.

[b] Stark et al. PLEFA 2016;104:1–10

Meta-Analysis: Omega-3 Index as a Predictor of Risk for Fatal Coronary Heart Disease

(10 studies worldwide - over 27,000 subjects)



Risk for fatal CHD was 35% lower in persons with an Omega-3 Index of 8% compared with those with an Index of 4%

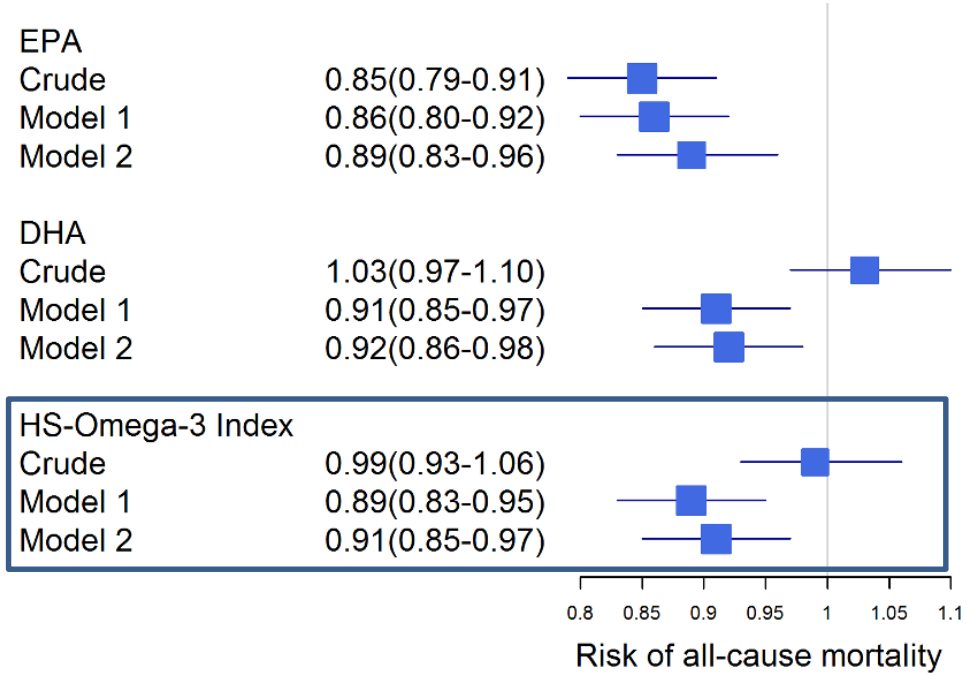
Harris WS, et al. Atherosclerosis 2017;262:51-54

Risk for all-cause mortality and the omega-3 index: the LURIC study

Per 1-SD increase in the Omega-3 Index over 10 years in 3259 patients undergoing diagnostic cardiac catheterization

Model 1: adjusted for age and gender

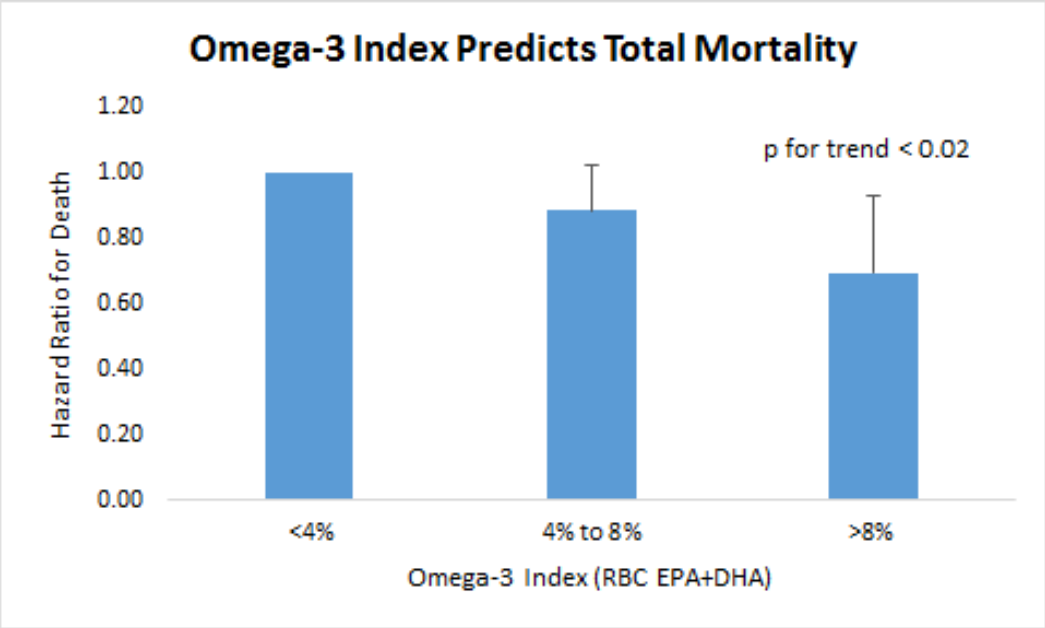
Model 2: additionally adjusted for BMI, LDL-C, HDL-C, logTG, hypertension, diabetes mellitus, smoking, alcohol intake, physical exercise and lipid lowering therapy.



Kleber et al. Atherosclerosis 2016;253175-181

Relative Risk for Death from Any Cause and the Omega-3 index

The Women's Health Initiative Memory Study



Risk for death from any cause over the 15-year study in 6501 post-menopausal women was 31% lower with an Omega-3 Index of >8% vs <4%

Harris WS, et al. J Clin Lipidol 2017;11:250-259

From Fish Oil to Medicine

Bernadine Healy, MD.
Former Director of the NIH and President of the AHA
US News and World Report. August 7, 2008

"This is no fish story: Raising omega-3s could be as important to public health as lowering cholesterol. Think about that comparison. Reining in our nation's cholesterol levels over the past 40 years has yielded great benefit to health and longevity. The change was a grass-roots effort driven by individuals—patients motivated by test results and doctors who helped monitor and manage them. The National Cholesterol Education Program even launched a "know your number" campaign. *But who knows their levels of omega-3s?"*

"Before long, your personal omega-3 index just could be the "new cholesterol" — the number you want to brag about."