



**Actuaries
Institute**

Body Hacking and the Quest to Cure Death

28 September 2017, Hong Kong

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Managing Director, Head of L&H
Willis Re (part of Willis Towers Watson)

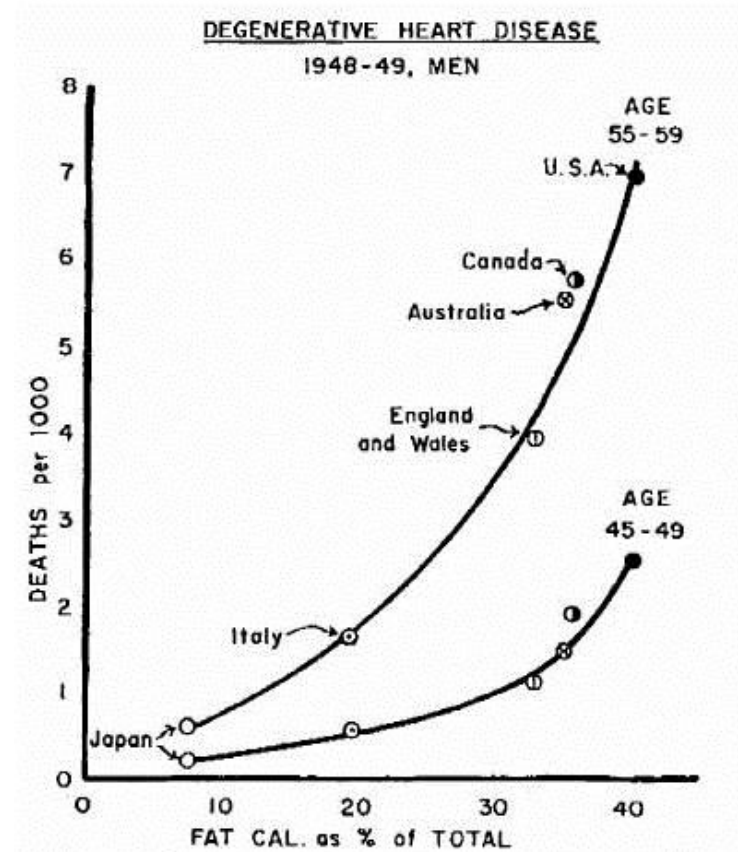
Setting the Scene

- I'm not a doctor, and I don't play one at conferences
- “Never believe anything you read on the Internet”
- Abraham Lincoln
- This is the **Real World**[™], not everything is black & white
- Good luck. The clock starts *now*!

In the Beginning

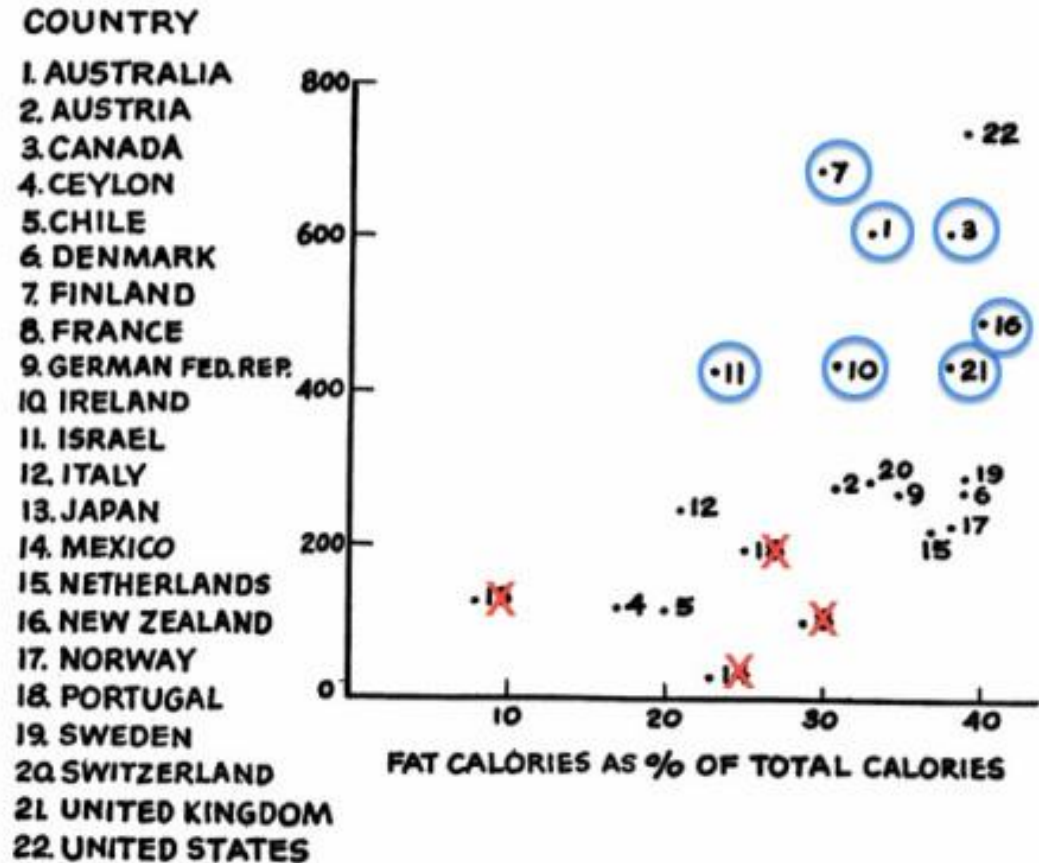
Ancel Keys & the Seven Countries Study

<https://deniseminger.com/2011/12/22/the-truth-about-ancel-keys-weve-all-got-it-wrong/>

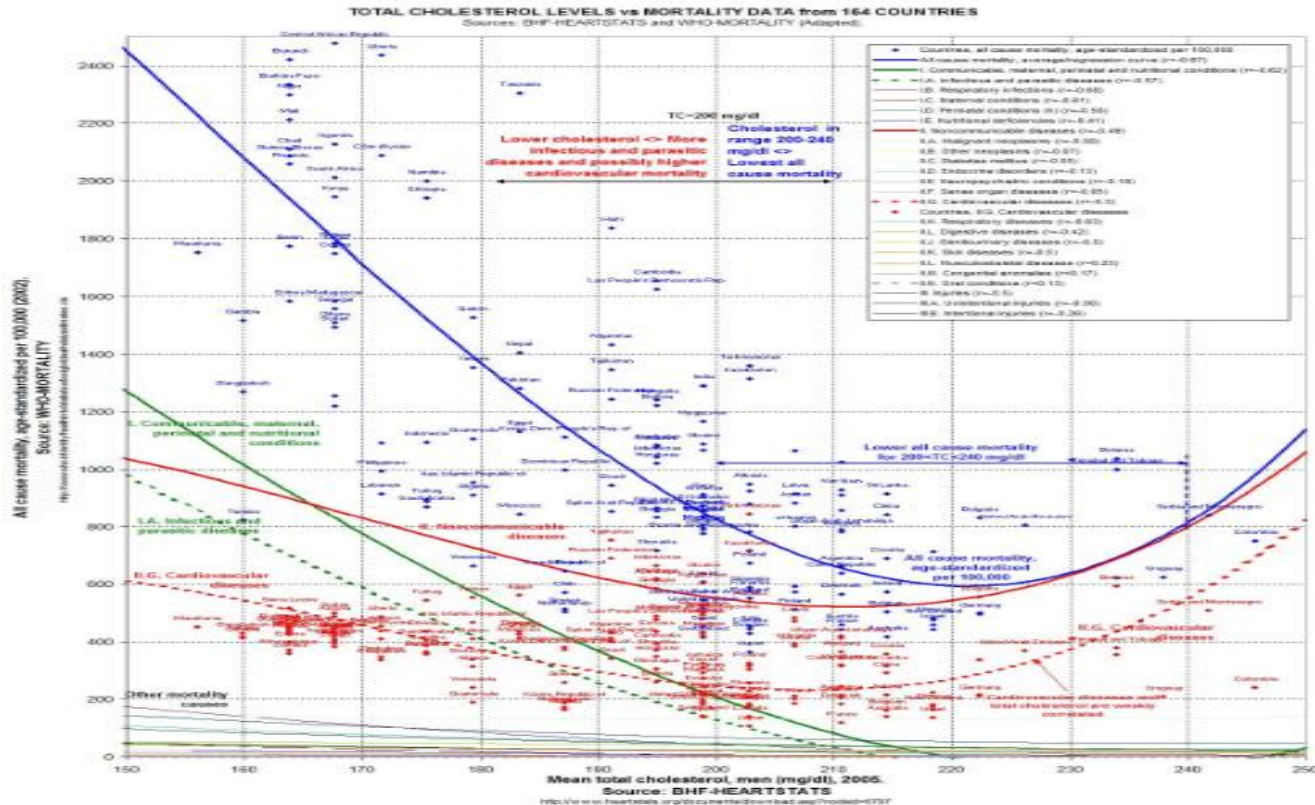


Ancel Keys & the Full 22 Countries

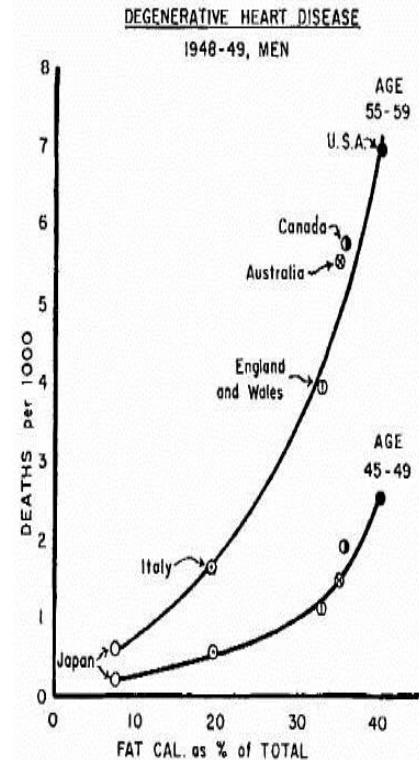
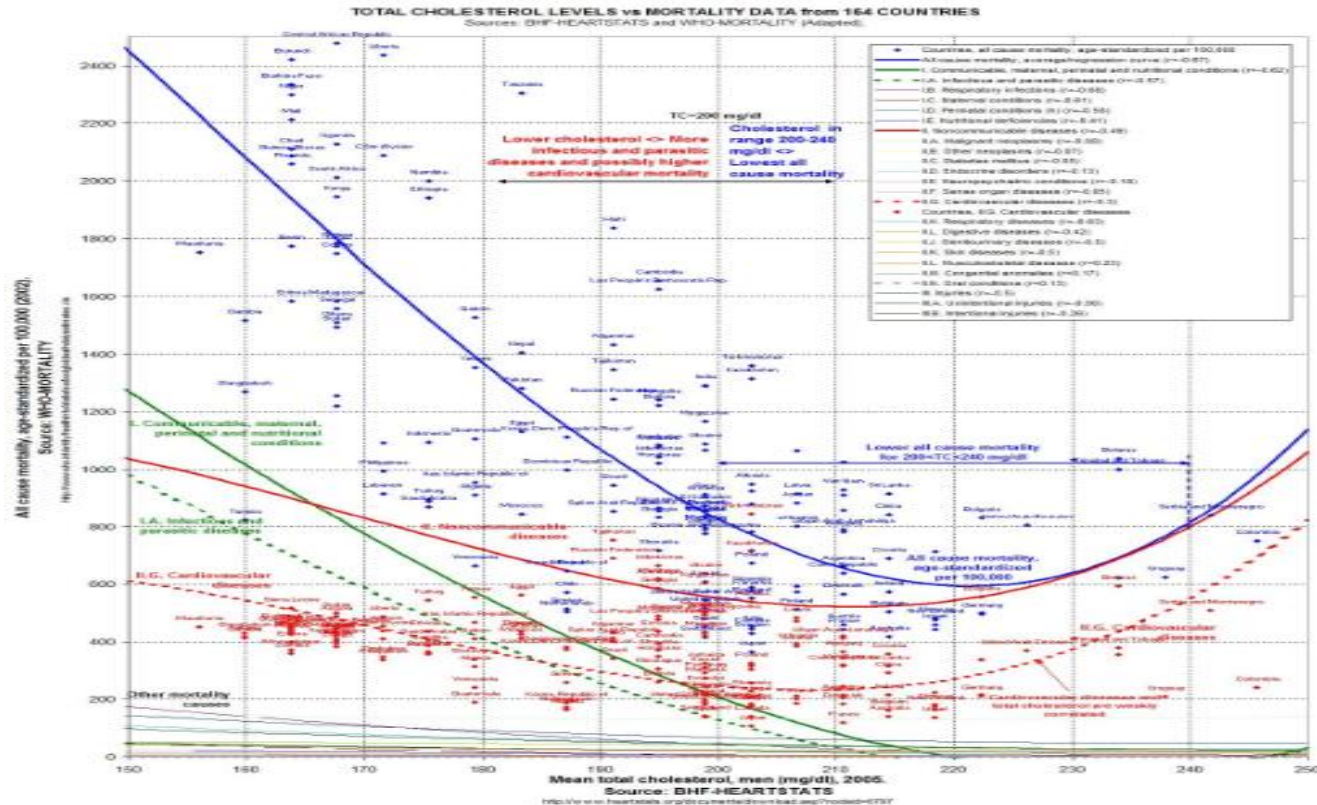
<https://deniseminger.com/2011/12/22/the-truth-about-ancel-keys-weve-all-got-it-wrong/>



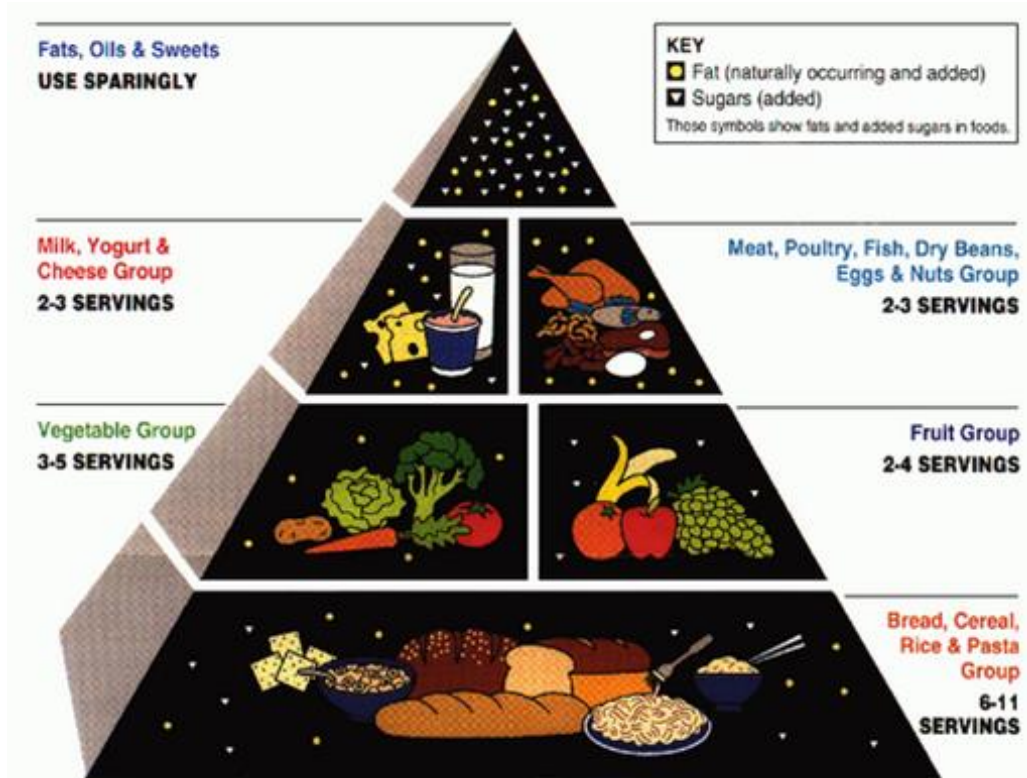
Why stop at 22 countries?



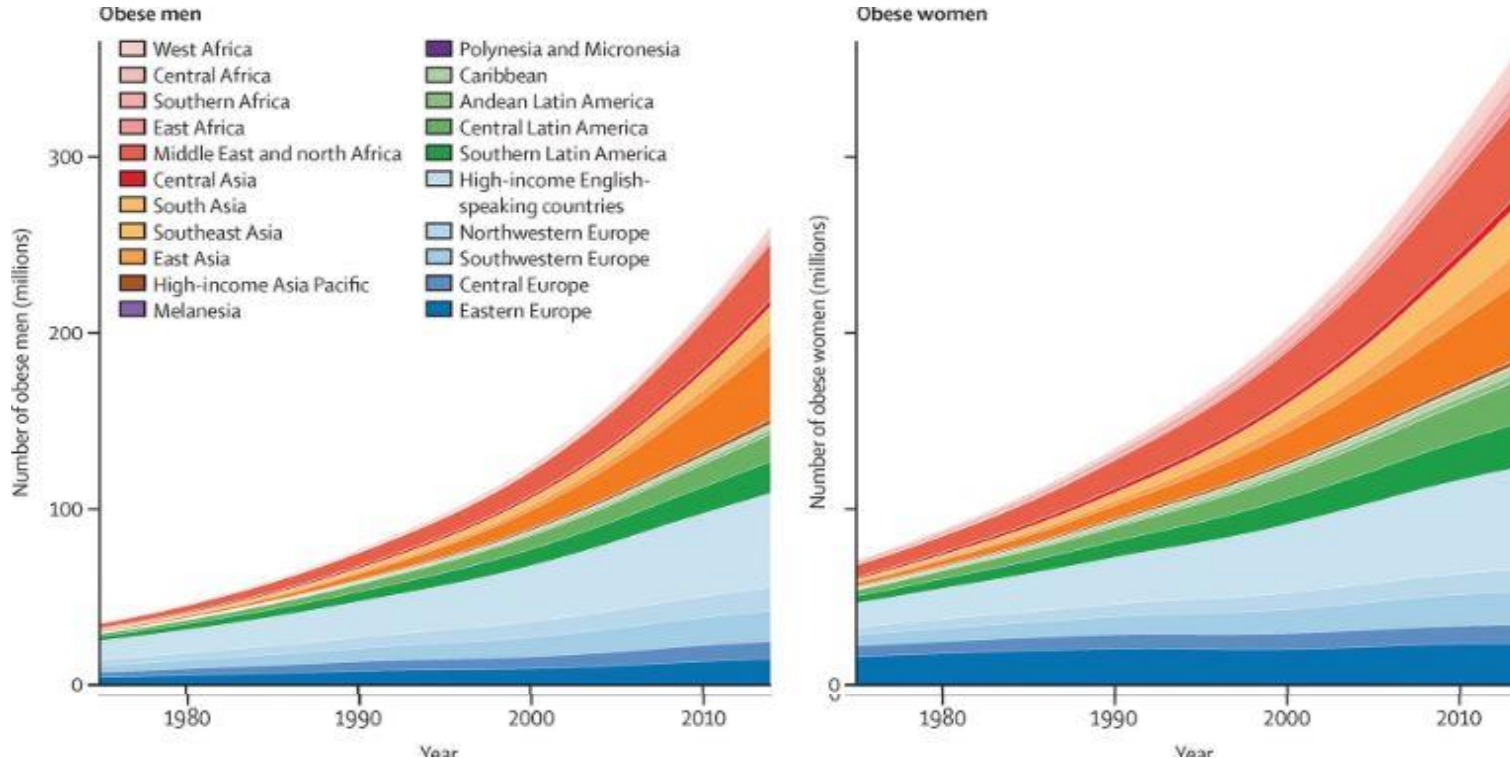
Can you see the problem?



One thing led to another ...



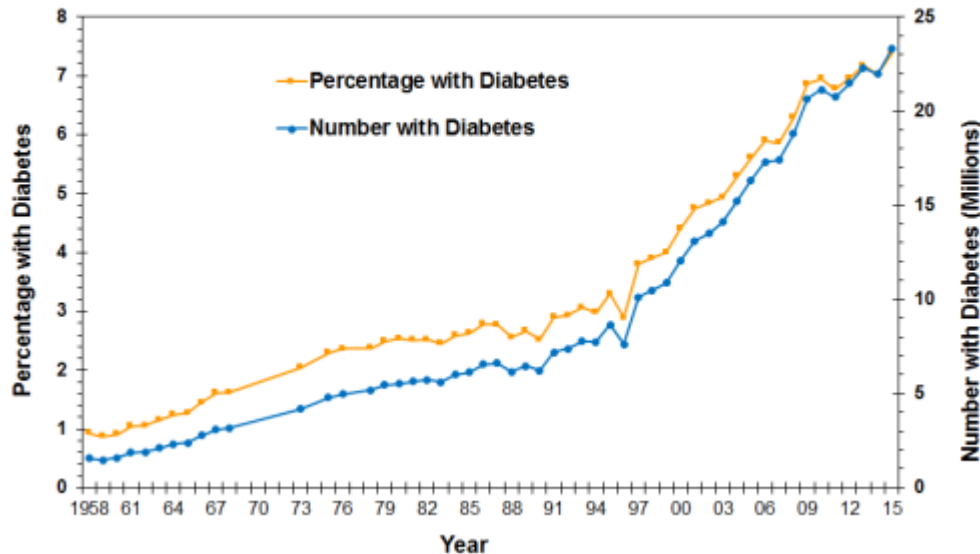
How's that working out for you? - obesity



<https://www.theguardian.com/global-development-professionals-network/2017/jan/03/using-data-visualisations-to-help-explain-the-global-obesity-explosion>

How's that working out for you? - diabetes

Number and Percentage of U.S. Population with Diagnosed Diabetes,
1958-2015



https://www.cdc.gov/diabetes/statistics/slides/long_term_trends.pdf

Diabetes: It's worse than you thought, because it could be better than you think

<http://www.meinsurancereview.com/Magazine/Magazine-Articles/mgid/341/cid/10053>

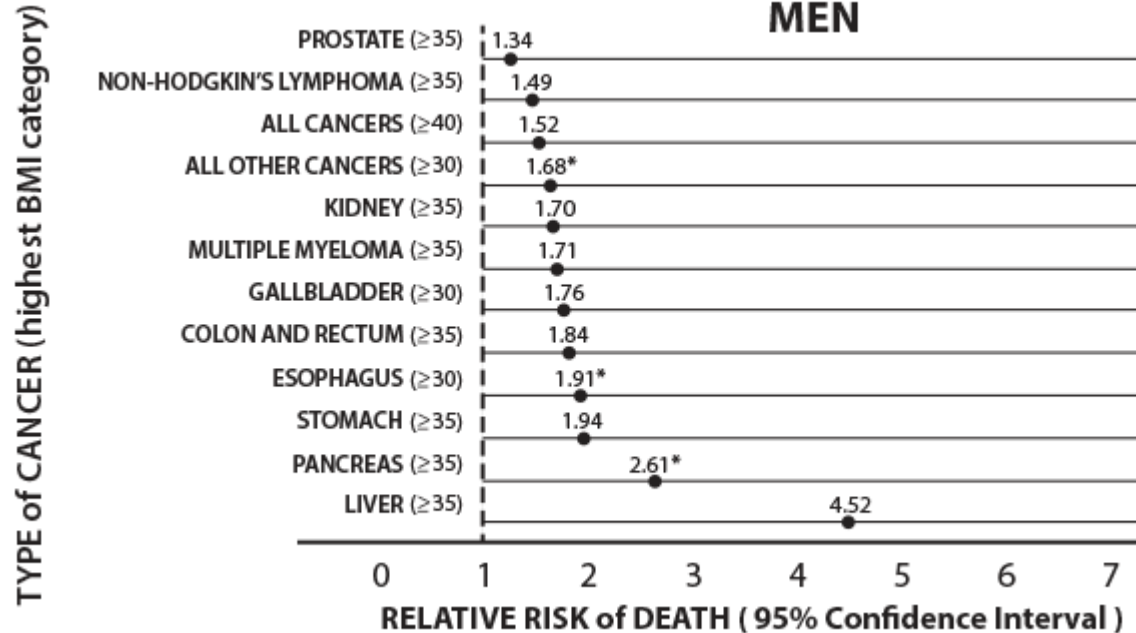
Simply stated, diabetes is a disease of excess carbs, and we need to understand this in order to fix underwriting, pricing & wellness

China: Burden of diabetes-mortality to grow

[http://www3.asiainsurancereview.com/News/Vew-NewsLetter-Article/id/38309/Type/eDaily/China-Burden-of-diabetes-associated-mortality-likely-to-grow](http://www3.asiainsurancereview.com/News/View-NewsLetter-Article/id/38309/Type/eDaily/China-Burden-of-diabetes-associated-mortality-likely-to-grow)

This study shows a strong association between diabetes & all-cause mortality (1,373 vs 646), resulting in 9-year shorter lifespan

How's that working out for you? - cancer

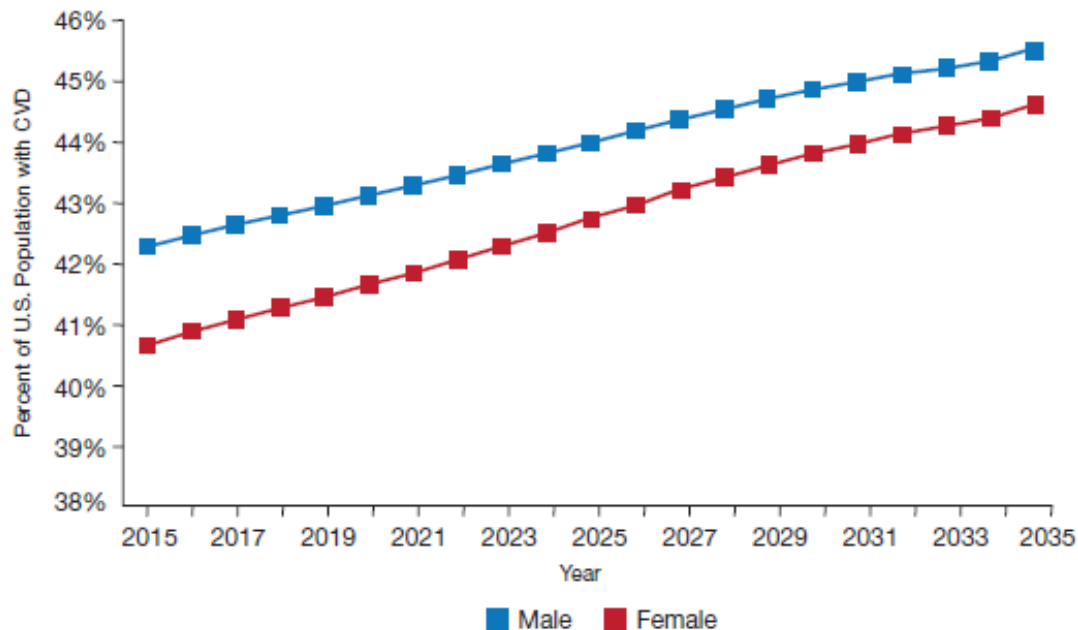


<https://www.t-nation.com/diet-fat-loss/vegans-suck-at-science-heres-the-proof?x0xrW>

<http://www.bmj.com/content/356/bmj.j477>

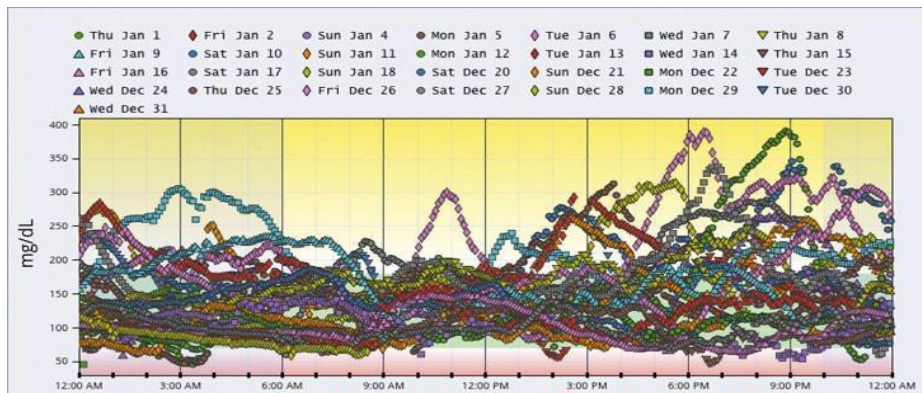
How's that working out for you? – cardio vascular

Projected Prevalence of CVD by Sex (2015-2035)

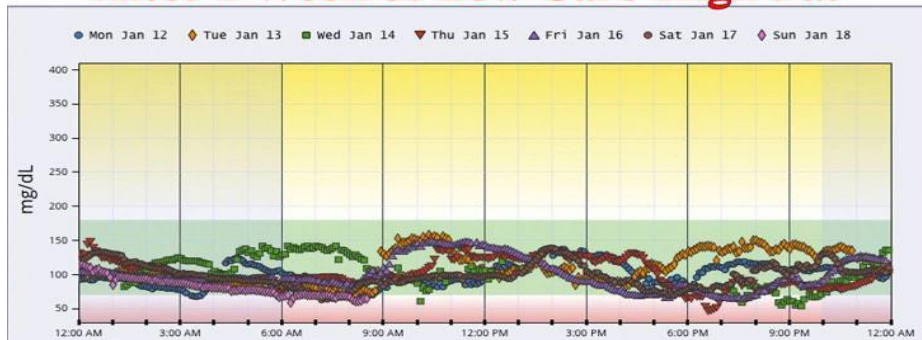


http://www.heart.org/HEARTORG/Advocate/Cardiovascular-Disease-A-Costly-Burden-for-America_UCM_491316_Article.jsp

How's that working out for you? - insulin



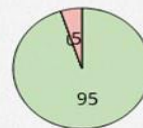
After 1 Week of Low Carb High Fat



Because eating
this way isn't
Difficult...
Dealing with a
complication
from Diabetes is.

Statistics

Average Glucose	101 mg/dL
Sensor Usage	7 of 7 days
Calibrations / Day	1.43
Standard Deviation	± 21 mg/dL



0 % High

95 % Target

5 % Low

But surely doctors don't make mistakes?



According to a recent Nationwide survey:

MORE DOCTORS SMOKE CAMELS
THAN ANY OTHER CIGARETTE

DOCTORS in every branch of medicine—113,597 in all—were queried in this nationwide study of cigarette preference. Three leading research organizations made the survey. The gist of the query was—What cigarette do you smoke, Doctor?

The brand named most was Camel!

The rich, full flavor and cool mildness of Camel's superb blend of costlier tobaccos seem to have the same appeal to the smoking tastes of doctors as to millions of other smokers. If you are a Camel smoker, this preference among doctors will hardly surprise you. If you're not—well, try Camels now.

CAMELS *Costlier Tobaccos*



20,679* Physicians
say **“LUCKIES**
are less irritating”

“It's toasted”

Your Throat Protection against irritation against cough

And how could such a deadly myth persist?

- Lipitor is a 'statin' which has lipid-lowering effects, prescribed ostensibly to prevent heart attacks
- Over the period when it had patent protection, Lipitor earned about \$131 billion in cumulative sales, which is more than twice that of the drug in the number 2 spot
- An 11-digit revenue for one drug, let alone the rest of that class of drugs? *What could go wrong?*

But didn't they do other studies?

- That's the problem, when you do experiments with specific goals in mind, for example:
 - Nikolai Anitschkow fed rabbits purified cholesterol (from animal products) and managed to get their cholesterol levels over 1000 mg/dl (4-5 times higher than an average human)
 - He noticed vascular lesions forming in the arteries, resembling human atherosclerosis
 - Therefore ... cholesterol causes heart attacks! Right??
 - BUT no-one seemed bothered that rabbits are herbivores
 - And people forgot to mention that similar experiments performed on dogs & rates (omnivores, who can process animal products) produced no lesions

But what if ...

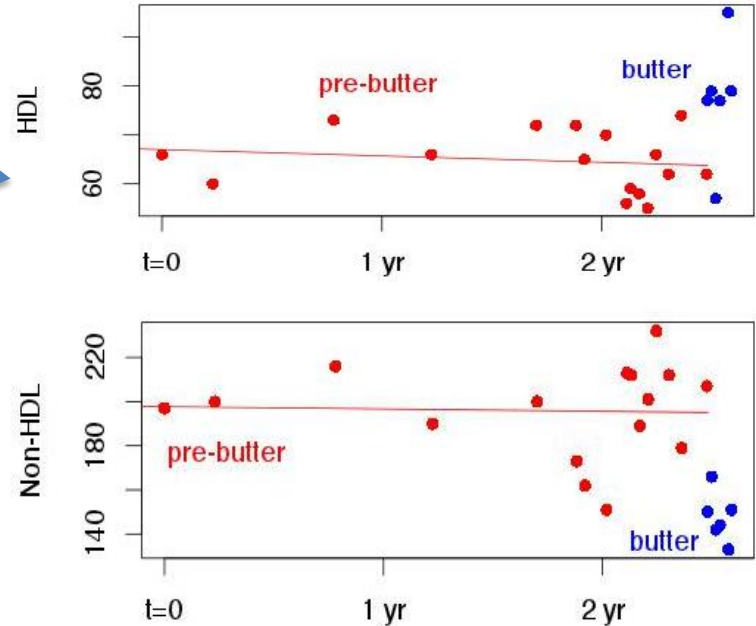
- ... doctors have been getting it wrong all along?
- ... medical underwriting is similarly flawed?
- ... we're loading & declining the wrong people?
- ... insurers pay for medicines that kill policyholders?
- ... insurers are complicit in passing on 'bad' advice?
- ... we start getting it right, and annuitants don't die?

What if **you** live a much longer healthier happier life?

Bodyhacking (or Biohacking or DIY Biology)

My own $n=1$ experiment

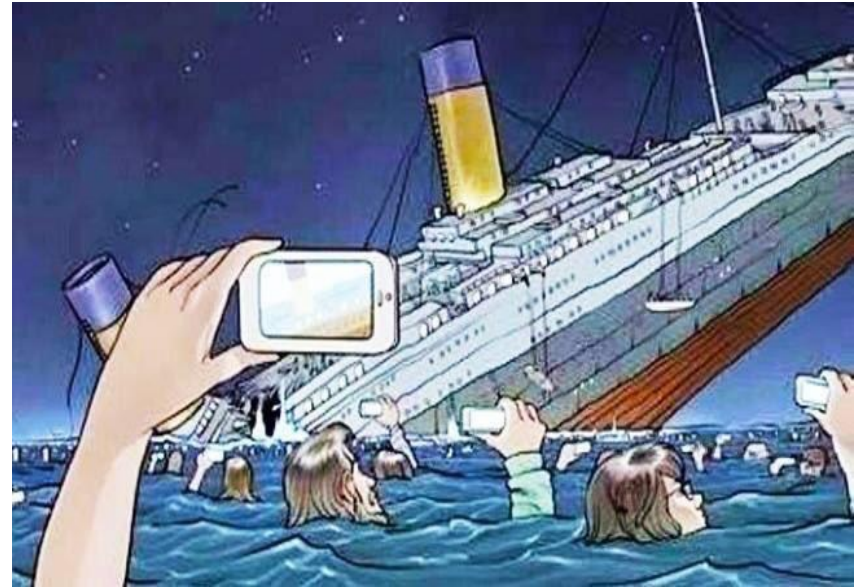
- Family history
- “Hacking cholesterol”
- But butter?
- 3 months ketogenic
- Insurance realisation



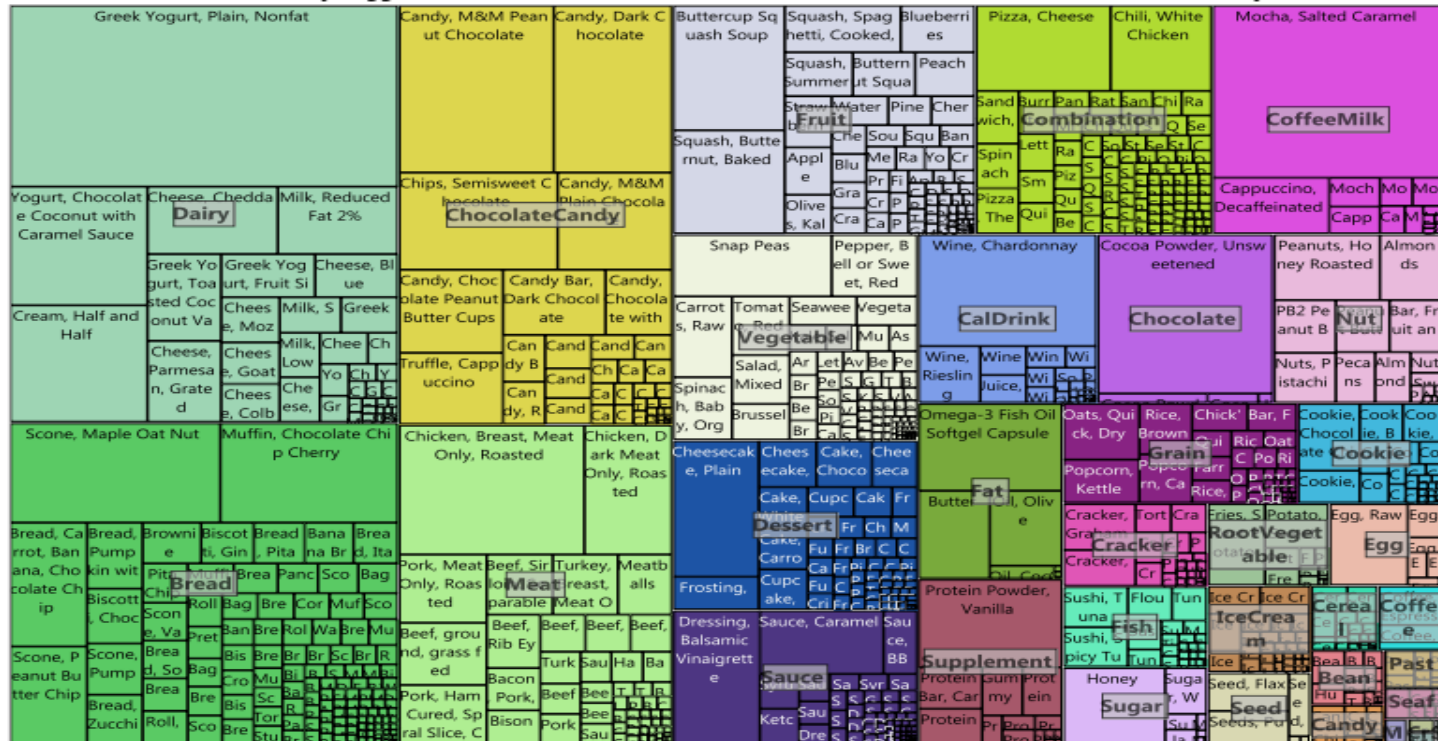


Quantified Self
self knowledge through numbers

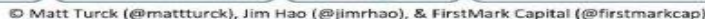
- We like to log things
- Literally: Quantified. Self.
- Sleep. Steps. Cholesterol. Weight. Blood pressure. Cancer markers. Illness. Menstruation. Diet. Exercise. Temperature. Sex. Mood.
- Tech makes it easier
- Hack. Quantify. Repeat



It can get really detailed!



Much more at:
[http://quantifiedself.com/
docs/ShannonConnersPo
ster.pdf](http://quantifiedself.com/docs/ShannonConnersPoster.pdf)



Wearables. Because Wellness Programs.



Participation in health/fitness programs reduces health claims by 16%. Logging fitness activities reduces risk by 22% for the unhealthiest participants. Active members are up to 64% less likely to lapse their insurance, and have up to 53% lower mortality. The only trouble is that participation in such programs remains low, with opt-in rates in some cases just 5% of those eligible to join.

<https://www.linkedin.com/pulse/case-connected-wearables-insurance-andrew-dart>

Maybe you are an (accidental) bodyhacker?

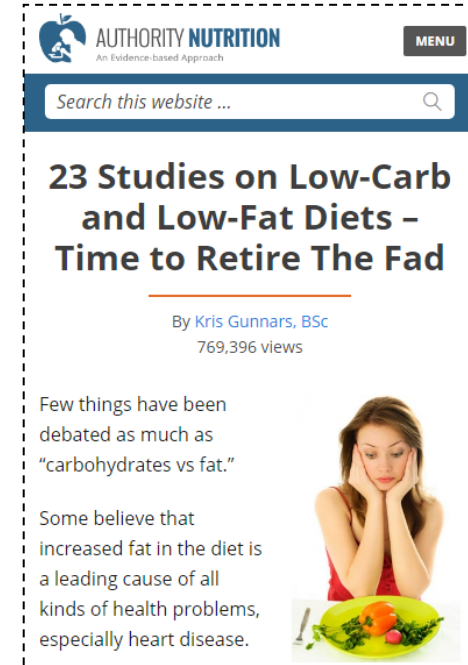
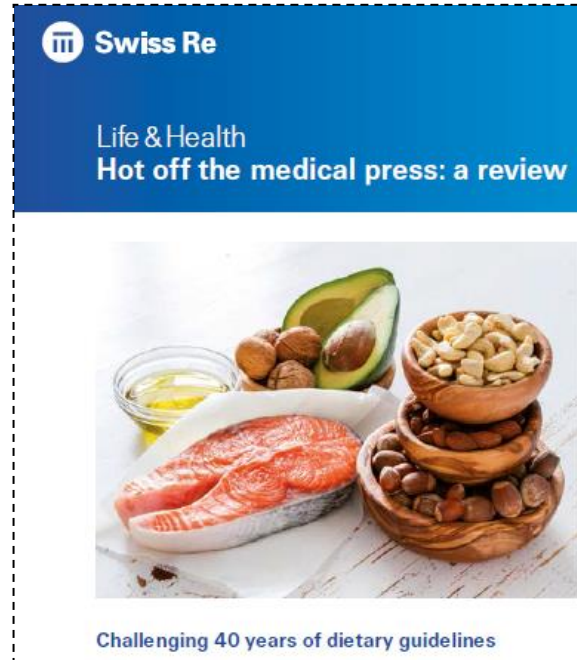
- Multivitamins, other supplements, Omega 3
- Weight loss – exercise & diets
- Coffee when you're tired
- Cooking with coconut oil (did you hear it's healthier?)
- Orange lenses for dyslexia
- Red lights at night before bed (or installing f.lux)
- Dual N-back to improve your 'fluid intelligence'
- Stem Cell & CRISPR therapy do not count as 'DIY'

Deliberate Bodyhacking

- Combining $n=1$ with self-quantification
 - alcohol & sleep quality
 - creatinine & muscle gain
 - butter & brain games
 - low carb / high fat (LCHF) & ...
 - weight, blood lipids, insulin sensitivity, blood sugar
 - fasting & cancer markers
- And we've witnessed the research dollars follow!

Major Screw-ups

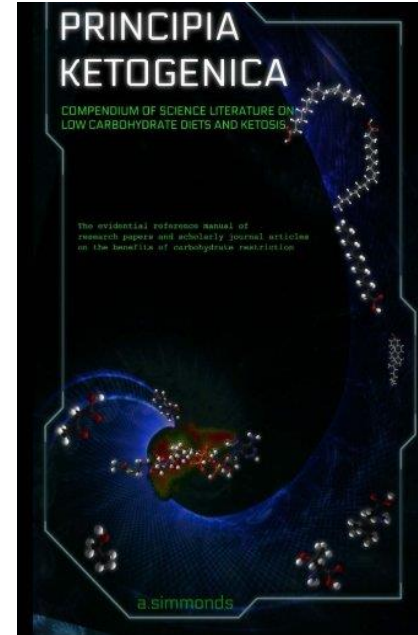
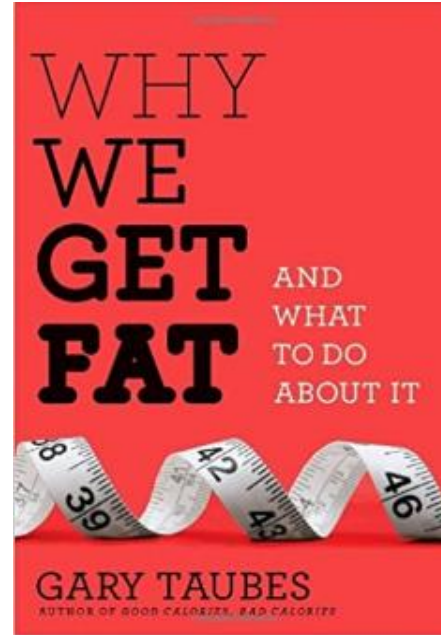
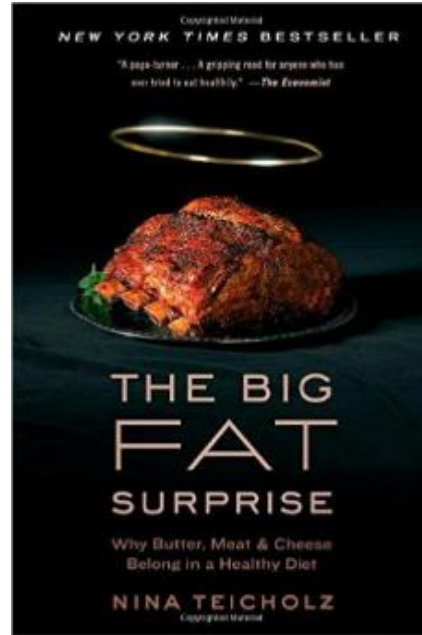
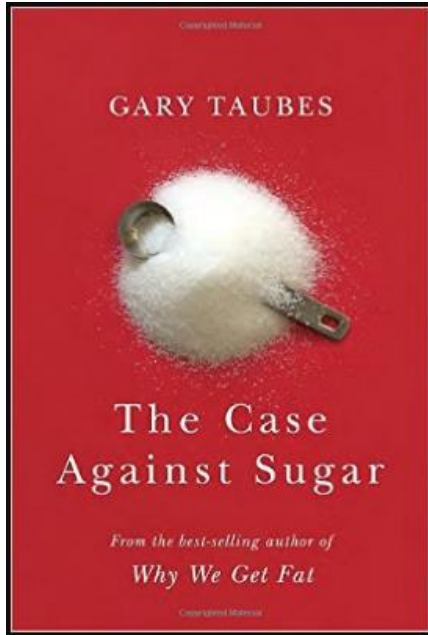
News Flash: this is no longer controversial



Our diets have been deadly

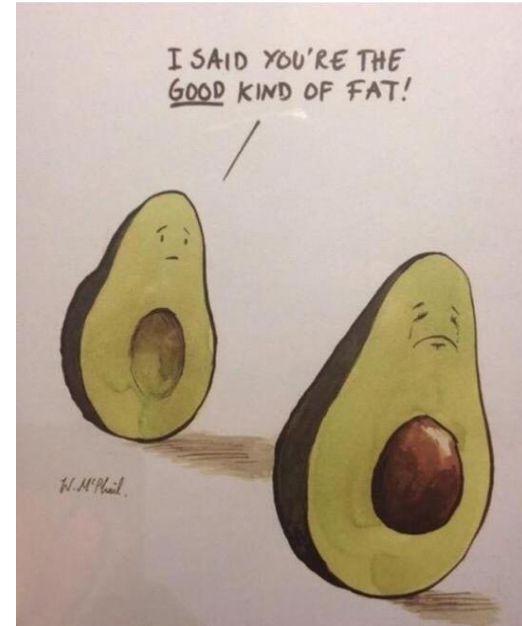
- You've seen the graphs
- And yes I know ... correlation isn't causation
- But even physiologically, we see the same thing
- Quick medical lesson:
 - Fat intake: cholesterol, pregnenolone, brain, myelin, polyunsaturated, breast milk ...
 - Carbs: sugar, insulin, fat storage, sensitivity, fruit ...
 - Inflammation <http://www.newyorker.com/magazine/2015/11/30/inflamed>

Source: thousands of pages



Nutritionism's Great Blunders

- **FAT** has been vilified – *but what is 'fat'?*
 - At least trans fats are to be banned
 - But saturated fats are essential
 - And vegetable oils are inflammatory
 - » Fat from grass-fed cows is better
 - Short-chain? Medium? Long?
 - Cooking or consumption?
- “Fruit **and** Vegetables” isn't a thing either



Cut the CRaP

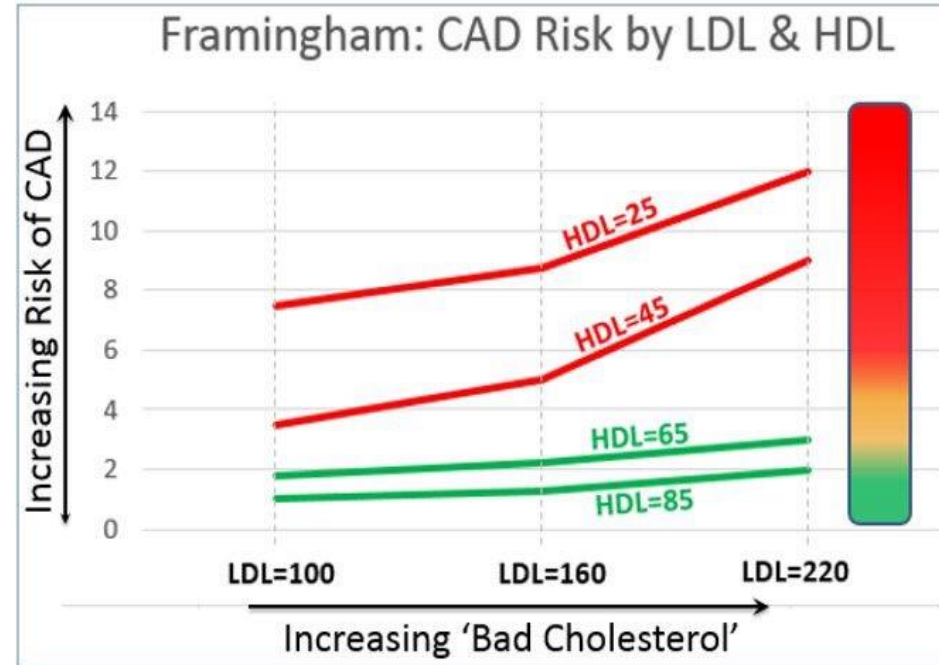
- Calorie Restriction as Primary
- Such diets are hard to follow but at least they're ineffective (sic) 🤪
- Big Sugar* has a vested interest in you believing that the reason there are fat people, is because they don't exercise enough
- Rather: Fridge & Freezer analogy



Cholesterol is not the Devil

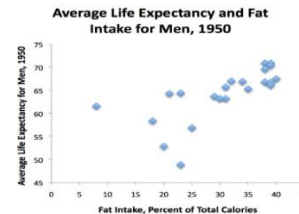
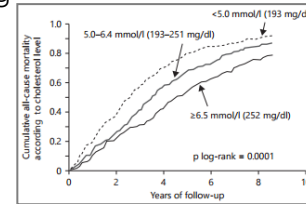
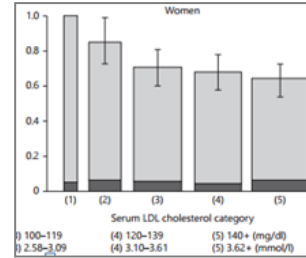
- Quick medical lesson:
 - HDL, LDL, VLDL, triglycerides, HDL/Trigs, 80% from the liver
- We need cholesterol
- Proof of claimed correlation with heart disease/death??
- No longer in US guidelines
- Low cholesterol & cancer?

<https://www.sciencedaily.com/releases/2012/03/120326113713.htm>



Lots of research comes out each week

- Independent Japanese paper <https://www.karger.com/Article/Pdf/381654>
- Rethink emphasis on low saturated fat to save hearts (RT'd by Mayo Clinic) <http://www.reuters.com/article/us-health-heart-prevention-idUSKBN17U2PJ?linkId=37014425>
- Critique of Dean Ornish Op-ed (mice??) <http://thebigfatsurprise.com/critique-dean-ornish-op-ed/>
- Cholesterol & heart disease – not what you think <http://www.zoeharcombe.com/2010/11/cholesterol-heart-disease-there-is-a-relationship-but-its-not-what-you-think/>
- Health Authorities continue to fail us <http://observer.com/2017/02/health-recommendations-wrong-saturated-fat-sodium-intake/>
- Saturated Fats: Do they cause heart disease? <http://www.nutrition-coalition.org/saturated-fats-do-they-cause-heart-disease/>
- Saturated fat doesn't clog arteries: heart disease is inflammatory condition, risk can be reduced from healthy lifestyle interventions <http://bjsm.bmj.com/content/early/2017/03/31/bjsports-2016-097285>
- Managing T2DM: low-carb diets can help (book by Australian CSIRO) <https://blog.csiro.au/managing-type-2-diabetes-how-low-carb-diets-can-help/>
- Evidence that supports the prescription of low-carbohydrate high-fat diets: a narrative review <http://bjsm.bmj.com/content/51/2/133.full.pdf+html>
- Cut out carbs, not fat if you want to lose weight, Harvard study finds <http://www.telegraph.co.uk/news/health/news/11963385/Cut-out-carbs-not-fat-if-you-want-to-lose-weight-Harvard-study-finds.html>
- Meta-analysis of prospective cohort studies evaluating the association of saturated fat with cardiovascular disease <https://www.ncbi.nlm.nih.gov/pubmed/20071648>



And it just keeps on coming ...

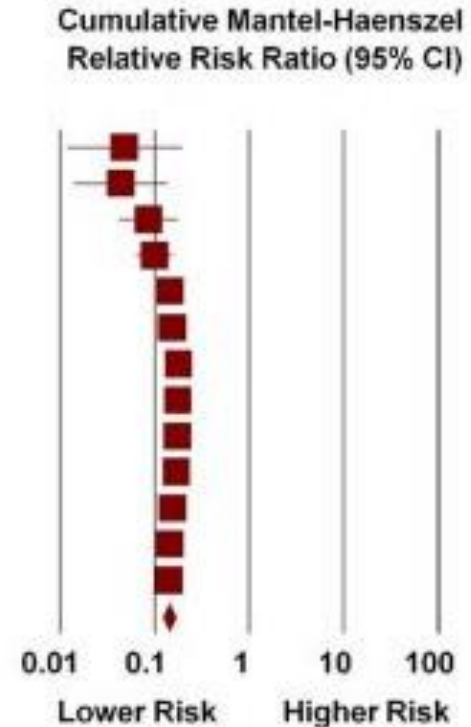
- Chance of colon cancer recurrence nearly cut in half in people who eat nuts
<https://www.sciencedaily.com/releases/2017/05/170518085129.htm>
- Dietary fat guidelines have no evidence base: where next for public health nutritional advice?
<http://bjsm.bmj.com/content/51/10/769>
- 6 Reasons Why a Calorie is NOT a Calorie <https://authoritynutrition.com/6-reasons-why-a-calorie-is-not-a-calorie/>
- What should the doctor order? How physicians can help stem rising healthcare costs
<https://www.linkedin.com/pulse/what-should-doctor-order-how-physicians-can-help-stem-mark-adams?published=t>
- Active Invasion of Oral & Aortic Tissues by Porphyromonas gingivalis in Mice Causally Links Periodontitis & Atherosclerosis <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0097811>
- Insulin Resistance and High Carbohydrate Diets <https://www.youtube.com/watch?v=IGKX8HoNb-0>
- Swiss Re Medical Updates Newsletter
http://media.swissre.com/documents/Medical+Newsletter+3_2017_EN_Final.pdf
- Diabetes & Insurance <http://www.meinsurancereview.com/Magazine/Magazine-Articles/mgid/341/cid/10053>
- **PURE:** <https://www.ncbi.nlm.nih.gov/pubmed/28864332>
"Associations of fats and carbohydrate intake with cardiovascular disease and mortality in 18 countries from five continents: a prospective cohort study"
"135,000 people. Increased carbohydrate intake was associated with a 28 % increase in mortality. Increased total fat intake was associated with a lower risk of total mortality"

If not cholesterol then what?

- Oxidation & Calcium deposits
- Coronary Artery Calcium Score
- Current meta-studies failing to find a correlation between cholesterol & mortality, but CAC →
- Having CAC=0 is like 5yr warranty against heart attack, even with high LDL <https://intermountainhealthcare.org/news/2017/03/major-study-of-atherosclerotic-plaque-deposits-shows-potential-breakthrough-in-determining-risk-for-heart-attacks/>
- If I were a HNW underwriter ...

PS. Take some Vitamin K2

<https://chrismasterjohnphd.com/2016/12/09/the-ultimate-vitamin-k2-resource/>

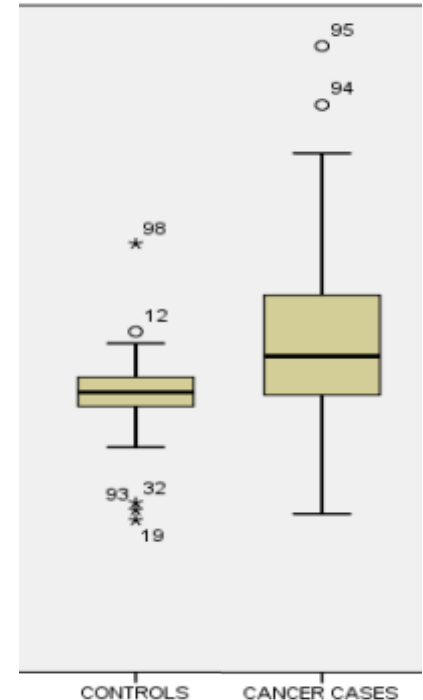


Statins for lowering Cholesterol

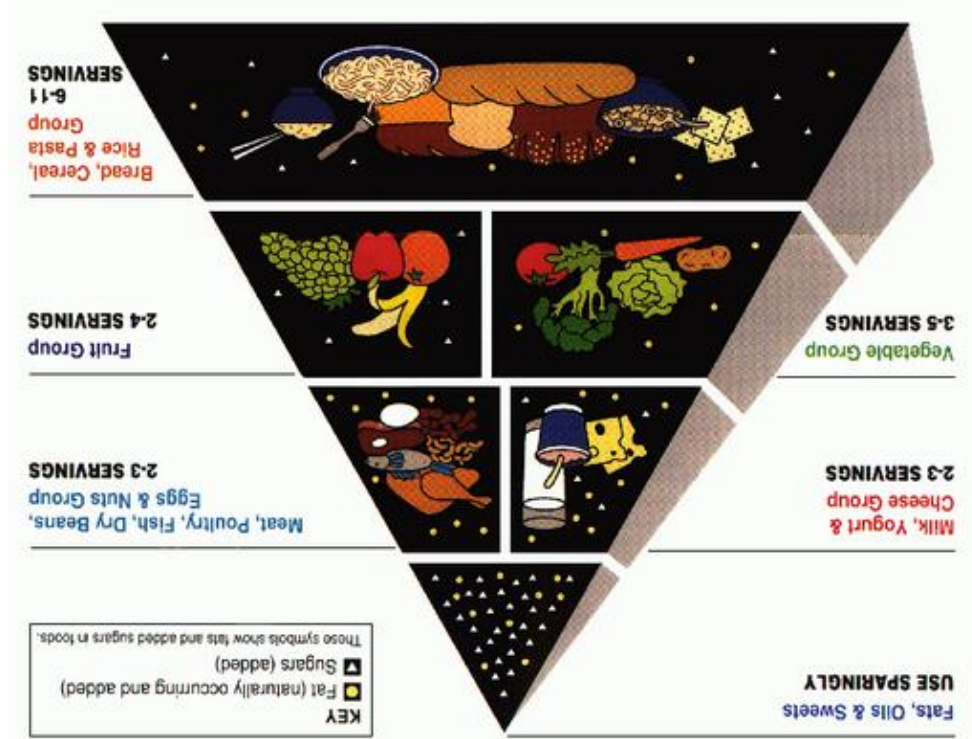
- Conflicting claims on benefits & side-effects
- If cholesterol isn't the problem, then why bother?
 - The recent ACCELERATE trial dumbfounded many experts by failing to demonstrate any cardiovascular benefit despite dramatically lowering LDL and raising HDL in high risk patients with coronary disease <http://www.medscape.com/viewarticle/875261>
 - Amgen share price: PCSK9 inhibitors have bombed, Repatha produced a massive drop in LDL cholesterol and a small drop in soft end points, and produced a ns small rise in total & cardiovascular mortality. The study was stopped early <https://high-fat-nutrition.blogspot.co.uk/2017/03/amgen-share-price-and-pcsk9-inhibition.html>
- Doctors are prescribing statins at lower & lower cholesterol values!
- Insurance companies are paying for these drugs, and being affected by what happens to the health of their policyholders

Diabetes is just Diabetes?

- Why so much emphasis on #LCHF?
 - because diabetes can be cured!
- Insulin insensitivity is key to diabetes
- Diabetes: heart attack, blindness, amputation
 - <http://www.thefateperor.com/blog/2015/4/30/insulin-resistance-the-primary-cause-of-coronary-artery-disease-bar-none-lCHF>
- Cancer correlates with HOMA-IR & high insulin
 - https://www.researchgate.net/publication/277325210_ASSOCIATION_BETWEEN_HOMA-IR_AND_CANCER
 - <http://onlinelibrary.wiley.com/doi/10.1002/ijc.30729/full>
- Alzheimer's is Type 3 Diabetes
 - <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2769828/>
- If I could only underwrite on one blood test ...



All the evidence points to ...



Supplementation is part of not dying

- Again, there are conflicting opinions out there
- Increasing amount of independent research & n=1
 - <https://examine.com>
 - <https://selfhacked.com>
- We're not talking about eliminating scurvy, we're talking about curing death

We are each 50% human & 50% bacteria

- Microbiome - gut/brain connection
- 90% of serotonin lies in your gut
 - https://en.m.wikipedia.org/wiki/Enteric_nervous_system
- Gut microbes switch genes on & off under influence of diet
 - <http://www.medicalnewstoday.com/articles/314369.php>
- Fecal transplants
 - fight malignancy: <http://www.hep.fsu.edu/~wahl/artic/SA/mag/2016/201604.pdf>
 - lose weight: <http://www.economist.com/news/science-and-technology/21586269-how-bacteria-your-gut-may-be-shaping-your-waistline-wider-understanding>
- Pro-biotics & Pre-biotics

Hormesis

(what doesn't kill you just makes you stronger)

- Obvious examples – alcohol & exercise
- Stresses can be **processes**
 - heat & cold, hypergravity, food limits, bone pressure
- Or **substances**
 - turmeric, pro-oxidants
- Remember there is a U-shaped response curve, more is definitely **not** always better

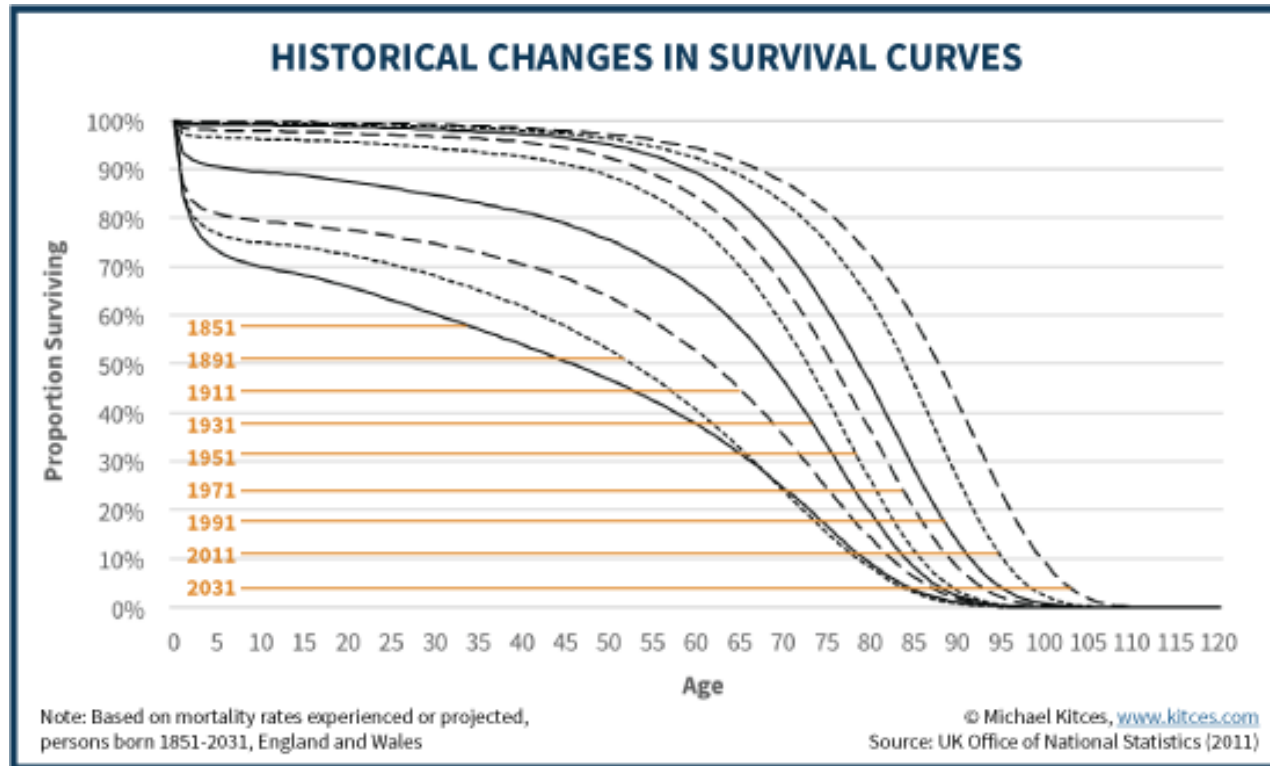
Cold showers have *another* purpose

- It's not about shivering away calories
 - <https://examine.com/nutrition/can-you-lose-weight-by-turning-down-the-heater/>
- White vs Brown Fat
- Parasympathetic nervous system
- Anti-inflammatory
- Ice baths & Cryo-baths
- Wim 'The Iceman' Hof

Exercise

- Muscle loss is a big problem with ageing: build it now
- Cardio-vascular: many benefits
- Flexibility: shouldn't be ignored, affects both above
- Passive: inversion boots, vibration plates
- HIIT: most effective from an anti-ageing point of view

Ageing: we can do better than 'square the curve'



<https://www.kitces.com/blog/squaring-the-survival-curve-and-what-it-means-for-retirement-planning/>

Implications

These myths are killing your policyholders (and making them sick)

- It's not just about 'charging enough', it's about caring for our policyholders' best interests
- Are insurers complicit if they're giving bad advice in their wellness programs, or no advice at all?
- And if insurers are paying, for example, for statins that people don't need (perhaps even hurting them)?
- If you insure longevity, you have some other problems

And yes, it's costing you money too



Reversing Type 2 Diabetes starts with ignoring the guidelines

<https://youtu.be/dalvvigy5tQ>

- Nearly 50% of Americans have diabetes or pre-diabetes
- T2DM can be reversed in many or most cases
- #LCHF intervention works so fast that we can literally pull people off 100s of units of insulin in days or weeks
- Compare 50+50 patients → save USD2000 pa diabetes meds
- LCHF -500, Traditional +350 units
- Lucky for Big Pharma that 'old' advice increases insulin needs and progresses the diabetes

How might medical underwriting be different?

- Cholesterol, Blood sugar, Insulin sensitivity
- ESR, CRP, Fibrinogen, etc.
- Vitamin D, Omega 6 to 3 ratio
- CAC (Coronary Artery Calcium Score)
- Genetic testing – can't use, can't ignore

Remember there is a difference between underwriting in order to put people on a scale, in order to identify current/future problems, in order to eliminate anti-selection

When the world catches on

- Reduced mortality & morbidity
 - good news for humans
 - pricing & valuation may be quick to adapt
 - maximum entry ages
- Extended longevity
 - annuities and pension funds??
 - global dependency ratios
 - government finances

How did we even get here?

Big Pharma

- From 2013/08 to 2014/12, **\$3.5b** was paid to 681,432 US physicians by 1630 pharmaceutical companies to promote numerous drug products
<http://www.bmj.com/content/357/bmj.j1855>
- Virtually all** continuing medical education in the US is sponsored heavily by Big Pharma giving them huge influence over what information is presented to doctors
<https://intensivedietarymanagement.com/big-pharma-behind-scenes/>
- Senate passes bill **restricting gifts** from pharma companies to doctors
<http://www.krcrtv.com/north-coast-news/senate-passes-bill-restricting-gifts-from-pharma-companies-to-doctors/505049810>



https://twitter.com/bmj_latest/status/859541792475283456

Big Sugar (BS)

- Propaganda?
 - They promotes “Energy Balance” (CRaP)
 - “Physical activity” not exercise, fitness, or weight loss
 - Emphasise the problem of obesity over metabolic syndrome
 - Chronic disease is “complicated”
- Coca-Cola & PepsiCo funded almost 100 health organisations over 5 years

<https://therussells.crossfit.com/2017/01/12/the-four-hallmarks-of-big-soda-bs-nutritional-propaganda/>

<https://therussells.crossfit.com/2017/01/05/big-food-vs-tim-noakes-the-final-crusade/>

<http://www.medicalnewstoday.com/articles/313363.php>



Sugar is the new tobacco

TheActuary
The magazine of the actuarial profession

LIFE PENSIONS GI **INVESTMENT** RISK & ERM HEALTH REINSURANCE ENVIRONMENT REG

HOME NEWS **FEATURES** INTERVIEWS OPINION INTERNATIONAL

The sweetest taboo

Jean Eu looks at the effects sugar has on human health and how its consumption used as a rating factor in the underwriting process

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Sugar is highly addictive. You love the way it makes you feel, the satisfaction it gives. You crave it. You need it to get through the day. It stimulates an integral part of your brain. It silently narrows your blood vessels, leading to more complications like heart disease and stroke. Somewhere in the world, it takes a life every 6 seconds.

 **DIABETES ASSOCIATION OF SRI LANKA**

Conflicts of Interest – an example

- Dr John Sievenpiper is one of the most outspoken defenders of dietary sugar, constantly in the media defending sugar
- He receives money from the Corn Refiners Association, for example
- In his paper in the Annals of Internal Medicine defending sugar, here's his list of conflicts of interest

<https://intensivedietarymanagement.com/big-pharma-behind-scenes/>

Potential Conflicts of Interest: Dr. Sievenpiper: *Grant (money to institution):* Canadian Institutes of Health Research, Calorie Control Council; *Support for travel to meetings for the study or other purposes:* The Coca-Cola Company; *Consultancy:* Abbott Laboratories, International Life Sciences Institute (ILSI) North America, Archer Daniels Midland; *Grants/grants pending (money to institution):* The Coca-Cola Company; *Travel/accommodations/meeting expenses unrelated to activities listed (money to institution):* The Coca-Cola Company, Pulse Canada, Canadian Diabetes Association; *Other:* Director of BDSK Consulting. Dr. de Souza: *Grant:* Canadian Institutes of Health Research; *Grant (money to institution):* Calorie Control Council, Canadian Institutes of Health Research; *Grants/grants pending (money to institution):* The Coca-Cola Company. Dr. Beyene: *Grant (money to institution):* Canadian Institutes of Health Research, Calorie Control Council; *Grants/grants pending (money to institution):* The Coca-Cola Company. Ms. Chiavaroli: *Other:* casual position as a clinical research coordinator at Glycemic Index Laboratories. Dr. A. Jenkins: *Grant (money to institution):* Canadian Institutes of Health Research; *Employment:* Part owner and Director of Research at Glycemic Index Laboratories; *Grants/grants pending (money to institution):* Canadian Diabetes Association; *Travel/accommodations/meeting expenses unrelated to activities listed:* Canadian Diabetes Association. Dr. Wolever: *Grant (money to institution):* Canadian Institutes of Health Research. *Board membership:* Glycemic Index Laboratories; *Consultancy:* McCain Foods, Temasek Polytechnic; *Employment:* Glycemic Index Laboratories, Glycaemic Index Testing; *Grants/grants pending (money to institution):* Canadian Institutes of Health Research, Dairy Farmers of Canada, Canadian Diabetes Association; *Payment for lectures including service on speakers bureaus:* Northwestern University; *Royalties:* Phillipa Sandall Publishing Services, CABI Publishers; *Travel/accommodations/meeting expenses unrelated to activities listed:* Royal Society of London, Glycemic Index Symbol program, CreaNutrition AG, McMaster University, Canadian Society for Nutritional Sciences, National Sports and Conditioning Association, Faculty of Public Health and Nutrition—Autonomous University of Nuevo Leon, Diabetes and Nutrition Study Group of the EASD. Dr. Kendall: *Grant (money to institution):* Canadian Institutes of Health Research, Calorie Control Council; *Grants/grants pending (money to institution):* The Coca-Cola Company, Almond Board of California, International Tree Nut Council, Barilla, Solae, Unilever, Saskatchewan Pulse Growers, Pulse Canada; *Payment for lectures including service on speakers bureaus:* Danone, Almond Board of California, Kellogg, Solae; *Travel/accommodations/meeting expenses unrelated to activities listed:* International Tree Nut Council, Saskatchewan Pulse Growers, Pulse Canada. Dr. D. Jenkins: *Grant (money to institution):* Barilla, Solae, Unilever, Haine Celestial, Loblaw Supermarkets, Sanitarium Company, Almond Board of California, Orafti, Canadian Institutes of Health Research, Canadian Foundation for Innovation, Ontario Research Fund, Advanced Foods and Material Network, The International Tree Nut Council Nutrition Research & Education, The Peanut Institute; *Consulting fee or honorarium:* Solae, Oldways Preservation Trust, Almond Board of California, Kellogg's, Quaker Oats, Procter and Gamble Technical Centre Limited, The Coca-Cola Sugar Advisory Board, Griffin Hospital for the development of the NuVal System, Abbott Laboratories, The Canola and Flax Councils of Canada, Soy Advisory Board of Dean Foods, The California Strawberry Commission, The International Tree Nut Council Nutrition Research & Education, The Peanut Institute, Barilla, Unilever, Haine Celestial, Loblaw Supermarkets; *Support for travel to meetings for the study or other purposes:* Almond Board of California, The International Tree Nut Council Nutrition Research & Education, The Peanut Institute, Alpro Soy Foundation, Soy Advisory Board of Dean Foods; *Board membership:* Loblaw Supermarkets, Sanitarium Company, Herbalife International, Nutritional Fundamentals for Health, Pacific Health Laboratories, Metagenics/MetaProteomics, Bayer Consumer Care, The California Strawberry Commission, Orafti, Science Advisory Council Agrifoods and Agriculture, Canadian Agriculture Policy Institute, Soy Advisory Board of Dean Foods, Kellogg's, Quaker Oats, Procter and Gamble Technical Centre Limited, The Coca-Cola Sugar Advisory Board, Griffin Hospital for the development of the NuVal System, Abbott Laboratories, The Canola and Flax Councils of Canada, Saskatchewan Pulse Growers; *Consultancy:* Solae, Oldways Preservation Trust, Almond Board of California, Kellogg's, Quaker Oats, Procter and Gamble Technical Centre Limited, The Coca-Cola Sugar Advisory Board, Griffin Hospital for the development of the NuVal System, Abbott Laboratories, The Canola and Flax Councils of Canada, Soy Advisory Board of Dean Foods, The California Strawberry Commission, The International Tree Nut Council Nutrition Research & Education, The Peanut Institute, Barilla, Unilever, Haine Celestial, Loblaw Supermarkets; *Stock/stock options:* Pacific Health Laboratories; *Other:* Spouse (Dr. Alexandra L. Jenkins) is a Director and Partner with Glycemic Index Laboratories, which tests foods for glycemic index used in his studies.

Dr Tim Noakes & Dr Gary Fettke

- Diabetes is now the biggest killer of SA women and the 2nd biggest killer overall, while 7 years ago it was not even in the Top 10 <https://www.dailymaverick.co.za/article/2017-03-12-health-e-news-diabetes-moves-up-the-killer-charts/#.WMXjZxJ95E4>
- Dr Tim Noakes found not guilty after 3 years
- Dr Gary Fettke in Australia has been banned from giving nutritional advice to his patients or the public for the rest of his medical career, by the Australian Health Practitioner Regulation Agency.
<https://drmalcolmkendrick.org/2017/04/26/tim-noakes-found-not-guilty-of-something-or-other/>



What other stuff?

Nootropics / Smart Drugs

- Omega 3, Choline, B-complex, Nicotine (basic stuff)
- Fats (saturated & delicious)
- Piracetam (the first true smart drug)
- Aniracetam, Oxiracetam, Phenylpiracetam (*goal)
- Modafinil / Adrafinil (ADHD, gamers, Wall Street)
- Micro-dosing (lithium, LSD, mushroom – Silicon Valley)
- The God Pill (Qualia, Limitless The Movie)

Genetic Testing – what can & can't you find out?

- Genes: we've got a bunch of 'em but some are wrong
- Solo: BRCA, so up to 85% chance of breast cancer
- Panels: not prostate cancer, but zinc methylation
- MTHFR: where folic acid is poison, with health issues
- Drugs: some simply cannot be processed
- Exercise & diet: What's right for you

Artificial Intelligence vs Doctors

- What if the diagnosis were better? And earlier?
- AI is already proving itself superior in certain areas
 - <https://www.top500.org/news/watson-proving-better-than-doctors-in-diagnosing-cancer/>
 - <http://www.newyorker.com/magazine/2017/04/03/ai-versus-md>
- And this is only the beginning

Curing Death – what?

- SENS Research Foundation
- Seven types of aging damage, including
 - cell loss & atrophy
 - mitochondria
 - telomeres



[https://en.wikipedia.org/
wiki/Aubrey_de_Grey](https://en.wikipedia.org/wiki/Aubrey_de_Grey)

Curing Death – DIY how?

- **Genetics:** cancer not just random, predisposition, etc.
- **Detox:** hair analysis, glutathione, chlorella, thistle
 - <http://www.naturallivingideas.com/naturally-detox-your-liver/>
- **Insulin:** #LCHF, Metformin, fasting, HIIT
 - <https://www.wsj.com/articles/scientists-new-goal-growing-old-without-disease-1426542180>
- **Inflammation:** LCHF*, thermogenesis,
 - <https://techcrunch.com/2017/05/03/scientists-have-eliminated-hiv-in-mice-using-crispr/>
- **Parasympathetic:** mindfulness, cold showers, HRV, breathing
 - <https://blog.bulletproof.com/tone-vagus-nerve-hack-nervous-system/>
- **Mitochondria:** infrared, HIIT, oxaloacetate, PQQ, fasting, cold
 - <https://blog.bulletproof.com/podcast-29-minding-my-mitochondria-with-dr-terry-wahls-md/>
- **Telemeres:** de-stress, exercise, supplements
 - <https://draxe.com/telomeres/>
- **Supplement:** all of the above

Curing Death – medically (not DIY)?

- **Detox:** chelation
 - https://en.wikipedia.org/wiki/Chelation_therapy
- **Gene therapy:** CRISPR & HIV
 - <https://techcrunch.com/2017/05/03/scientists-have-eliminated-hiv-in-mice-using-crispr/>
- **Stem cell therapy:** joints, pancreas, infarctions
 - https://en.wikipedia.org/wiki/Stem-cell_therapy
- **Platelet-rich Plasma:** joints, ligaments, tendons
 - <http://www.spinemd.com/treatments/platelet-rich-plasma>

And if all else fails ...

- **Cryonics:** freeze yourself for decades or even centuries
 - <http://www.alcor.org/AboutCryonics/index.html>
- **Cyber-survival:** download your brain
 - <http://edition.cnn.com/2005/TECH/05/23/brain.download/>

Wrapping it all up

Later ~~Last~~ Thoughts

- I am not a doctor; I am not giving you advice; I am not diagnosing you; There are of course exceptions to every rule; Don't try this at home kids
- I cannot keep up with all being published on the topic!
- Many Billionaires are putting a lot of money into this
- As individuals we can make our own lives better, and as members of the Actuarial community we can positively impact on the lives of our policyholders

Additional Reading

- intensivedietarymanagement.com
- chrismasterjohnphd.com
- quantifiedself.com
- thefatemperor.com
- selfhacked.com
- 23andme.com
- ubiome.com
- smartdrugsmarts.com
- BiohackingAsia.wordpress.com
- examine.com
- bulletproofexec.com
- bengreenfieldfitness.com
- fourhourbody.com
- drhyman.com
- terrywahls.com
- realmealrevolution.com
- eatingacademy.com

Let's Stay in Touch

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