

Hvordan er våre matvalg forbundet med helse og forventet levealder?

Resultater fra Food4HealthyLife

Lars T. Fadnes

Professor, University of Bergen



Bakgrunn

- Globalt er kosthold anslått å forårsake 11 millioner dødsfall og 255 million tapte leveår/år
- Global Burden of Disease studien og EAT-Lancet med flere gir noen befolkningsanslag på hva som er gunstige kostholdsmønstre, men gir begrenset informasjon om hva en kan forvente av gevinster av ulike matvalg

En jungel av forskning

Publisert >1,5 millioner vitenskapelige artikler relatert til kosthold og ernæring ved (desembe 2022)

Hvordan kan en finne fram i jungelen av studier?
Hvilken tilnærminger kan vi ha?

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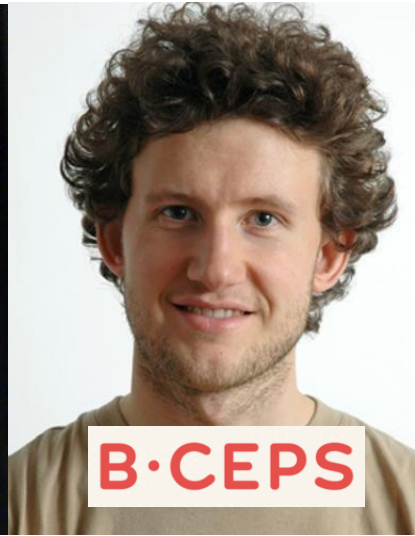
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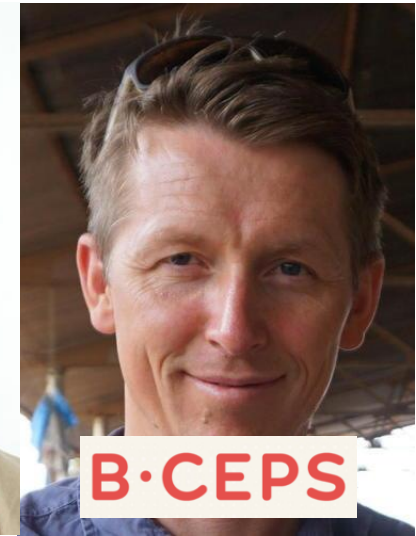
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PLOS MEDICINE

RESEARCH ARTICLE

Estimating impact of food choices on life expectancy: A modeling study

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Abstract

Background

Interpreting and utilizing the findings of nutritional research can be challenging to clinicians, policy makers, and even researchers. To make better decisions about diet, innovative methods that integrate the best evidence are needed. We have developed a decision support model that predicts how dietary choices affect life expectancy (LE).

Methods and findings

Based on meta-analyses and data from the Global Burden of Disease study (2019), we used life table methodology to estimate how LE changes with sustained changes in the intake of fruits, vegetables, whole grains, refined grains, nuts, legumes, fish, eggs, milk/dairy, red meat, processed meat, and sugar-sweetened beverages. We present estimates (with 95% uncertainty intervals [95% UIs]) for an optimized diet and a feasibility approach diet. An optimal diet had substantially higher intake than a typical diet of whole grains, legumes, fish, fruits, vegetables, and included a handful of nuts, while reducing red and processed meats, sugar-sweetened beverages, and refined grains. A feasibility approach diet was a midpoint between an optimal and a typical Western diet. A sustained change from a typical Western diet to the optimal diet from age 20 years would increase LE by more than a decade for women from the United States (10.7 [95% UI 8.4 to 12.3] years) and men (13.0 [95% UI 9.4 to 14.3] years). The largest gains would be made by eating more legumes (females: 2.2 [95% UI 1.1 to 3.4]; males: 2.5 [95% UI 1.1 to 3.9]), whole grains (females: 2.0 [95% UI 1.3 to 2.7]; males: 2.3 [95% UI 1.6 to 3.0]), and nuts (females: 1.7 [95% UI 1.5 to 2.0]; males: 2.0 [95% UI 1.7 to 2.3]), and less red meat (females: 1.6 [95% UI 1.5 to 1.8]; males: 1.9 [95% UI 1.7 to 2.1]) and processed meat (females: 1.6 [95% UI 1.5 to 1.8]; males: 1.9 [95% UI 1.7 to 2.1]). Changing from a typical diet to the optimized diet at age 60 years would increase LE by 8.0 (95% UI 6.2 to 9.3) years for women and 8.8 (95% UI 6.8 to 10.0) years for men, and 80-year-olds would gain 3.4 years (95% UI females: 2.6 to 3.8/males: 2.7 to 3.9). Change from typical to feasibility approach diet would increase LE by 6.2 (95% UI 3.5 to 8.1) years for 20-year-old women from the United States and 7.3 (95% UI 4.7



OPEN ACCESS

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uib.no/en/med/151413/food-pattern-calculator-estimates-how-gain-ten-life-years



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NEWS

Food pattern calculator estimates how to gain up to ten life years

Researchers at UIB have developed a calculator that can estimate how many life years you could gain by modifications in diet patterns.



Nuts, whole grain and legumes are food groups that are strongly associated with longer life expectancy. Photo: Colourbox

Mediaoppmerksomhet

Estimating impact of food choices on life expectancy: A modeling study

Overview of attention for article published in PLOS Medicine, February 2023.

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Health Reporter, 19 Mar. 2023

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ΚΑΘΗΜΕΡΙΝΗ Θάλασσα και ζήτηση περισσότερα: Ακολουθήστε τα τέσσερα μυστικά μακροζωίας των 90
Καθημερινή, 14 Feb. 2023
Δύο υπάλληλοι τμήμας για εθνοπαθολογία και τη μακροζωία, συνέθεσαν υπάλληλους ομοειδή τμήμα για τη διαβίωση.

NATIONAL GEOGRAPHIC Le jeûne peut-il nous aider à vivre plus longtemps ?
National Geographic, 20 Jan. 2023
Enfant, l'aîné Longo passait les été à Malosio, le village de Calabre où ses parents ont grandi dans le sud de l'Italie.

NATIONAL GEOGRAPHIC Can fasting help you live longer? Here's what the science says.
National Geographic, 17 Jan. 2023
Crises or cure? Today's fasting mania grew out of more than a century of research showing that extreme calorie restriction

THE HEALTHY FOODS How to Eat Mediterranean to Live to Be 100 Years Old
The Health Foods, 10 Jan. 2023
What if changing your diet means that you might be able to live to be 100? The good to be true? Research says otherwise

Only Star Post Eat certain diet to live longer, says expert - 36% reduction in risk of early death
Only Star Post, 08 Jan. 2023
There are a number of factors at play when it comes to how long we live. While some of these are invariable, we can ch

NATIONAL GEOGRAPHIC How to live longer: Plant-based diet could slash risk of early death by 36% - swifteleca
South Telecom, 08 Jan 2023
There are a number of factors at play when it comes to how long we live. While some of these are invariable, we can ch

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Metode

Har benyttet

- meta-analyser,
- Global Burden of Disease studien (2019)

Kombinert disse med overlevelses-tabell metoder og presenterer usikkerhetsestimater for optimalisert og gjennomførbare kostholdsendringer

Metode 1: Meta-analyser

RESEARCH

Whole grain consumption and risk of cardiovascular disease, cancer, and all-cause and cause specific mortality: systematic review and dose-response meta-analysis of prospective studies

Dagfinn Aune,^{1,2} NaNa Keum,¹ Edward Giovannucci,^{3,4} Lars T Fardes,⁵ Paolo Boffetta,⁷ Darren C Greenwood

OPEN ACCESS
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 Additional material is published online only. See supplementary material on page S176.
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ABSTRACT
OBJECTIVE To quantify consumption of grains and cancer, an additional material is published online only. See supplementary material on page S176.
STUDY SE Prospective estimates grains of 1 disease, 1 mortality.
DATA SYN Summary calculator
RESULTS 45 studies summary grain intake example, 1 one and a grains (n=9), n= (0.75 to 1.1), 0.85, P<4 similar res the outcor risks for n

WHAT IS ALREADY KNOWN ON THIS
 A high intake of whole grains has been associated with cardiovascular disease, and 1 mortality from respiratory disease, life cardiovascular, non-cancer causes
 Reductions in risk were observed up to and a half servings/day and for whole and added bran
 The results strongly support dietary rec grain foods in the general population to premature mortality

WHAT THIS STUDY ADDS
 A high intake of whole grains was associated with cardiovascular disease, total 1 mortality from respiratory disease, life cardiovascular, non-cancer causes
 Reductions in risk were observed up to and a half servings/day and for whole and added bran
 The results strongly support dietary rec grain foods in the general population to premature mortality

10.1136/bmj.2015.075167

10.1136/bmj.2015.075167



Original article

Fruit and vegetable intake and risk of cardiovascular disease, cancer, and all-cause and cause specific mortality: a systematic review and dose-response meta-analysis of prospective studies

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Abstract
 Background: Questions remain about the relationship between fruit and vegetable intake and mortality, and the effects of specific nutrients. We conducted a systematic review and meta-analysis of prospective studies investigating the association between fruit and vegetable intake and mortality. **Methods:** PubMed and Embase were searched for prospective studies of fruit and vegetable intake and mortality. Summed effects models were used to estimate the association between fruit and vegetable intake and mortality. **Results:** Higher intake of fruit and vegetables was associated with a lower risk of mortality. The association was strongest for total fruit and vegetable intake. **Conclusions:** Higher intake of fruit and vegetables is associated with a lower risk of mortality.

Keywords: fruit, vegetable, meta-analysis, dose response, mortality

International Journal of Epidemiology, 2017, 46, 1010-1018

doi:10.1093/ije/dyw013

Original article



Food groups and risk of all-cause mortality: a systematic review and dose-response meta-analysis of prospective studies

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Abstract
 Background: Suboptimal diet is one of the most important factors in preventing early death and disability worldwide. **Objective:** The aim of this meta-analysis was to synthesize the knowledge about the relation between intake of 12 major food groups, including whole grains, refined grains, vegetables, fruits, nuts, legumes, eggs, dairy, fish, red meat, processed meat, and sugar-sweetened beverages, with risk of all-cause mortality. **Design:** We conducted a systematic search in PubMed, Embase, and Google Scholar for prospective studies investigating the association between food groups and risk of all-cause mortality. Summary RR and 95% CI were estimated with the use of a random effects model for high-intake compared with low-intake categories, as well as for linear and nonlinear relations. Moreover, the risk reduction potential of foods was calculated by multiplying the RR by optimal intake values (serving category with the strongest association) for risk-reducing foods or risk-increasing foods, respectively. **Results:** With increasing intake for each daily serving of whole grains (RR: 0.92; 95% CI: 0.89, 0.95), vegetables (RR: 0.96; 95% CI: 0.95, 0.98), fruits (RR: 0.94; 95% CI: 0.92, 0.97), nuts (RR: 0.76; 95% CI: 0.69, 0.81), and fish (RR: 0.97; 95% CI: 0.90, 0.98), the risk of all-cause mortality decreased; higher intake of red meat (RR: 1.12; 95% CI: 1.04, 1.18) and processed meat (RR: 1.23; 95% CI: 1.12, 1.36) was associated with an increased risk of all-cause mortality in a linear dose-response meta-analysis. A clear indication of nonlinearity was seen for the relations between vegetables, fruits, nuts, and dairy and all-cause mortality. Optimal consumption of risk-reducing foods results in a 56% reduction of all-cause mortality, whereas consumption of risk-increasing foods is associated with a 3-fold increased risk of all-cause mortality. **Conclusions:** Selecting specific optimal intakes of the investigated food groups can lead to a considerable change in the risk of premature death. *Am J Clin Nutr* 2017;105:1462-73.

Keywords: food groups, diet, meta-analysis, dose response, mortality

INTRODUCTION

In 2013, the number of deaths worldwide and among all age groups amounted to nearly 55 million; 70% of these were caused

1462



Original article

Oppdaterte lov og forskningsresultater

British Journal of Nutrition (2014), 112, 707–725
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doi:10.1017/S000711451400214X

Association between total, processed, red and white meat consumption and all-cause, CVD and IHD mortality: a meta-analysis of cohort studies

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(Submitted 6 December 2013 – Final revision received 12 February 2014)

Abstract

An association between processed and red meat intake and all-cause mortality has been reported in several cohort studies, but many controversial reports regarding it. We conducted a meta-analysis to summarize the evidence on the association between intake of total, red, white and processed and all-cause, CVD and IHD mortality. The results of mortality from all-cause and CVD, while not statistically significant, should be interpreted with caution due to the heterogeneity.

Key words: Meta-analysis, Mortality, Meat

In the last 50 years, there has been a shift of the diet towards a higher-energy density or by higher intakes of fat and proteins (most sources) and added sugars present in foods of complex carbohydrates, fruits and vegetables. Chronic diseases have become the main cause of mortality, leading to the list of 'Western countries' [1]. Thus, the knowledge that nutrients and foods might have great importance for public health has become

Abbreviations: IHD, ischaemic heart disease; *Corresponding author: I. Abete, fax: +34 913 759137



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Polyunsaturated fatty acids for the primary and secondary prevention of cardiovascular disease (Review)

Abdelhamid AS, Martin N, Bridges C, Brainard JS, Wang X, Brown TJ, Hanson S, Jimoh OF, Ajabnoor SM, Deane KHO, Song F, Hooper L

Aune et al. BMC Medicine (2016) 14:207

DOI:10.1186/s12916-016-0730-3

BMC Medicine

RESEARCH ARTICLE

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Nut consumption and risk of cardiovascular disease, total cancer, all-cause and cause-specific mortality: a systematic review and dose-response meta-analysis of prospective studies

Dagfinn Aune^{1,2}, NaNa Keum¹, Edward Giovannucci^{3,4,5}, Lars T Fardes^{6,7}, Paolo Boffetta⁸, Darren C Greenwood⁹, Serena Tonstad¹, Lars J Vatten¹, Ello Ribi¹⁰ and Teresa Norat¹¹

Abstract
Background: Although nut consumption has been associated with a reduced risk of cardiovascular disease and all-cause mortality, data on less common causes of death has not been systematically assessed. Previous reviews missed several studies and additional studies have since been published. We therefore conducted a systematic review and meta-analysis of nut consumption and risk of cardiovascular disease, total cancer, and all-cause and cause-specific mortality.

Methods: PubMed and Embase were searched for prospective studies of nut consumption and risk of cardiovascular disease, total cancer, and all-cause and cause-specific mortality in adult populations published up to July 19, 2016. Summary relative risks (RRs) and 95% confidence intervals (CIs) were calculated using random-effects models. The burden of mortality attributable to low nut consumption was calculated for selected regions.

Results: Twenty studies (19 publications) were included in the meta-analysis. The summary RRs per 28 grams/day increase in nut intake was for coronary heart disease, 0.71 (95% CI: 0.62–0.80), $I^2=0\%$, $n=11$); stroke, 0.93 (95% CI: 0.83–1.05), $I^2=14\%$, $n=11$); cardiovascular disease, 0.79 (95% CI: 0.70–0.88), $I^2=60\%$, $n=12$); total cancer, 0.85 (95% CI: 0.70–0.94), $I^2=42\%$, $n=8$); all-cause mortality, 0.78 (95% CI: 0.72–0.84), $I^2=66\%$, $n=15$); and for mortality from respiratory disease, 0.48 (95% CI: 0.26–0.89), $I^2=0\%$, $n=3$); diabetes, 0.61 (95% CI: 0.43–0.88), $I^2=0\%$, $n=4$); neurodegenerative disease, 0.65 (95% CI: 0.40–1.08), $I^2=5.9\%$, $n=3$); infectious disease, 0.25 (95% CI: 0.07–0.85), $I^2=54\%$, $n=2$); and kidney disease, 0.27 (95% CI: 0.04–1.91), $I^2=61\%$, $n=2$). The results were similar for tree nuts and peanuts. If the associations are causal, an estimated 4.4 million premature deaths in the Americas, Europe, Southeast Asia, and Western Pacific would be attributable to a nut intake below 20 grams per day in 2013.

Conclusions: Higher nut intake is associated with reduced risk of cardiovascular disease, total cancer and all-cause mortality and mortality from respiratory disease, diabetes, and infections.

Keywords: Nuts, Peanuts, Cardiovascular disease, Cancer, All-cause mortality, Cause-specific mortality, Meta-analysis

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Polyunsaturated fatty acids for the primary and secondary prevention of cardiovascular disease (Review)

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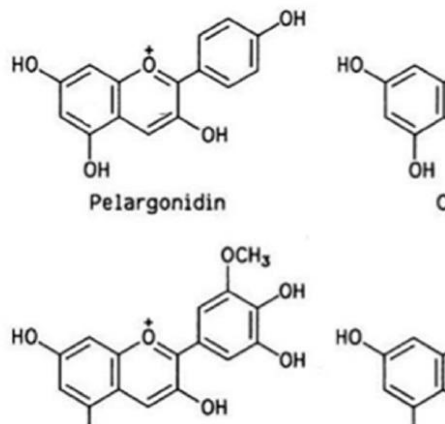
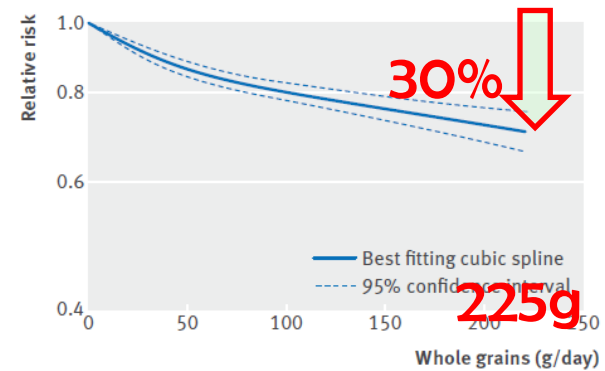
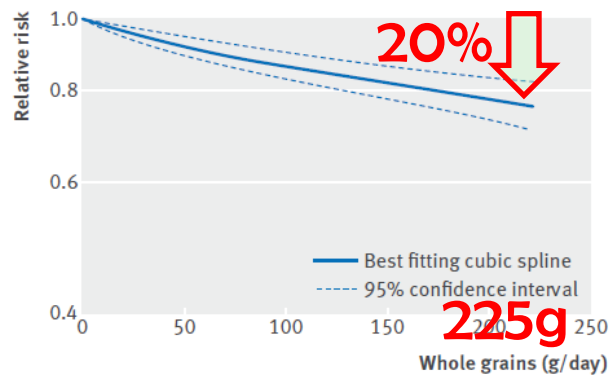
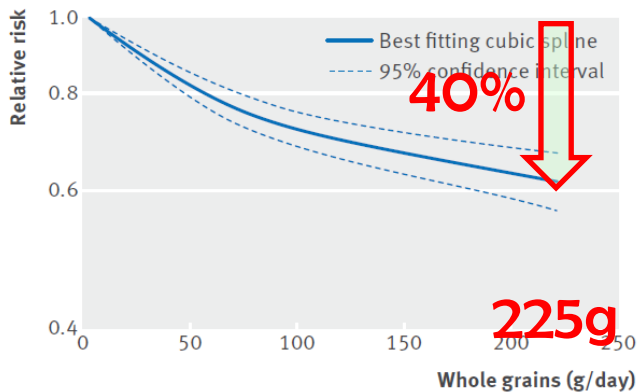
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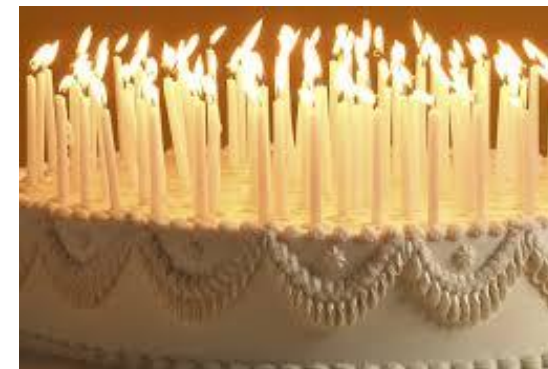
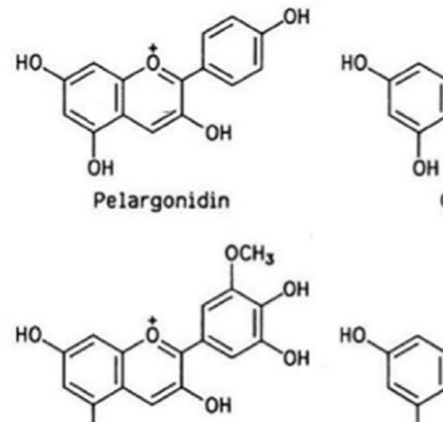
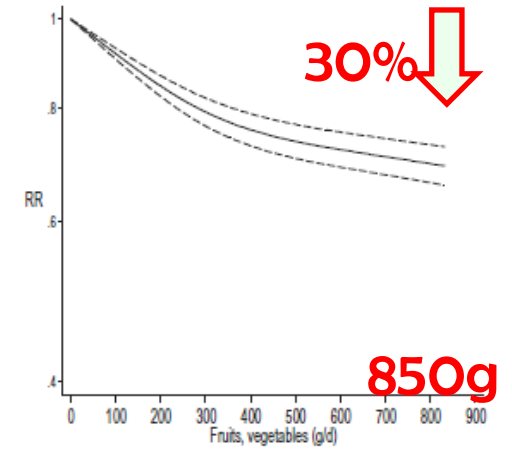
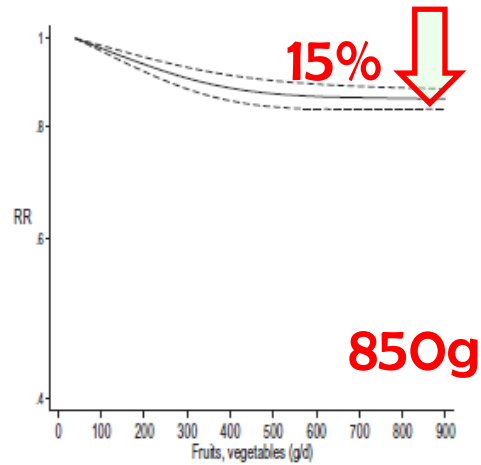
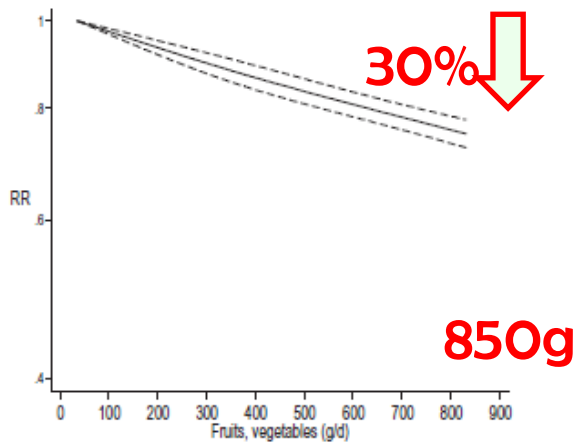
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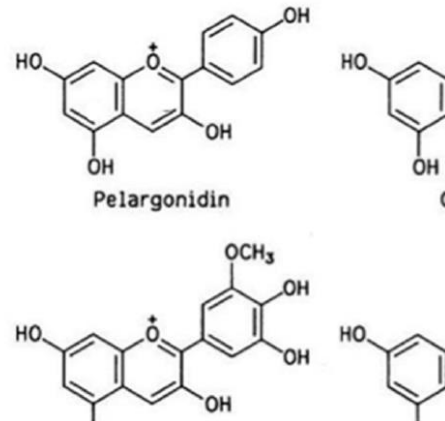
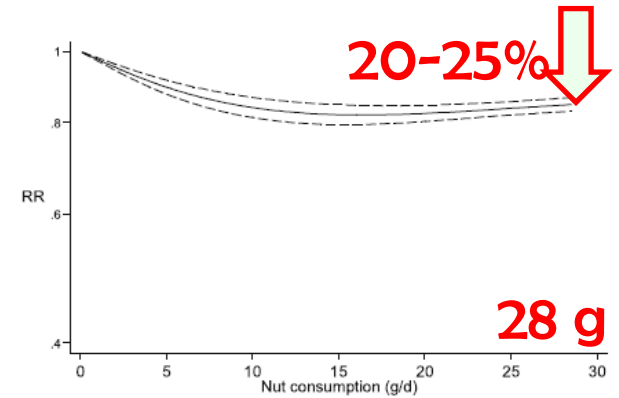
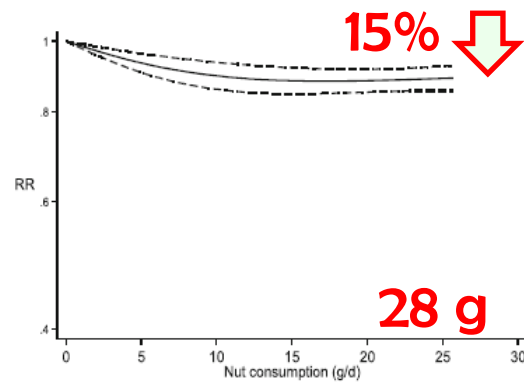
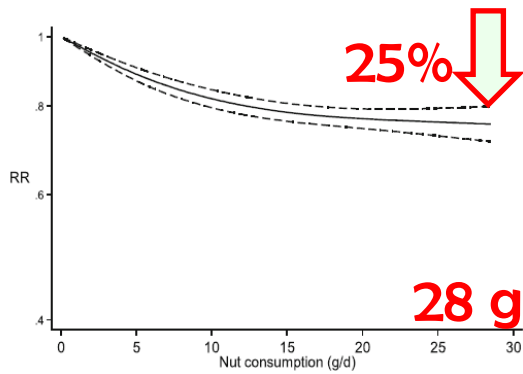
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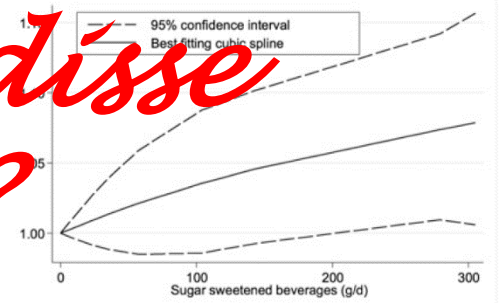
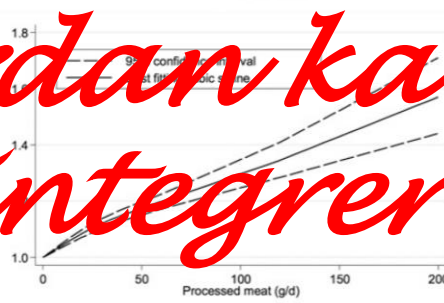
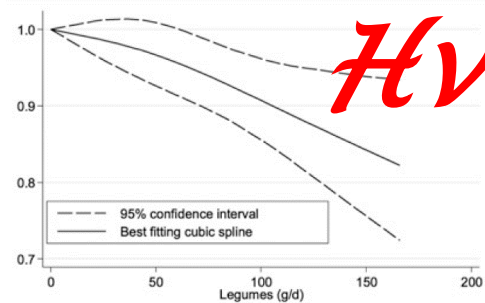
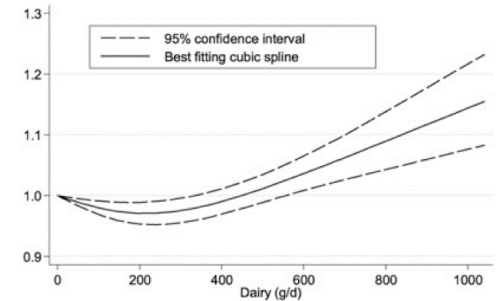
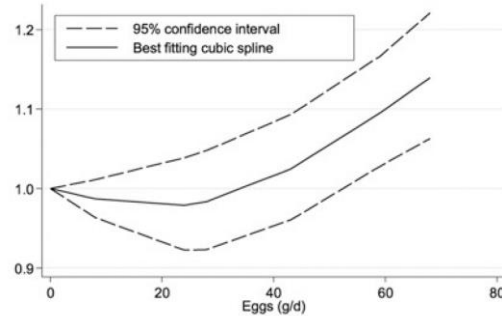
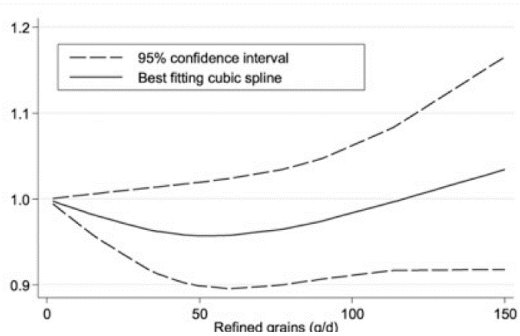
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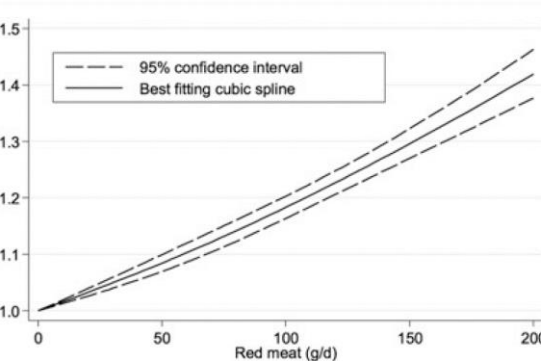
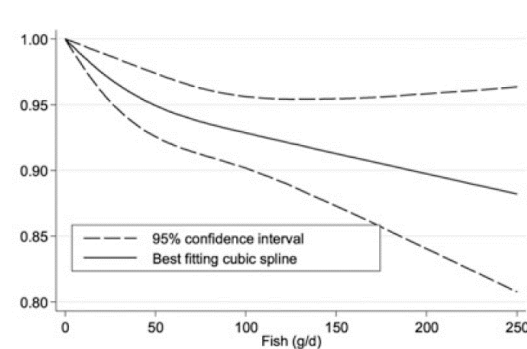




Andre matvaregrupper



Hvordan kan disse integreres?



Metode 2: Bakgrunnsdata

- Populasjonsdata om dødsfall fra Global Burden of Disease (2019)
- Forventet levealder: antall år en person kan forventes å leve fra ulike grupper dersom de kommer opp til en viss alder
- Har hentet data for USA, Storbritannia, Tyskland, Frankrike, Kina, Norge, Iran, med flere



https://www.healthdata.org/gbd/2019

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Measuring what matters

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Global Burden of Disease (GBD)

GBD

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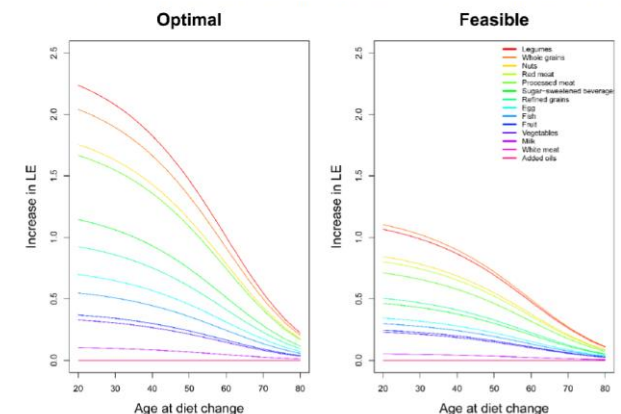
The Lancet: Latest global disease estimates reveal perfect storm of rising chronic diseases and public health failures fuelling COVID-19 pandemic

Metode 3: Effektforsinkelse

- Helsegevinster fra kosthold er relatert til reduksjon i kardiovaskulær sykdom, kreft, og diabetes, samt færre tidlige dødsfall blant annet fra disse. Kan anta full effekt etter 10-20 år med gradvis økning i effekt før dette
- Tilleggs (sensitivitets) analyser for 5, 30 og 50 år

Table S3: Absolute and relative change in life expectancy with delay to full effects of 10 (default), 5, 30 and 50-year-old females and males from the United States.

Age	Sex	Estimate	Absolute change (years)				Relative change (proportion)			
			10-year	5-year	30-year	50-year	10-year	5-year	30-year	50-year
20	Female	10.7	0	0.1	-0.4	-1.3	0	0.01	-0.04	-0.12
20	Male	13.0	0	0.2	-0.9	-2.2	0	0.02	-0.07	-0.17
40	Female	10.0	0	0.2	-1.2	-3.4	0	0.02	-0.12	-0.34
40	Male	11.7	0	0.3	-1.8	-4.7	0	0.03	-0.15	-0.40
60	Female	8.0	0	0.5	-2.8	-5.3	0	0.06	-0.35	-0.66
60	Male	8.8	0	0.8	-3.6	-6.1	0	0.09	-0.41	-0.69
80	Female	3.4	0	1.2	-2.4	-2.8	0	0.35	-0.71	-0.82
80	Male	3.4	0	1.3	-2.4	-2.9	0	0.38	-0.71	-0.85



Metode 4: Usikkerhet

Vi beregnet usikkerhet basert på konfidensintervaller med Monte Carlo simulering

Metode 5: Overlapp

1. Selv om meta-analyser ofte justerer for flere andre matvaregrupper, er det mulig en har noe gjenstående forvekslingsfaktorer relatert til andre matvaregrupper. Tok hensyn til dette med å ta hensyn til ulike grader av potensiell overlapp i sensitivitetsanalyser

Metode 6: Matvaremønstre

- Vi estimerte ulike kostholdsmønstre som var forbundet med særlig gunstig levesteutsikter,(OD) et typisk vestlig kosthold (TW) samt et “gjennomførbart kosthold” (FA) som var gjennomsnittet mellom disse.
- Fullkorn : TW 50g, FA 137.5g, OD 225g
- Grønnsaker: TW 250g, FA 325g, OD 400g
- Frukt: TW 200g, 300g, and OD 400g
- Nøtter: TW 0g, FA 12.5g, and OD 25g
- Belgvekster: TW 0g, FA 100g, and OD 200g
- Fisk: TW 50, FA 125g, and OD 200g
- Egg: TW 50g, FA 37.5g and OD 25g
- Melk: TW 300g, FA 250g, and OD 200g
- Raffinert korn: TW 150g, FA 100g, OD 50g
- Rødt kjøtt: TW 100, FA 50g, and OD 0g
- Bearbeidet kjøtt: TW 50g, FA 25g, OD 0g
- Hvitt kjøtt: TW 75g, FA 62.5g and OD 50g
- Sukret drikke: TW 500g, FA 250g, and OD 0g
- Tilsatte planteoljer: TW 25g, FA 25g, and OD 25g
- Energi estimat 8085 kJ/day for TW, 7850 kJ/day for FA, 7615 kJ/day for OD.

Supplementary file for "Estimating impact of food choices on life expectancy: A modeling study"

Text S3: Estimated intake of various food groups in the United States and Norway.

United States:
Vegetables: 249 g
Fruit: 184 g
Nuts: 11 g
Legumes: 9 g
Fish: 17 g
Egg: 41 g
Milk: 414 g
Whole grains (fresh weight): 30 g
Refined grains: 159 g
Meat, red: 95 g
Meat, processed: 53 g
Meat, white: 75 g
Sugar sweetened beverages: 621 g
Added oils: 21 g

Norway:
Vegetables: 255 g (typical energy 2 kJ/g [mixed vegetables and potatoes])
Fruit: 244 g (typical energy 1.5 kJ/g [orange, apple])
Nuts: 11 g (typical energy 26.8 kJ/g [pea nuts, roasted and salted])
Legumes: 6 g (typical energy 5 kJ/g [chick peas, cooked])
Fish: 52 g (typical energy 6 kJ/g [salmon, steamed])
Egg: 56 g (typical energy 6 kJ/g [boiled egg])
Milk: 224 g (typical energy 1.7 kJ/g [milk, 1% fat])
Whole grains (fresh weight): 61 g (typical energy 4 kJ/g [porridge with water])
Refined grains: 172 g (typical energy 11 kJ/g [bread])
Meat, red: 71 g (typical energy 7 kJ/g [beef])
Meat, processed: 58 g (typical energy 19 kJ/g [bacon])
Meat, white: 58 g (typical energy 10 kJ/g [chicken leg])
Sugar sweetened beverages: 425 g (typical energy 2 kJ/g [lemonade])
Added oils: 30 g (typical energy 37 kJ/g [soybean oil])

Sources:
<https://nrcs.usda.gov/download/1945.PDF>
<https://health.gov/dietaryguidelines/2015-guidelines/chapter-2-2-choose-look-at-current-intakes-and-recommendations>
<https://www.eis.usda.gov/data-products/food-consumption-and-nutrient-intakes/food-consumption-and-nutrient-intakes-of-food-26-consumption-2016-2019>
<https://www.nrcs.usda.nh.gov/publications/1314956>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3645629/pdf/nlm052312.pdf>
<https://www.norstat.no/om-oss/om-oss/2019-08-27-tilstand-2019-2020-1>
<https://www.nrcs.usda.nh.gov/publications/1314956>
Helseundersøkelser i Trondheim i norsk kosthold 2018. Matlevingsundersøkelser og forbrukundersøkelser (IS-2018), 16. Febr. 2019
<https://www.sunnlig.no/no/sunnlig/sunnlig-og-nyttig-og-er-og>
<http://www.naturerstaten.no>

Metode 7: Evidens

- Gradering av evidens
- Evidensgrad var “høy” for fullkorn “moderat” for fisk, rødt og bearbeidet kjøtt, nøtter, belgvekster, melk, “lav” for grønnsaker, frukt, sukret drikke og raffinerte kornprodukter samt “veldig lav” for egg og hvitt kjøtt
- Total evidensgrad moderat
- Fleste metaanalysene hadde høy kvalitetsgrad (AMSTAR-2)

Metode 8: Analyser

- R Shiny med web applikasjon (<http://food4healthylife.org/>)

https://food4healthylife.org

Calculator Help Settings

Selection of population, age and sex Gender: Both Female Male

Location: Europe Age: 20 Optimal Feasible Auto-adjusting of intervention diet to optimized or feasible-approach diet

Life expectancy changes from diet components

Food	IE
Whole grains	0.99
Yeast/bread	0.21
Fruit	0.07
Nuts	1.47
Legumes	0.96
Fish	0.59
Eggs	0.80
Milk/dairy	0.65
Milk/dairy (fat-free)	0.65
Red meat	0.72
Processed meat	0.66
White meat	0.60
Sugar sweetened beverages	0.47
Added oils	0.60

Total life expectancy change (difference between comparison and intervention diet)

Life expectancy (linked with comparison diet)

Expected years left: 62.9 Total: 82.9 Reference from birth: 81.2 Age: reference from age: 82.9

Life expectancy (linked with intervention diet)

Expected years left: 69.4 Total: 89.4 Reference from birth: 81.2 Age: reference from age: 82.9

Years gained/lost for prolonged change 6.5 6.4; 6.6

Comparison diet (e.g. typical western diet)

Whole grains** (fresh weight): 80

Fish** (before): 80

Processed meat** (before): 80

Nuts** (before): 0

Red meat** (before): 100

Legumes** (before): 0

Milk/dairy** (before): 300

Vegetables** (before): 250

Fruit** (before): 220

Sugar sweetened beverage** (before): 900

Refined grains** (before): 190

Eggs (before): 80

White meat** (before): 70

Added oils (before): 25

Intervention diet (e.g. feasibility-approach diet)

Whole grains** (fresh weight): 125

Fish** (after): 100

Processed meat** (after): 25

Nuts** (after): 25

Red meat** (after): 80

Legumes** (after): 100

Milk/dairy** (after): 250

Vegetables** (after): 325

Fruit** (after): 300

Sugar sweetened beverage** (after): 250

Refined grains** (after): 100

Eggs (after): 25

White meat** (after): 80

Added oils (after): 25

Overall NutriGrade meta-evidence quality is 6.4 (moderate). Estimated total energy 7776 kJ/day; 1859 kcal/day. NutriGrade meta-evidence quality score and estimated energy intake in intervention diet

n diet (e.g. typical western diet)

Whole grains*** (fresh weight before):



Fish** (before):



Processed meat** (before):



Nuts** (before):



Red meat** (before):



Legumes** (before):



0 100 200 300 400 500 600 700 800

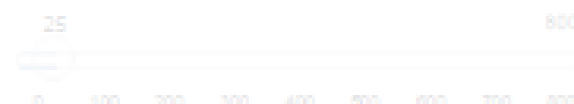
Whole grains*** (fresh weight, after):



Fish** (after):



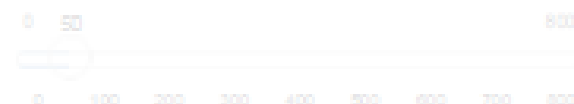
Processed meat** (after):



Nuts** (after):



Red meat** (after):



Legumes** (after):



0 100 200 300 400 500 600 700 800

diet (e.g. feasibility-approach diet)

Overall NutriGrade meta-evidence quality is 6.4 (moderate). Estimated total energy 7775 kJ/day (1858 kcal/day).

NutriGrade meta-evidence c

Vegetables* (before):

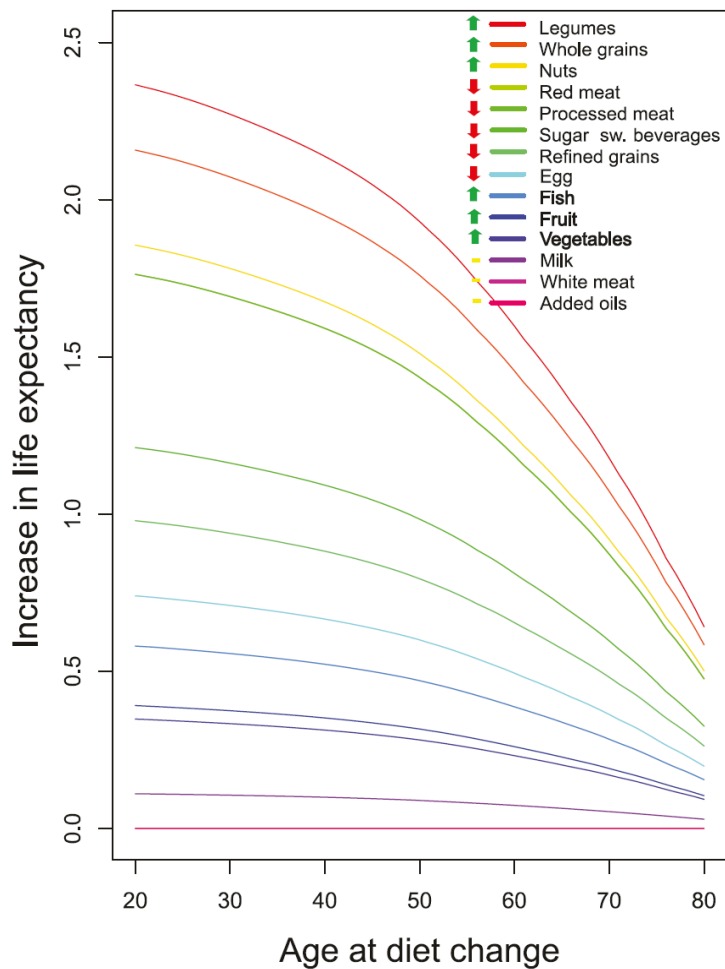
Vegetables* (after):

Int

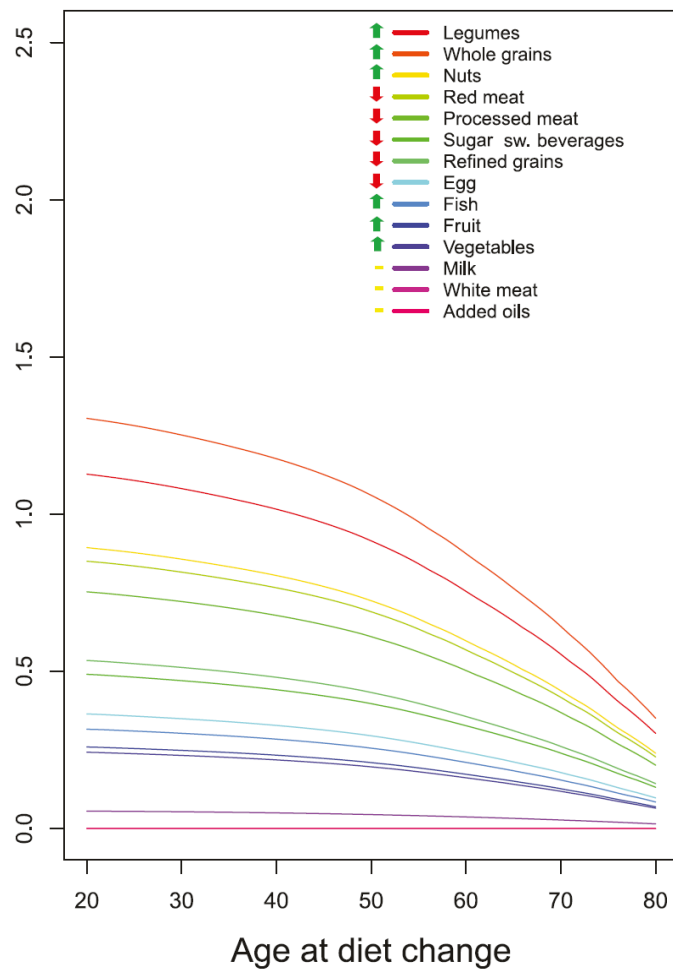
Region	Age	Typical Western		Feasibility approach				Optimized			
		Male	Female	Male	Gain	Female	Gain	Male	Gain	Female	Gain
		LE	LE	LE	Gain	LE	Gain	LE	Gain	LE	Gain
United States	20	57.8	62.5	65.1	7.3	68.7	6.2	70.8	13.0	73.3	10.7
	40	39.4	43.3	46.0	6.5	49.0	5.7	51.1	11.7	53.3	10.0
	60	22.4	25.3	27.2	4.8	29.9	4.5	31.2	8.8	33.3	8.0
	80	9.0	10.3	10.9	1.9	12.3	2.0	12.4	3.4	13.7	3.4
China	20	40.7	41.8	63.7	7.0	67.7	5.9	69.6	12.0	72.4	10.0
	40	37.6	42.2	44.1	6.4	47.8	5.6	49.7	12.0	52.4	10.2
	60	20.1	23.5	25.0	4.9	28.2	4.7	29.4	9.3	32.1	8.6
	80	7.4	8.6	9.1	1.7	10.5	1.9	10.5	3.1	12.0	3.4
Europe	20	56.3	62.9	63.8	7.6	68.8	5.9	69.9	13.7	73.3	10.4
	40	37.7	43.4	44.5	6.8	49.0	5.5	50.0	12.3	53.2	9.8
	60	21.0	25.1	25.9	4.9	29.6	4.5	30.0	9.1	33.2	8.1
	80	8.4	9.8	10.3	1.8	11.7	2.0	11.7	3.3	13.2	3.5

Gevinster av matgrupper

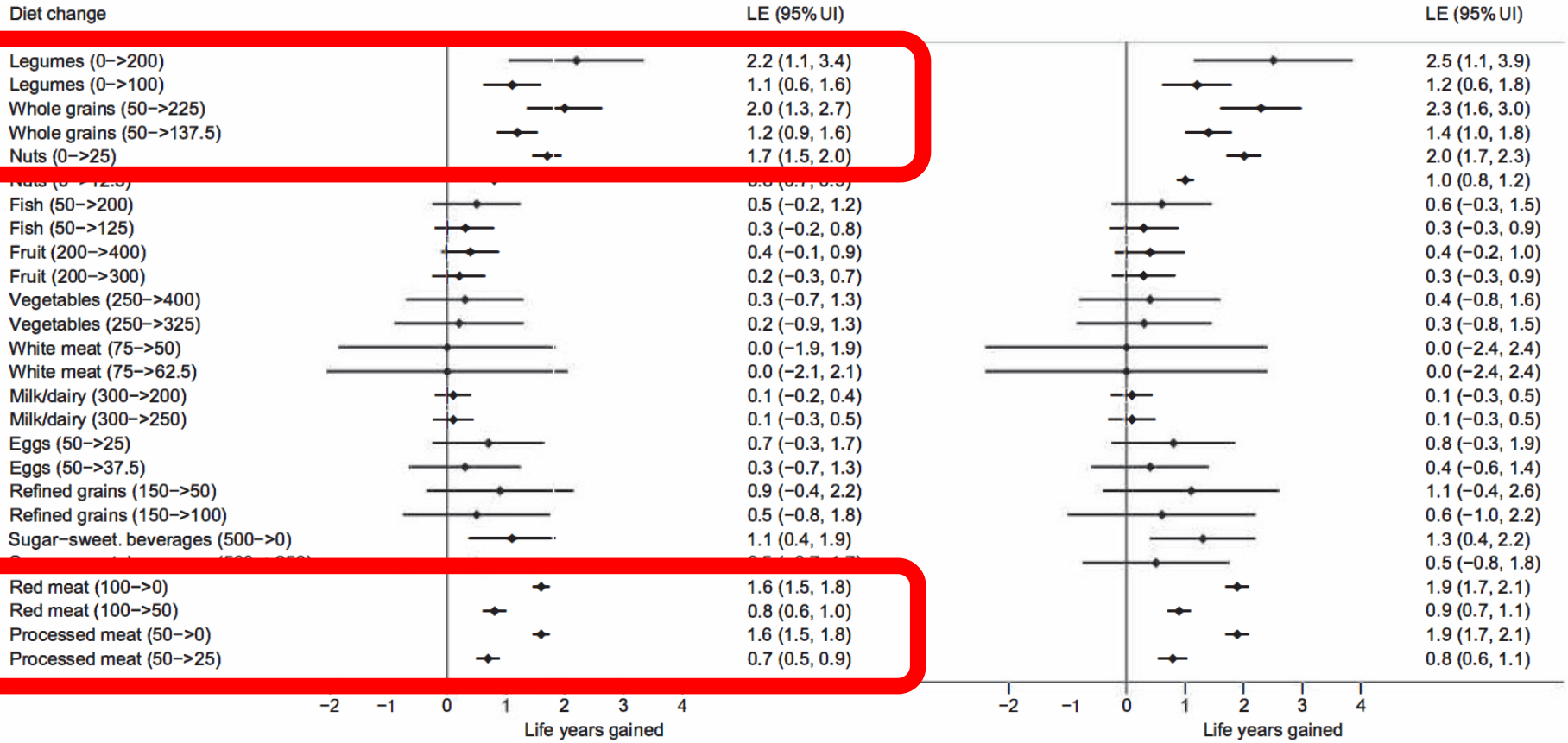
Optimal diet



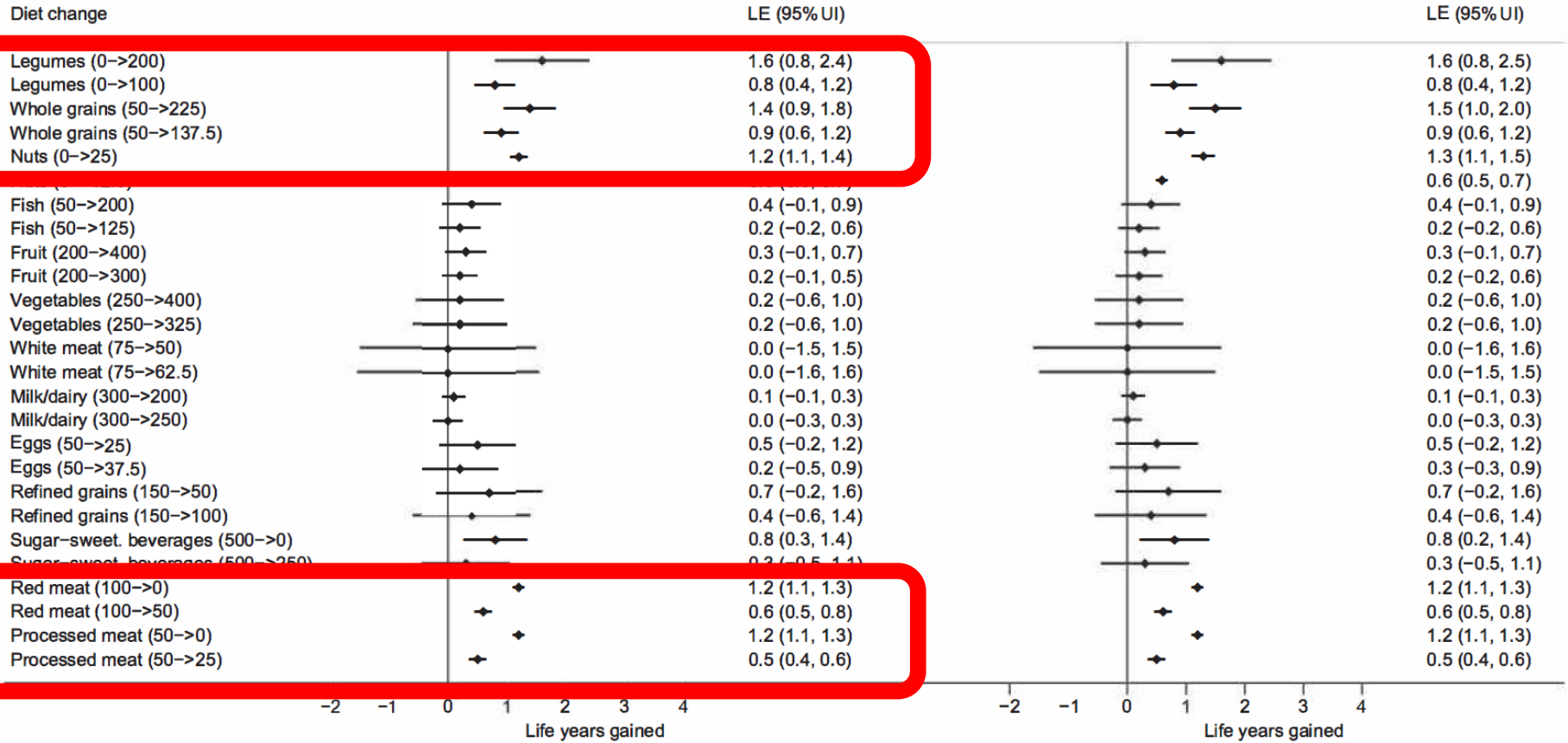
Feasible diet



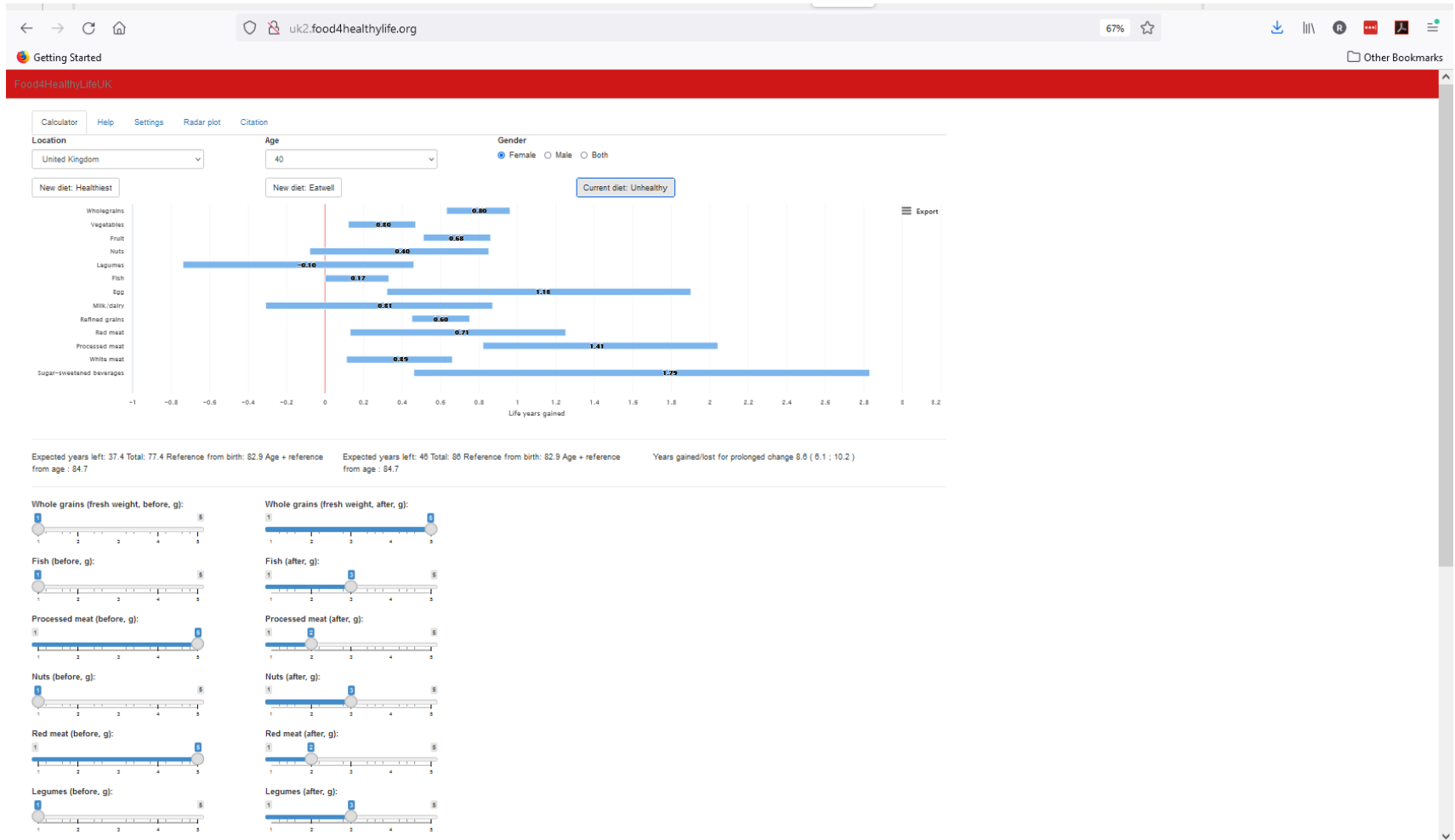
Estimerte leveårsgevinst for 20-år gammel kvinne fra USA med typisk vestlig kosthold til gjennomførbart eller optimalisert kosthold



Estimerte leveårsgevinst for 60-år gammel kvinne fra USA med typisk vestlig kosthold til gjennomførbart eller optimalisert kosthold



UK tilpasning



UK tilpasning

LifeUK

Help

Settings

Radar plot

Citation

Life years gained per food group

With lower and upper uncertainty limits



uk2.food4healthylife.org

67% ☆

Getting Started

Food4HealthyLifeUK

Calculator Help Settings Radar plot Citation

Model adjustment (conservative vs. full):



Time to full effect (years):



Adjusted data

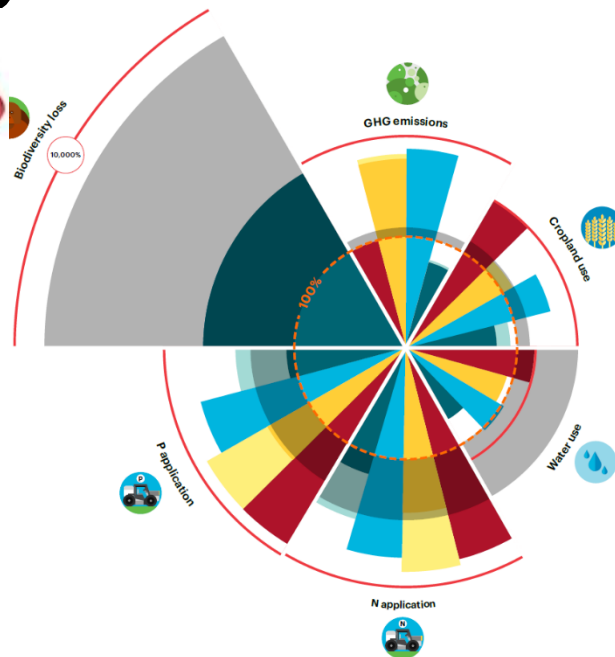
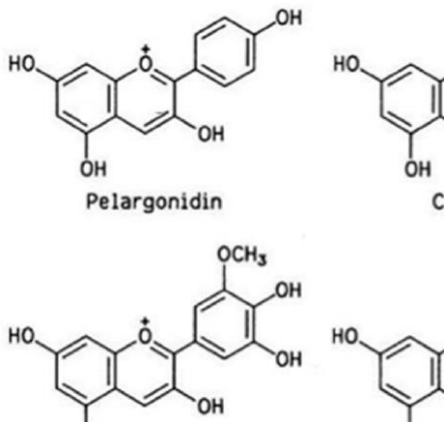
Core
Extended

Standard model

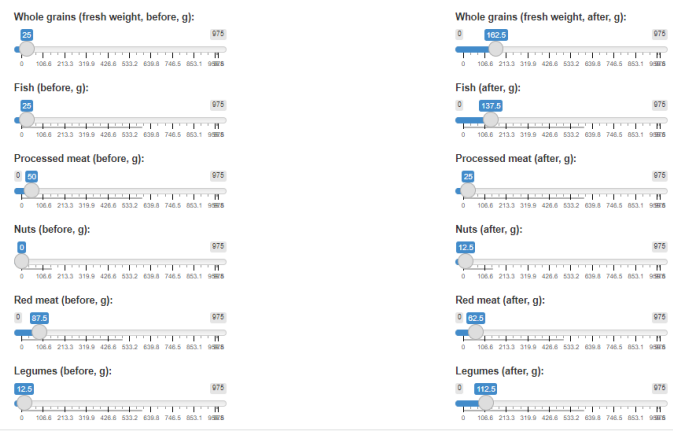
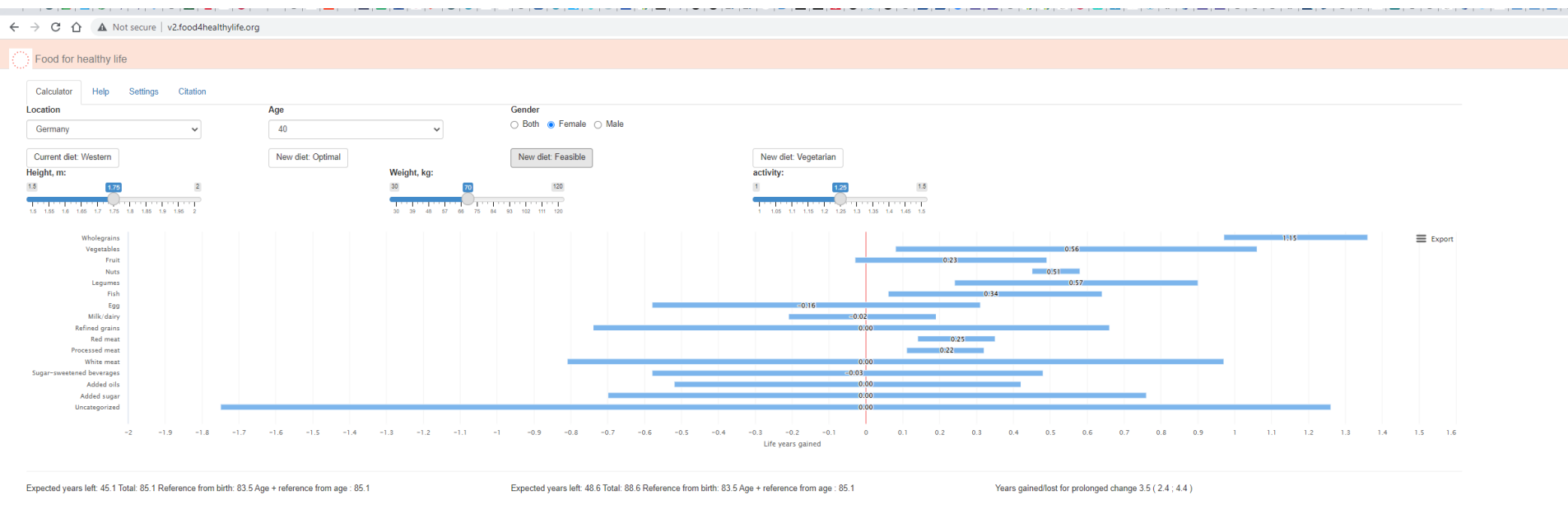
Extensive model

Download

Neste steg



Food4HealthyLife 2.0



Hva ser kontrollerte studier om ulike metabolske utfall?

- Nøtter, belgvekster, fullkornsprodukter, frukt og grønnsaker kommer best ut også her

Food group relativ ranking for each individual primary and secondary outcome and summary ranking across outcomes¹

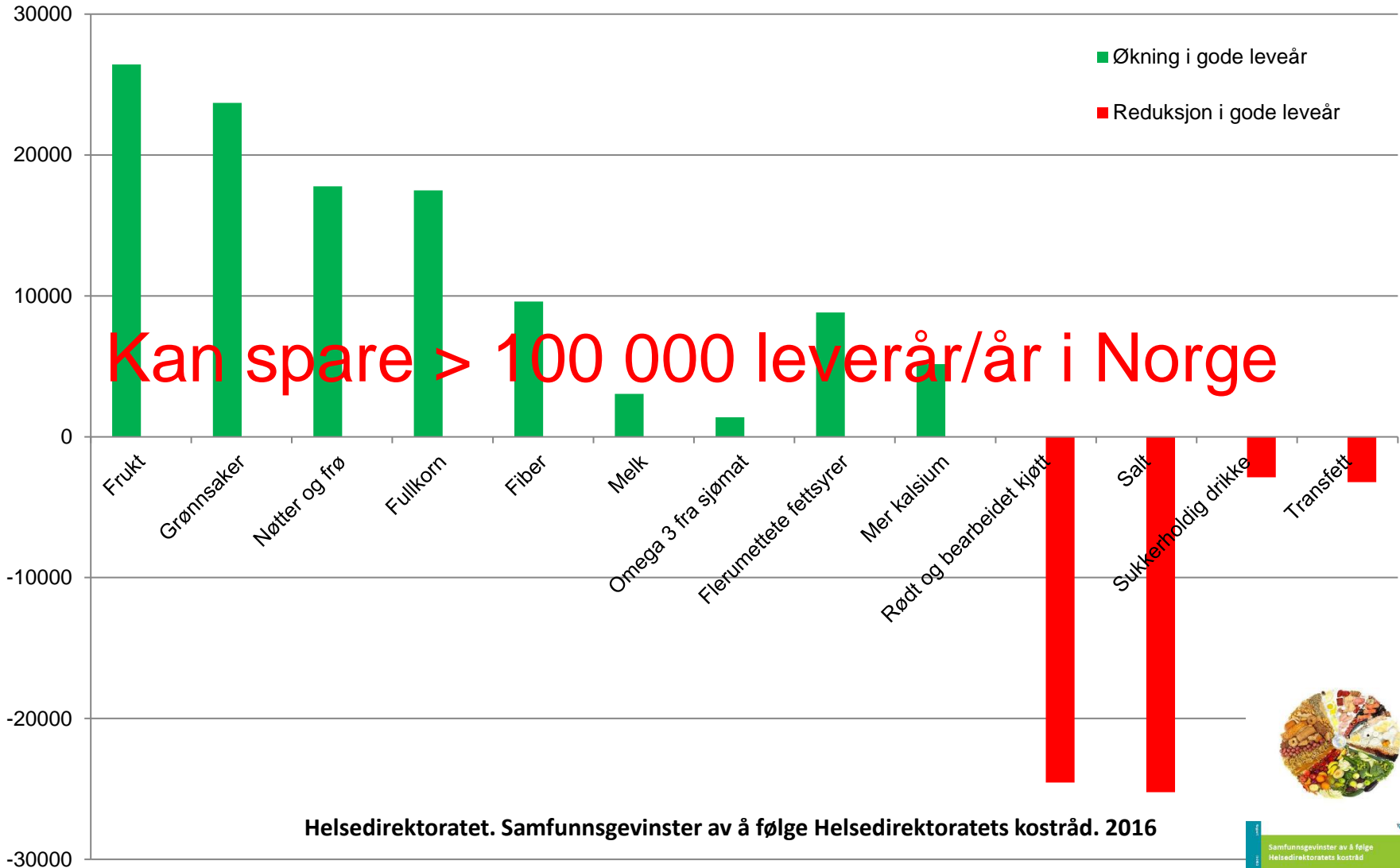
Food group	Primary outcomes				Secondary outcomes						Summary ranking
	LDL-C	TG	TC	HDL-C	FG	HbA1c	HOMA-IR	SBP	DBP	CRP	All outcomes combined
Nuts	93	78	92	62	84	37	67	32	42	76	66
Legumes	85	58	91	12	51	61	76	69	70	45	62
Whole grains	70	53	71	44	57	76	86	44	57	61	62
Refined grains	42	25	42	49	74	70	56	14	30	36	44
Fruits and vegetables	63	35	58	49	20	52	43	91	54	26	49
Eggs	40	16	30	58	NA	NA	6	41	41	80	39
Dairy	33	44	33	49	32	NA	21	NA	NA	48	37
Fish	23	97	23	91	NA	NA	47	62	33	32	51
Red meat	20	72	28	57	24	5	NA	48	74	46	42
SSBs	30	23	32	30	28	NA	NA	NA	NA	NA	29

¹The values represent the SUCRA for all outcomes (e.g. nuts were ranked as the best food group for reducing LDL cholesterol, SUCRA: 93%; fish was ranked as the best food group for reducing triacylglycerol, SUCRA: 97%). CRP, C-reactive protein; DBP, diastolic blood pressure; FG, fasting glucose; HbA1c, glycated hemoglobin; HDL-C, HDL cholesterol; LDL-C, LDL cholesterol NA, not applicable; SBP, systolic blood pressure; SSB, sugar-sweetened beverage; SUCRA, surface under the cumulative ranking curves; TC, total cholesterol; TG, triacylglycerols.

Hvordan matcher dette mot de norske kostrådene?

- Råd 1: Det anbefales et kosthold som **hovedsakelig er plantebasert** og som inneholder **mye grønnsaker, frukt, bær, fullkorn og fisk**, og **begrensede mengder rødt kjøtt, salt, tilsatt sukker** og energirike matvarer.
- Råd 2: Det anbefales at man **oppretholder balanse mellom energiinntak og energiforbruk.**
- Råd 3: Spis **minst 5 porsjoner grønnsaker, frukt og bær** hver dag
- Råd 4: Spis **minst 4 porsjoner fullkornsprodukter** hver dag
- Råd 5: Spis **fisk** tilsvarende **2-3** middagsporsjoner **i uken**
- Råd 6: Det anbefales at magre meieriprodukter inngår i det daglige kostholdet
- Råd 7: Det anbefales at man velger magert kjøtt og magre kjøttprodukter og **begrenser inntaket av rødt kjøtt og bearbeidet kjøtt**
- Råd 8: Det anbefales at man velger matoljer, flytende margarin eller myk margarin
- Råd 9: **Vann** anbefales **som drikke**
- Råd 10: **Begrens** inntaket av **tilsatt sukker**
- Råd 11: **Begrens** inntaket av **salt**
- Råd 12: Kosttilskudd kan være nødvendig for å sikre næringsstoffinntaket for noen grupper i befolkningen.
- Råd 13: Det anbefales at alle daglig er i fysisk aktivitet i minst 30 minutter.»

Endring i gode leveår (Norge)



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Nine healthy lifestyle habits shared by people who've lived the longest.

Secrets OF THE Blue Zones

Loma Linda
CALIFORNIA
U.S.A.

Life expectancy
is more than

10
years longer
than for average Americans

Nicoya Peninsula
COSTA RICA

Men over 60 are

7x
more likely
to reach age 100*

Sardinia
ITALY

Home to nearly

10x
more centenarians
than the US Per capita

Ikaria
GREECE

1 in 3 Ikarians
live to be at least

90
years old

Okinawa
JAPAN

Life expectancy

85.3
years

Sykdomsforebyggende kosthold

«i et nøtteskall»





Mat det er lurt å
begrense



Andel med lavt inntak

	Thiamin		Ribovlavin		Niacin		Vitamin B6		Folate		Vitamin B12		Vitamin C	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1-3 years	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
4-8 years	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
9-13 years	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	17%	23%
14-18 years	2%	11%	2%	4%	2%	2%	2%	10%	6%	20%	2%	7%	39%	35%
19-30 years	3%	7%	3%	3%	2%	2%	2%	9%	2%	12%	2%	4%	42%	44%
31-50 years	2%	8%	2%	2%	2%	2%	2%	12%	4%	17%	2%	3%	46%	46%
51-70 years	2%	8%	2%	2%	2%	2%	11%	25%	6%	18%	2%	6%	47%	35%
71+ years													42%	29%
Pregnant w														

- Mikronæringsstoffer hvor det er særlig hyppig med utilstrekkelig inntak er merket med røde linjer
- [NORKOST3](#) viste også at mer enn halvparten av nordmenn også inntok mindre enn anbefalt av vitamin A, D, folat og mer enn en fjerdedel også vitamin C, E, kalsium, magnesium og kalium
- Med et godt kosthold, kan imidlertid de fleste av disse dekkes godt uten tilskudd – men mange vil ha behov for tilskudd av vitamin D vinterhalvåret

	Male		Female		Male		Female		Male		Female	
	2%	2%	76%	78%	73%	83%	37%	35%	2%	3%	92%	97%
1-3 years	2%	2%	76%	78%	73%	83%	37%	35%	2%	3%	92%	97%
4-8 years	2%	3%	92%	97%	67%	68%	67%	75%	15%	24%	91%	98%
9-13 years	15%	24%	91%	98%	87%	93%	67%	66%	49%	53%	86%	98%
14-18 years	49%	53%	86%	98%	98%	98%	72%	81%	57%	53%	92%	98%
19-30 years	57%	53%	92%	98%	86%	98%	85%	71%	49%	45%	91%	98%
31-50 years	49%	45%	91%	98%	82%	94%	72%	62%	49%	37%	91%	97%
51-70 years	49%	37%	91%	97%	87%	91%	68%	47%	42%	37%	93%	98%
71+ years	42%	37%	93%	98%	90%	98%	81%	61%				
Pregnant women		26%		90%		94%		46%				

Proportion of inadequate intakes of minerals, water and fat-soluble vitamins by age, gender and life stage categories based on percentage of the US population with intakes below the Estimated Average Requirement (EAR) (protein) or adequate intake (fiber, 18:3 PUFA). From National Health and Nutrition Examination Survey (NHANES) 2007–2010).

Mat & kosthold har ulike aspekter

- Miljø- og klimaaspekter
- Hensyn for andre arter
- Global matsikkerhet
- Helseaspekter



Konklusjon

- Gunstige kostholdsendringer over tid kan gi store gevinster i form av reduksjon i sykdom og økning i gode leveår for kvinner og menn i ulike alder
- Også gjennomførbare endringer gir stor gevinst
- Største gevinster ser en ved å øke mengden fullkorn, belgvekster, og nøtter samt redusere rødt og bearbeidet kjøtt samt sukret drikke og sukkerrik mat
- Gevinster er større jo tidligere en starter, men store også dersom en starter senere i livet
- Food4HealthyLife (<http://food4healthylife.org/>) kan hjelpe en i å prioritere hvilke endringer som vil ha stor og mindre stor betydning

Spørsmål og kommentarer

