

PUTTING NUTRITION AT THE HEART OF SUSTAINABLE DIETS



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2010

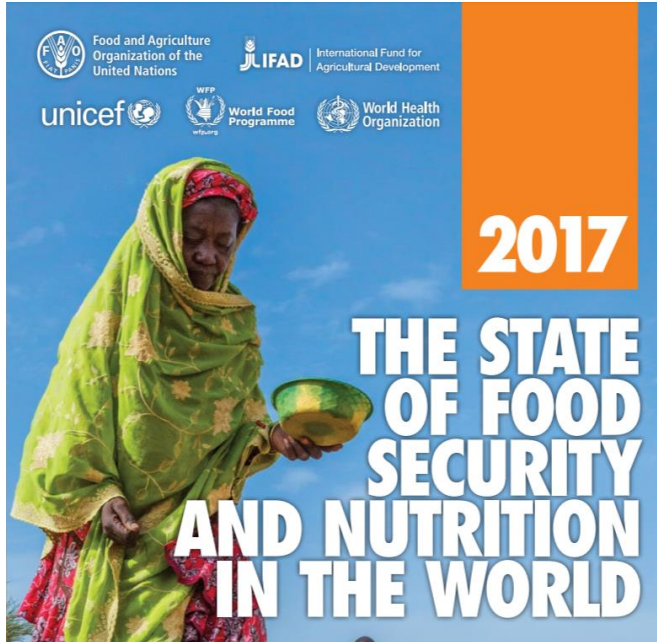


What is a sustainable diet?

How can we achieve a dietary pattern that provides us with the many nutrients we need for health, in appropriate amounts, but that is also equitable, affordable and sustainable? And, how do we produce more food with fewer resources, such as land, water and fuel, to feed the growing global population?



Food security at different levels



Age/gender



Food security
≠
Nutrient security

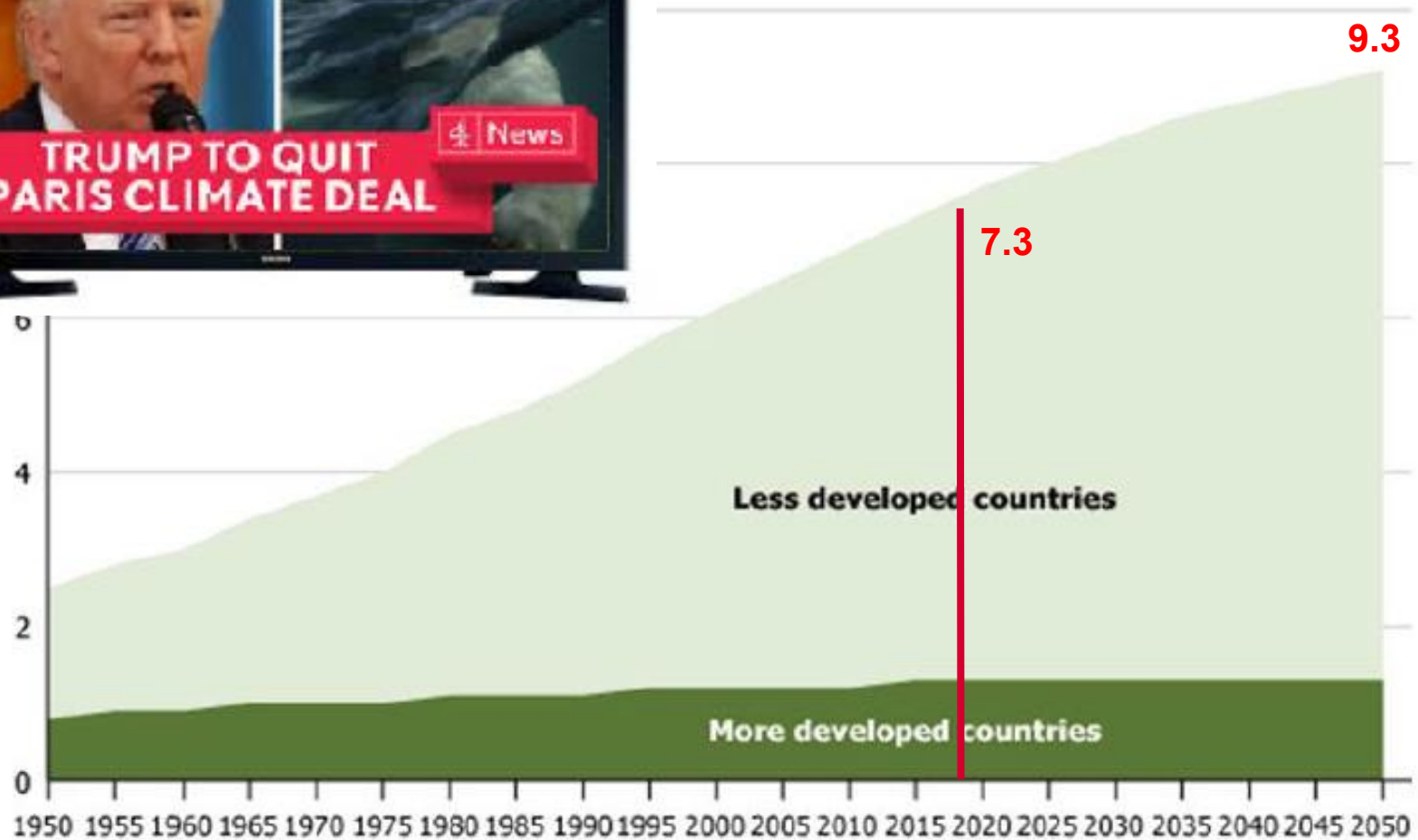


WORLDWIDE FOOD SECURITY

Feeding an increasing world population



Source: United Nations Population Division, *World Population Prospects, The 2008 Revision*



The New Nordic Diet is an effective tool in environmental protection: it reduces the associated socioeconomic cost of diets¹⁻³

Henrik Saxe

ABSTRACT

Background: The New Nordic Diet (NND) was designed by gastronomic, nutritional, and environmental specialists to be a palatable, healthy, and sustainable diet containing 35% less meat than the Average Danish Diet (ADD); more whole-grain products, nuts, fruit, and vegetables; locally grown food in season; and >75% organic produce. The environmental impact of the 2 diets was compared based on 16 impact categories, which were monetized to evaluate the overall socioeconomic effect of a shift from an ADD to an NND.

Objective: The objective was to determine whether this diet shift can be an effective tool in environmental protection.

Design: The 3 features by which this diet shift affects the environment—composition, transport (import), and type of production (organic/conventional)—were separately investigated by using life cycle assessment.

Results: When both diet composition and transport were taken into account, the NND reduced the environmental impact relative to the ADD measured by all 16 impact categories. The socioeconomic savings related to this diet shift was €266/person per year, or 32% of the overall environmental cost of the ADD. When the actual 8% content of organic produce in the ADD and the 84% content of

we obviously have to eat and drink. However, what we choose to eat and drink greatly affects the environmental impact on ecosystems and human well-being as well as resource expenditure. The choice of diet is personal, although it is often associated with ethnicity, social status, habit, age, and sex and is influenced by policy and economics (3).

Meat, fish, and dairy product production typically causes greater environmental impacts than the production of fruit and vegetables (4, 5). Reducing the content of meat and dairy products and increasing the content of fruit and vegetables in the typical Western diet would decrease the environmental impact of eating and drinking (6).

This study is part of the Danish multidisciplinary OPUS⁴ (Optimal well-being, development and health for Danish children through a healthy New Nordic Diet) project, which developed, tested, and disseminated a New Nordic Diet (NND) aimed at being simultaneously palatable, healthy, and environmentally sustainable (7, 8). The NND contains 35% less meat and more locally grown vegetables, including legumes and roots, whole grains, nuts, fish, and fruit and berries in season. The focus on palatability helps disseminate the NND to a broad range of consumers.

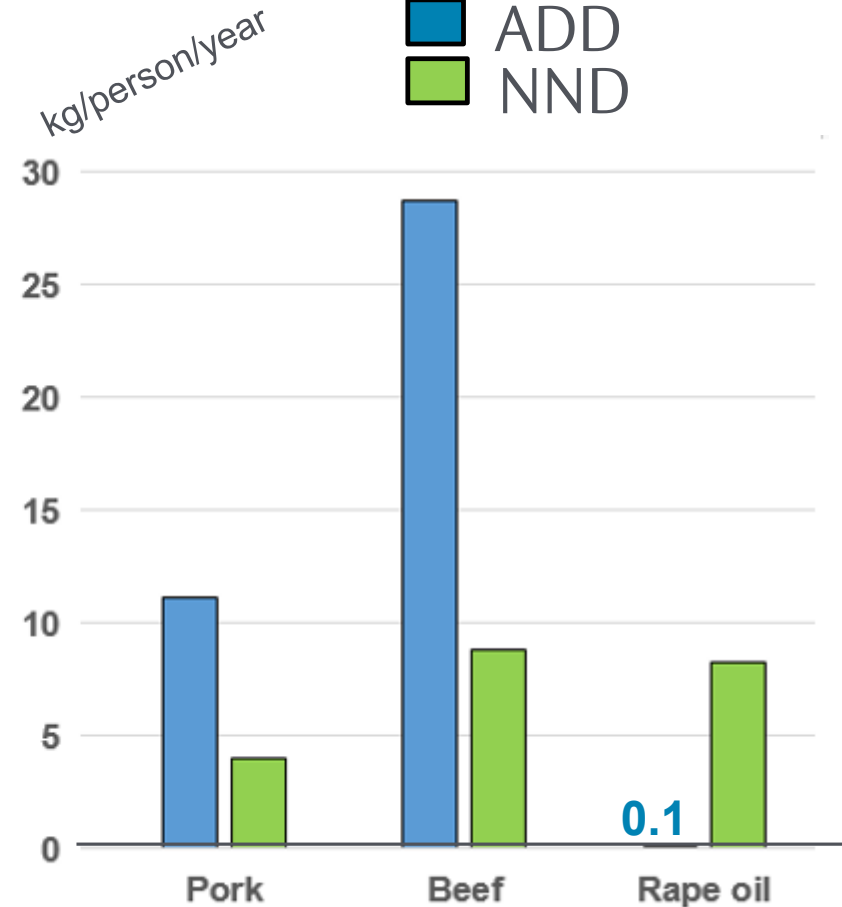
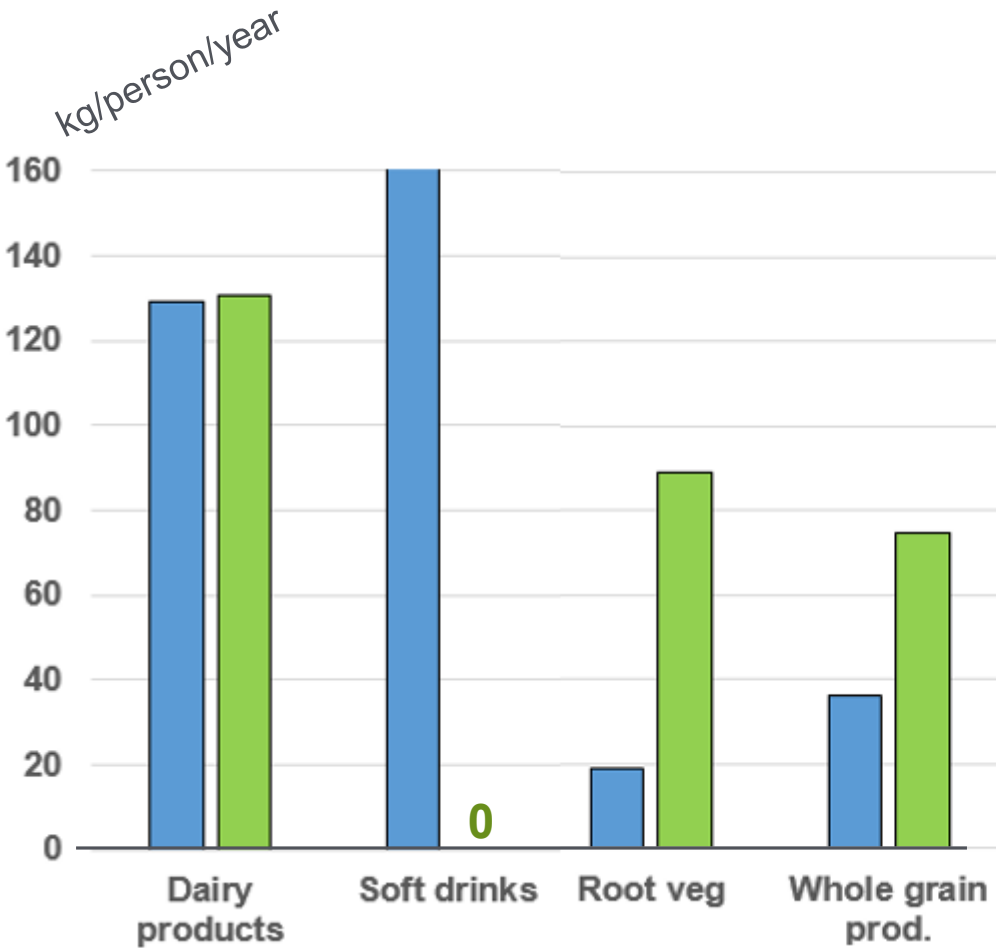


New Nordic (NND) vs. average Danish diet (ADD)

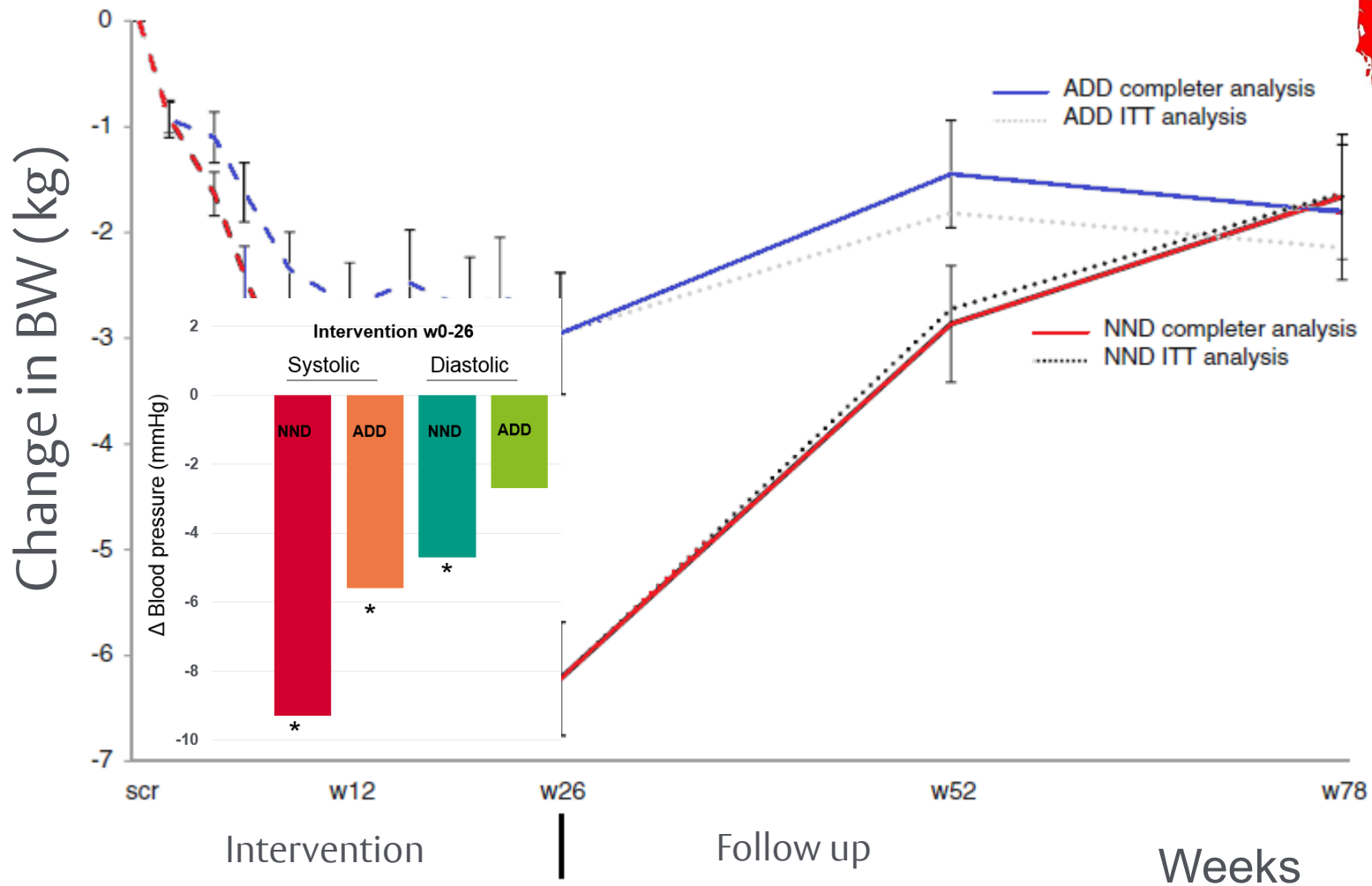
Saxe, 2014



ADD
NND



Changes in BW on new Nordic (NND) and average Danish diet (ADD)



Substantial and vulnerable sections of the UK population do not have food security now!



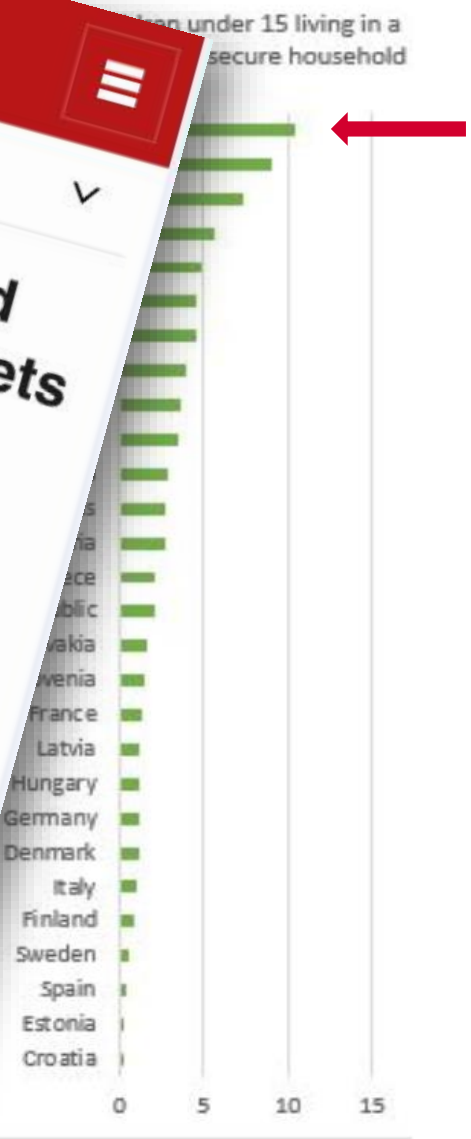
NEWS

Family & Education

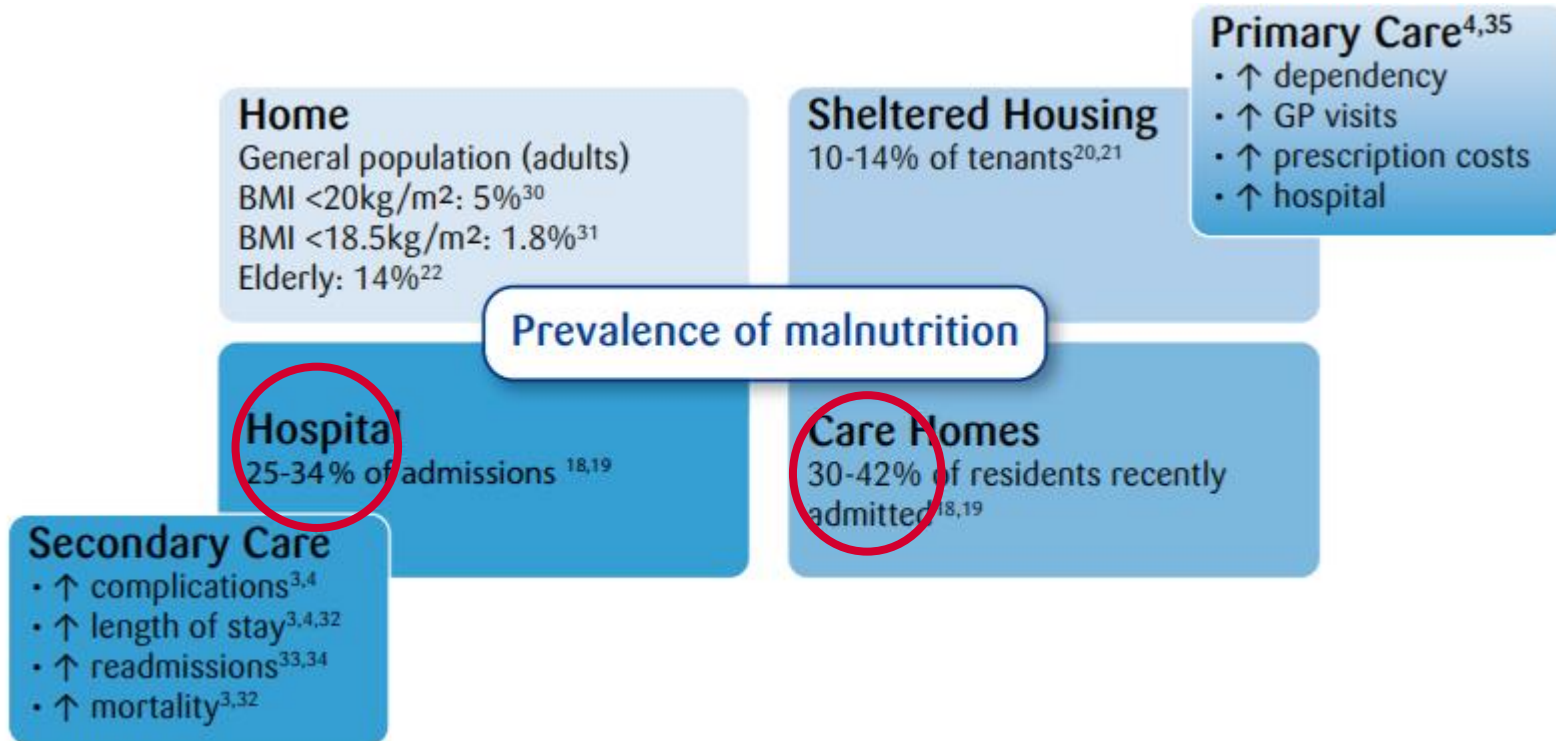
Child poverty: Pale and hungry pupils 'fill pockets with school food'

By Hannah Richardson
BBC News Education Reporter in Brighton


© 2 April 2018



Prevalence of malnutrition in UK elderly



Annual cost to UK health services £13-19 billion



appg Hunger 2018

Hidden hunger and malnutrition in the elderly

Brotherton et al., 2012

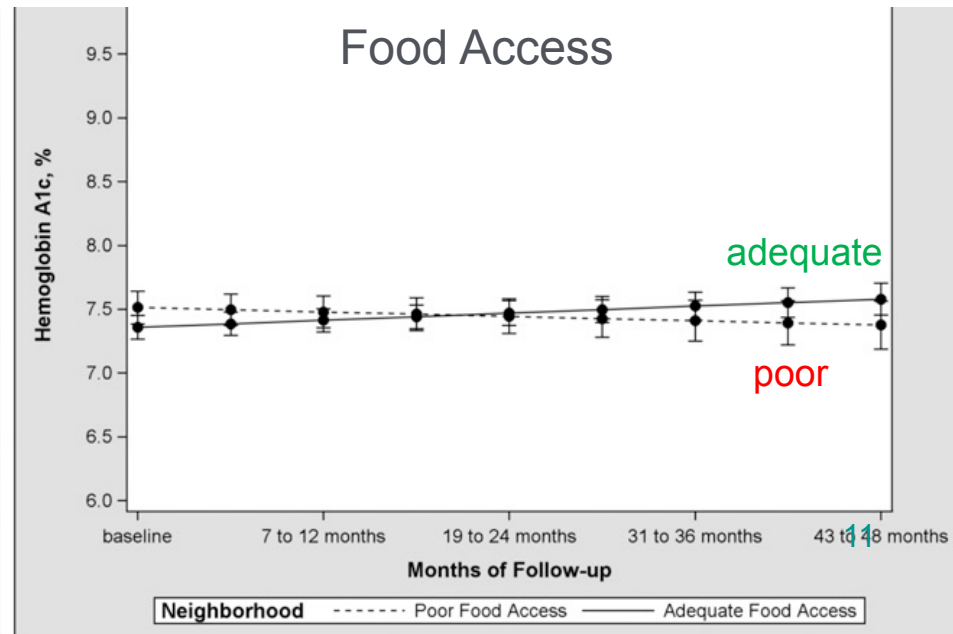




Food Insecurity, Food “Deserts,” and Glycemic Control in Patients With Diabetes: A Longitudinal Analysis

Seth A. Berkowitz,^{1,2,3} Andrew J. Karter,⁴
 Giselle Corbie-Smith,^{5,6}
 Hilary K. Seligman,^{7,8} Sarah A. Ackroyd,⁹
 Lily S. Barnard,¹⁰ Steven J. Atlas,^{1,3} and
 Deborah J. Wexler^{2,3}

<https://doi.org/10.2337/dc17-1981>



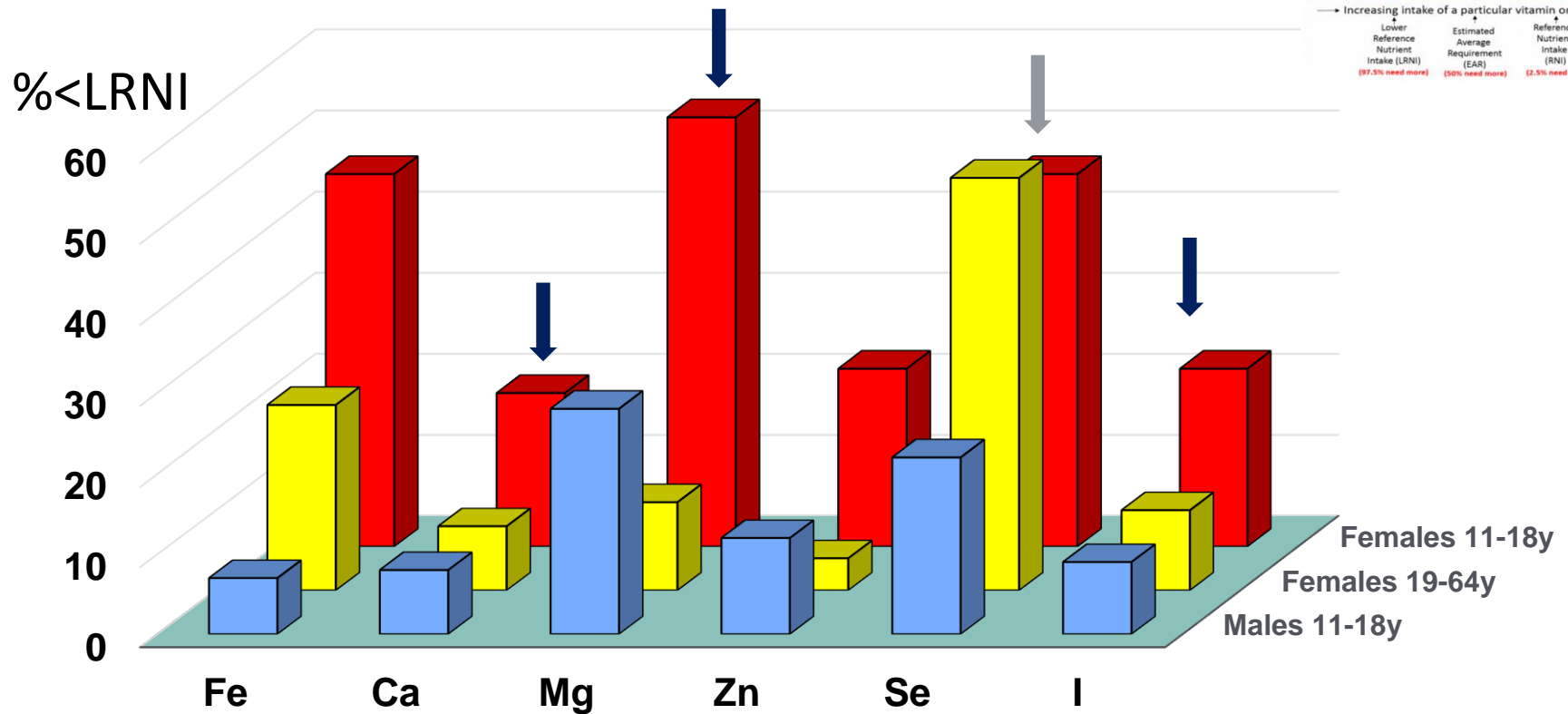
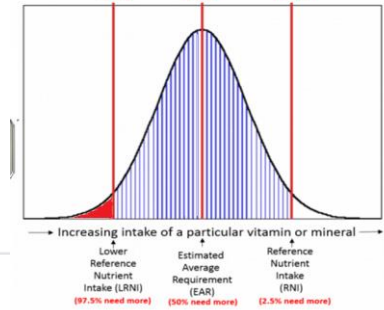


UK NUTRIENT INSECURITY



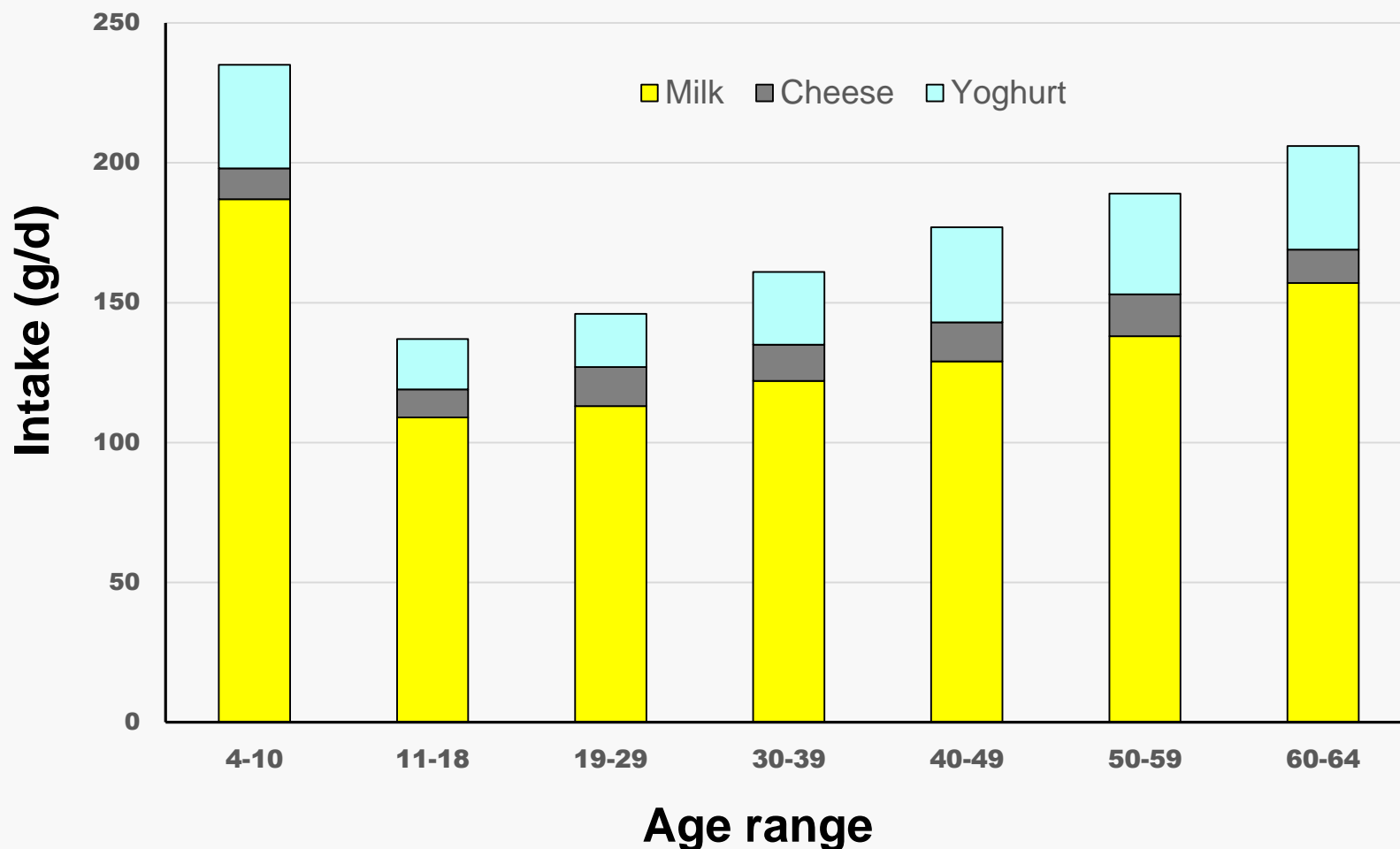
Micronutrient status of UK children and adult females

% of population whose needs are met



Dairy food intake in UK females

NDNS 2014, Y1-4 combined



Bone r

Health

Dairy-free diets warning over risk to bone health

© 12 April 2017 | Health

f t m e Share



GETTY IMAGES

Diets which cut out dairy food could be a "ticking time bomb" for young people's bone health, a charity is warning.

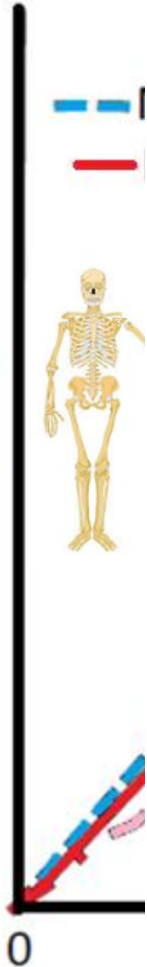
A National Osteoporosis Society survey found a fifth of under-25s are cutting out or reducing dairy in their diet.

It said it was concerned many young adults were putting their health at risk by following eating fads.

Cutting out dairy can be healthy if enough calcium is consumed from other

2016)

Bone Mass

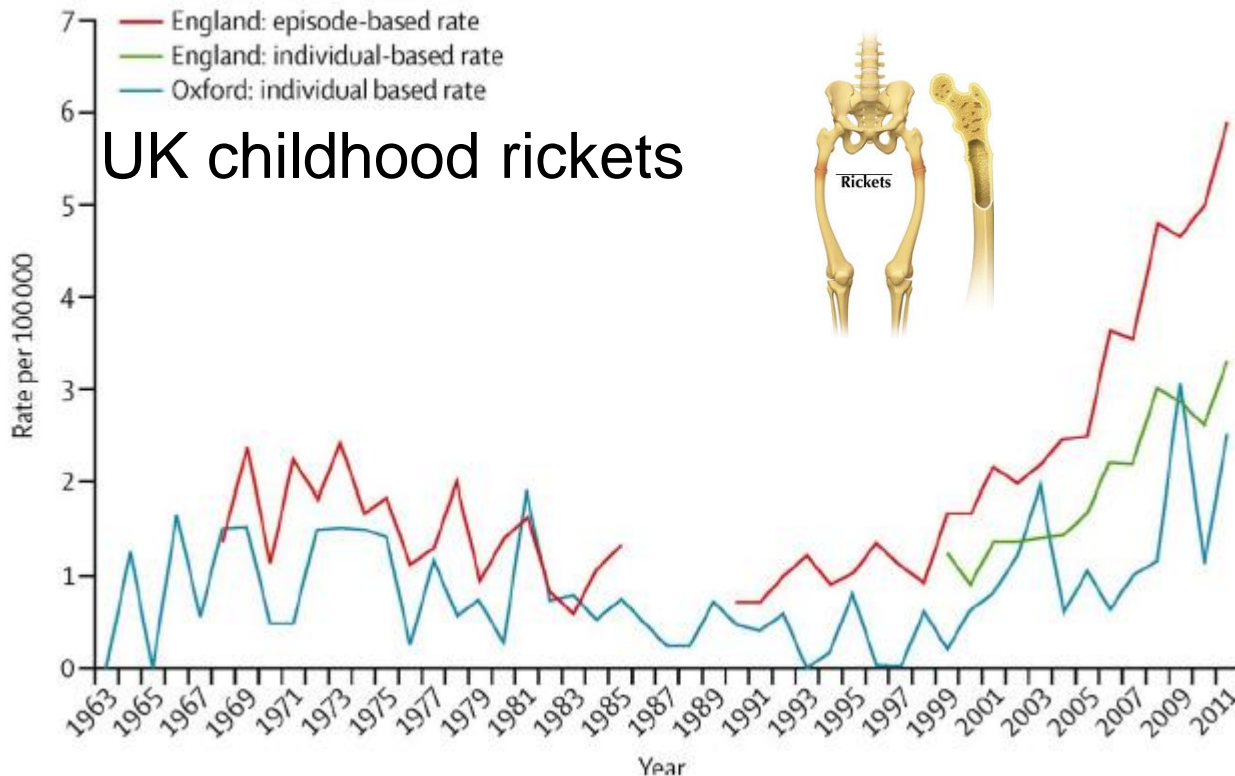


Sub-optimal vitamin D status across Europe

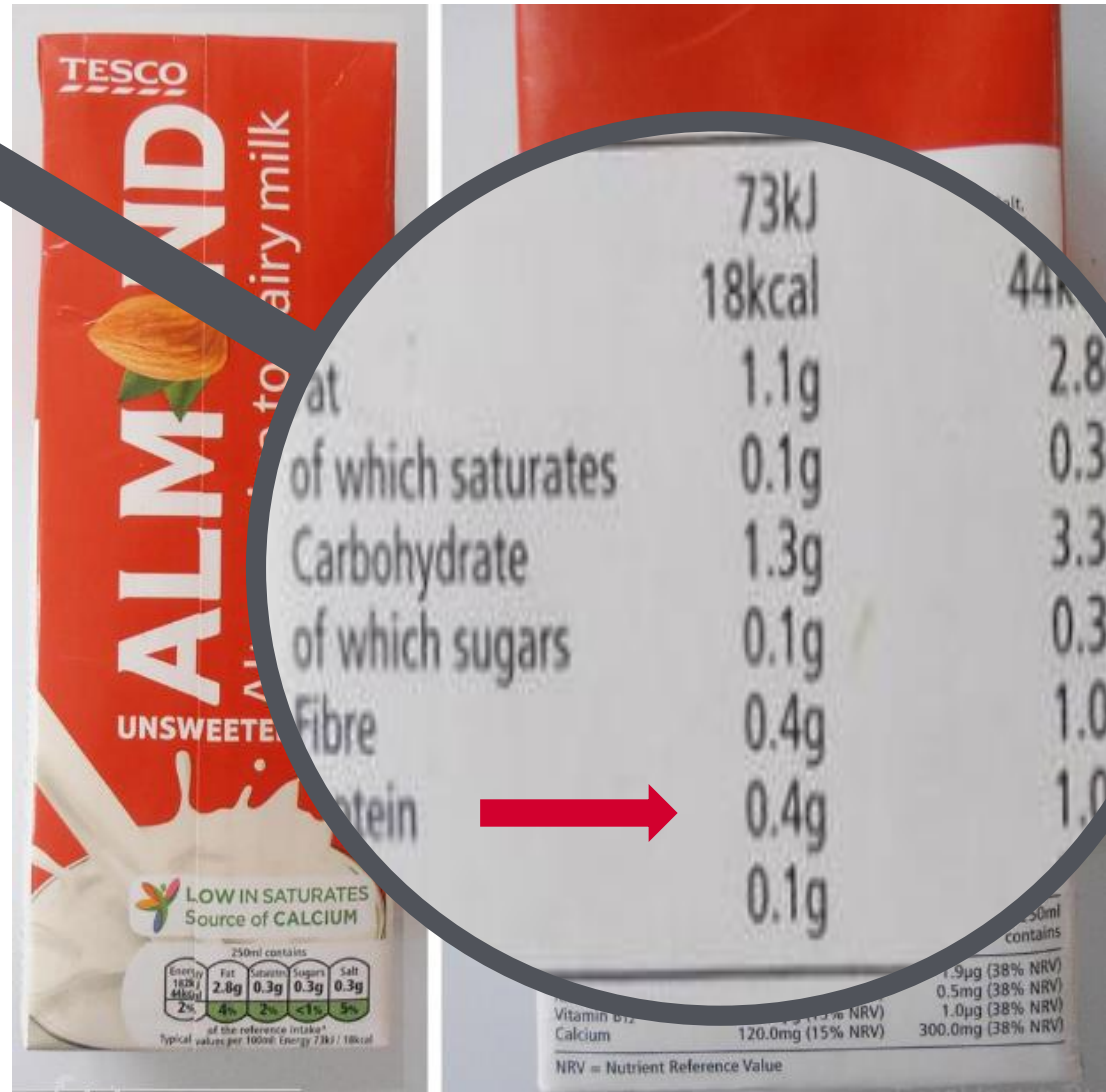
Vitamin D deficiency in Europe: pandemic?^{1,2}

doi: 10.3945/ajcn.115.120873.

Kevin D Cashman,^{3,4*} Kirsten G Dowling,³ Zuzana Škrabáková,³ Marcela Gonzalez-Gross,^{6,7} Jara Valtueña,⁶ Stefaan De Henauw,⁸ Luis Moreno,⁹ Camilla T Damsgaard,¹⁰ Kim F Michaelsen,¹⁰ Christian Mølgaard,¹⁰ Rolf Jorde,¹¹ Guri Grimnes,¹¹ George Moschonis,¹² Christina Mavrogianni,¹² Yannis Manios,¹² Michael Thamm,¹³ Gert BM Mensink,¹³ Martina Rabenberg,¹³ Markus A Busch,¹³ Lorna Cox,¹⁴ Sarah Meadows,¹⁴ Gail Goldberg,¹⁴ Ann Prentice,¹⁴ Jacqueline M Dekker,¹⁵ Giel Nijpels,¹⁶ Stefan Pilz,¹⁸ Karin M Swart,¹⁵ Natasja M van Schoor,¹⁵ Paul Lips,¹⁷ Christel Lamberg-Allardt,²⁴



Protein quality for bones?



Recent studies of UK iodine status

Recent UK studies have shown sub-optimal status in:

- Women of childbearing age¹⁻³
- Pregnant women⁴⁻⁷



THE LANCET 22nd May 2013

Articles

Effect of inadequate iodine status in UK pregnant women on cognitive outcomes in their children: results from the Avon Longitudinal Study of Parents and Children (ALSPAC)



Sarah C Bath, Colin D Steer, Jean Golding, Pauline Emmett, Margaret P Rayman

J Clin Endocrin Metab. First published ahead of print April 30, 2013 as doi:10.1210/jc.2012-4249

ORIGINAL ARTICLE

Endocrine Care

Mild Iodine Deficiency During Pregnancy Is Associated With Reduced Educational Outcomes in the Offspring: 9-Year Follow-up of the Gestational Iodine Cohort

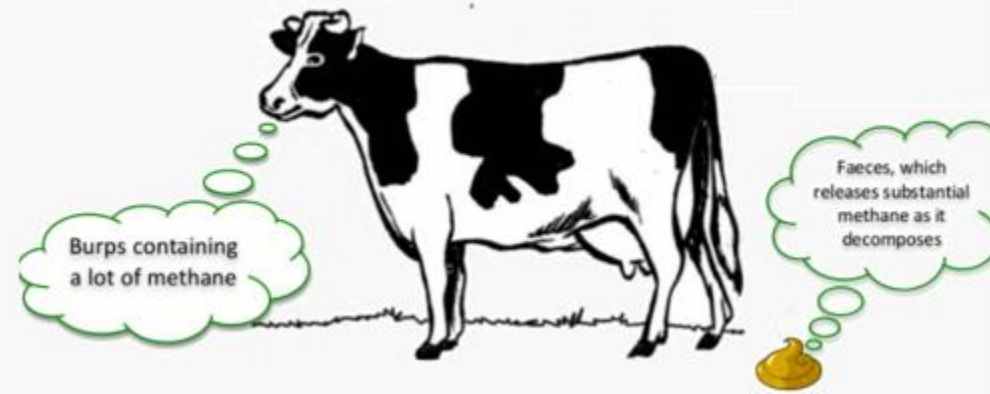
Kristen L. Hynes, Petr Otahal, Ian Hay, and John R. Burgess

Menzies Research Institute Tasmania (K.L.H., P.O.), Faculty of Education (I.H.), and School of Medicine (J.R.B.), University of Tasmania, Sandy Bay, Tasmania 7005, Australia; and Department of Endocrinology (J.R.B.), Royal Hobart Hospital, Hobart, Tasmania 7000, Australia

1. Bath et al. 2008; 2. Rayman et al. 2008; 3. Lar
5. Barnett et al. 2002; 6. Bath et al. 2010; 7. Pear

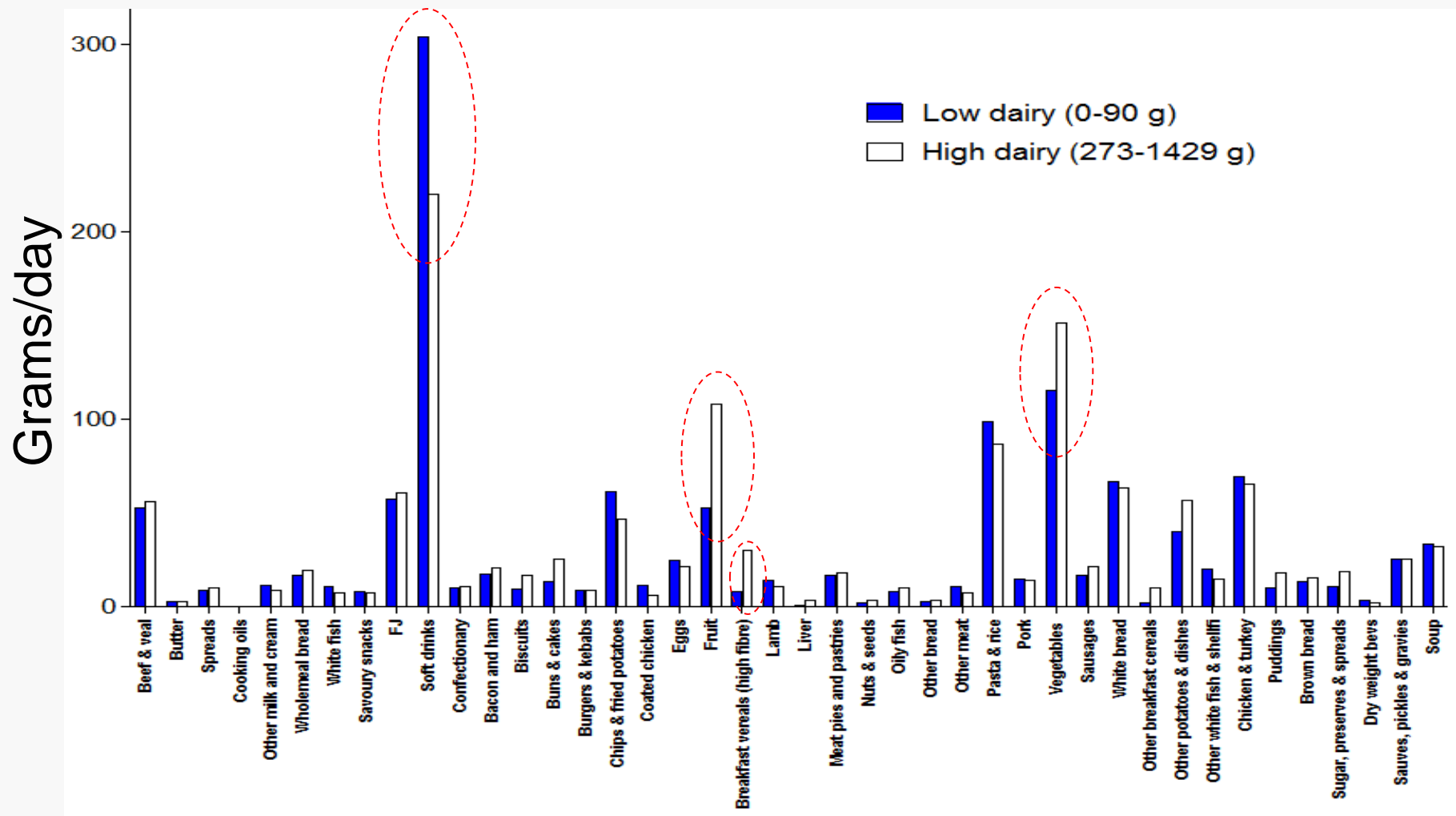


IS MILK/DAIRY TOO ENVIRONMENTALLY COSTLY?



UK dietary pattern by daily intake of dairy portions

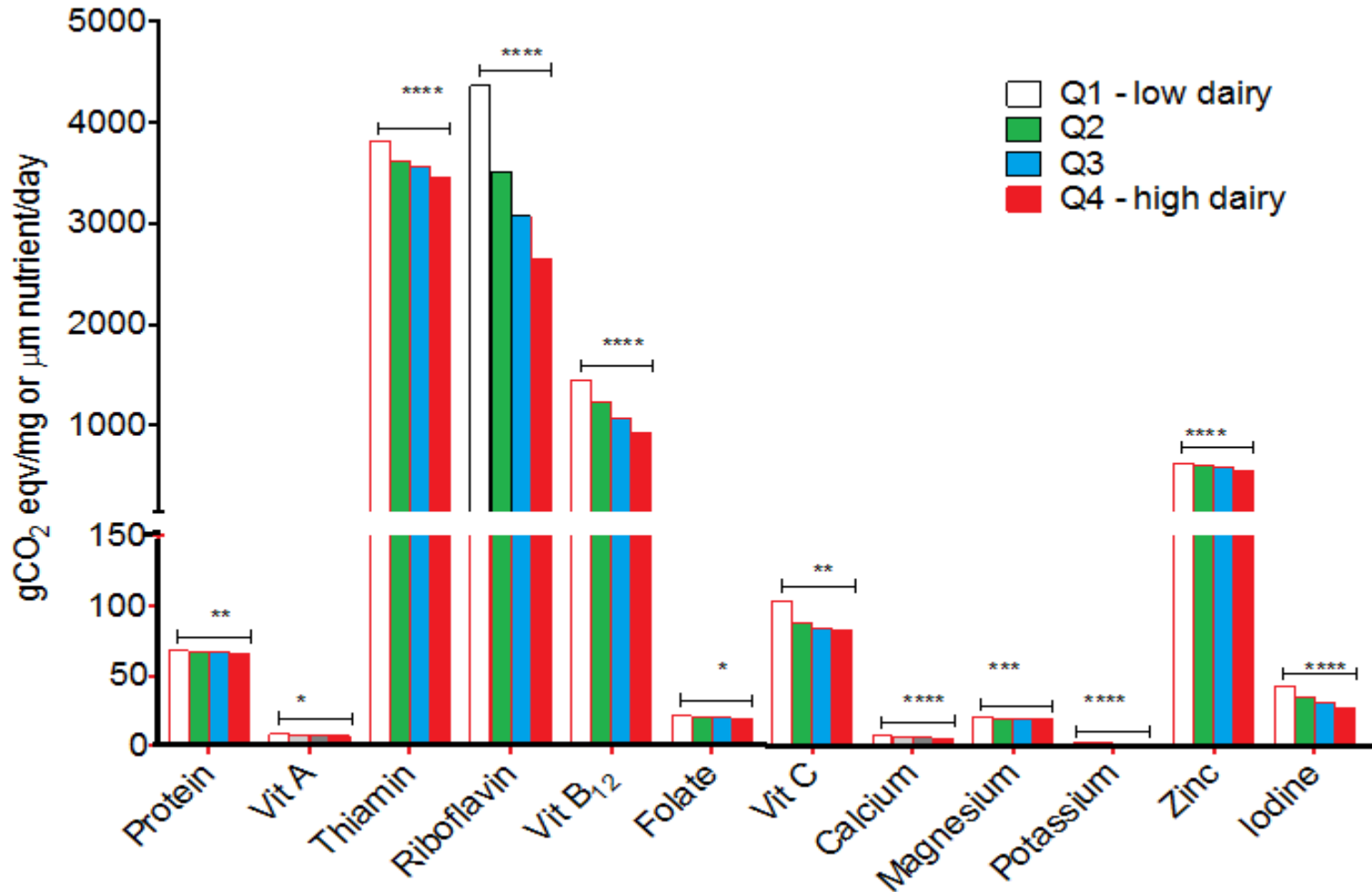
Hobbs et al. under review



Modelling the current male UK adult (19-64 y) diet (NDNS 2014)

Greenhouse gas eq/unit nutrients

Hobbs et al. under review

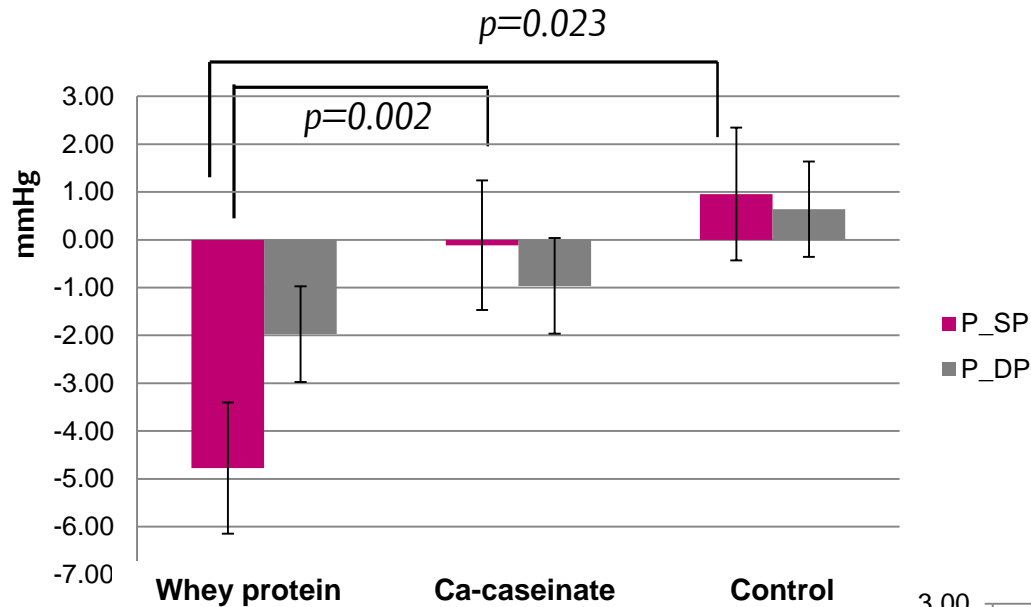


Recent meta-analyses of prospective studies on dairy and cardiometabolic diseases

Dairy	Outcome	RR (95% CI)	Ref
Milk	AC mortality	1.00 (0.93-1.07)	Guo et al., 2017
Milk	CVD	1.01 (0.93-1.10)	Guo et al., 2017
Cheese	CVD	0.98 (0.95-1.00)	Guo et al., 2017
Milk	Stroke	0.93 (0.88-0.98)	De Goede et al., 2016
Cheese /40 g/d	Stroke	0.97 (0.94-1.01)	De Goede et al., 2016
Yoghurt/80g/d	Diabetes	0.86 (0.83-0.90)	Gijsbers et al., 2016

Milk proteins and blood pressure

Peripheral SBP & DBP



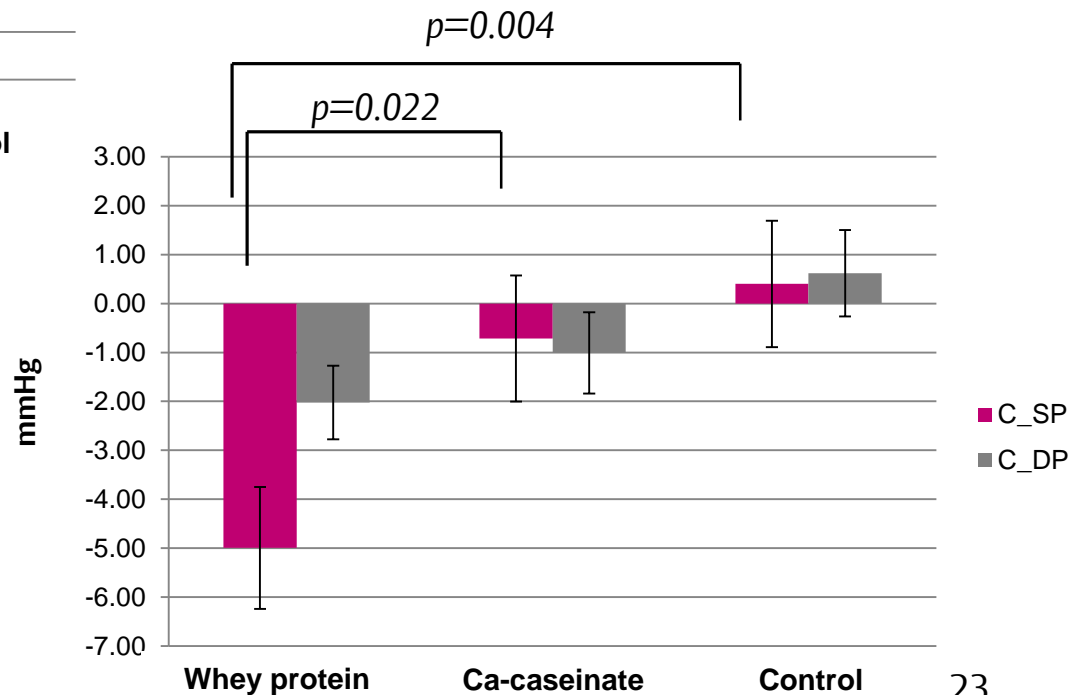
Overall treatment effect for P_SBP $p=0.007$,
 Overall treatment effect for P_DP $p=0.095$,
 Overall treatment effect for P_MeanP $p=0.009$

$n=38$, Means \pm SEM

Central SBP & DBP

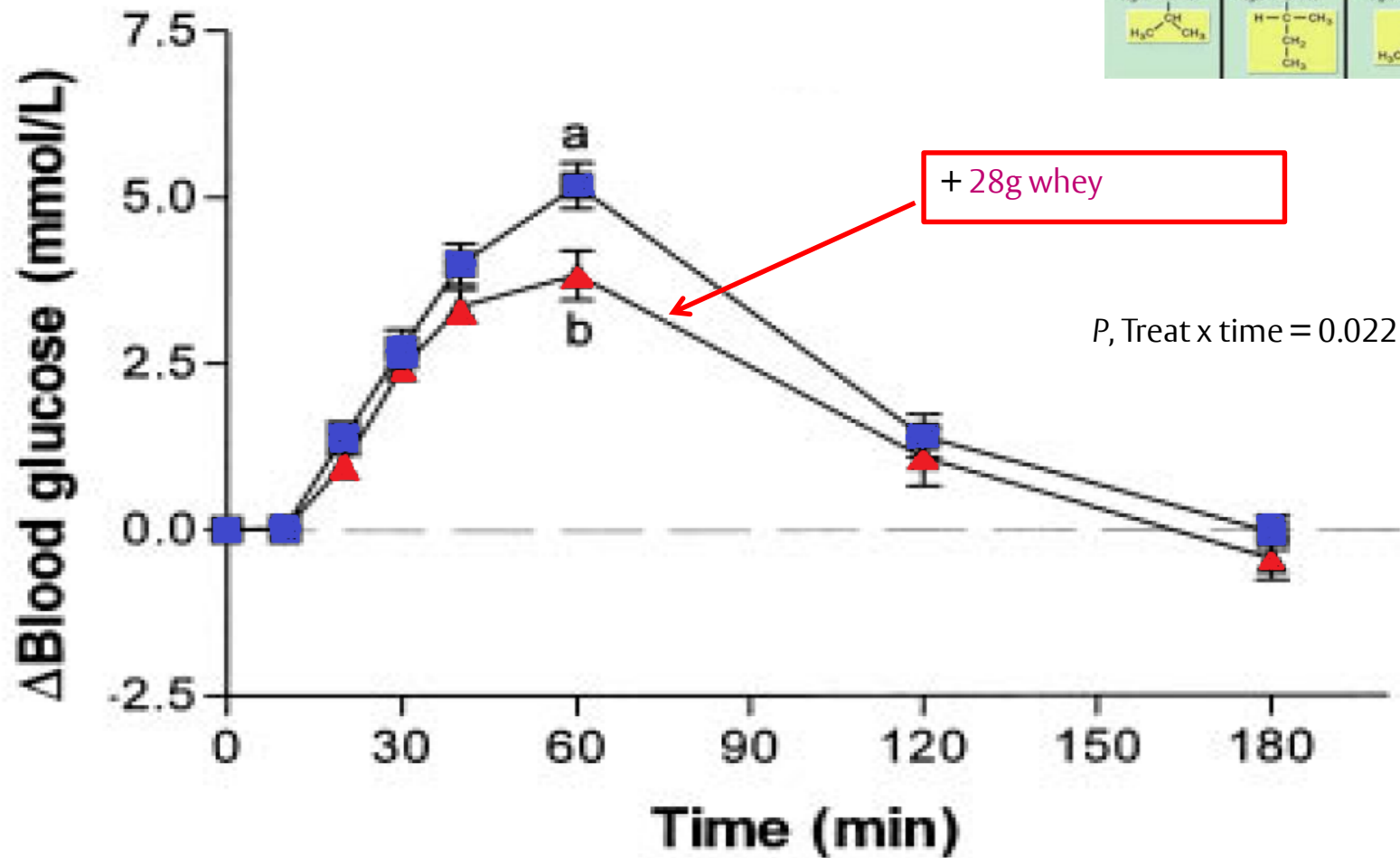
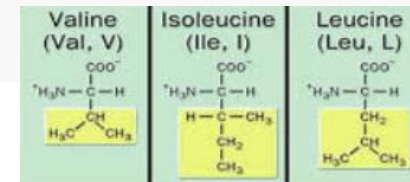
Overall treatment effect for C_SBP $p=0.010$,
 Overall treatment effect for C_DP $p=0.094$,
 Overall treatment effect for C_MeanP $p=0.024$

$n=38$, Means \pm SEM



Carbohydrate-rich meal +/- whey protein on blood glucose in T2DM patients

Frid et al., 2005



A few conclusions...

- There are different levels of food security and achieving them will require different solutions if indeed achievable..
- The UK may be currently 'food secure' but significant sections of the population are not and this is not widely known....
- Many children and young females in the UK are certainly not nutrient secure...
- Whilst the world issue is important, much more effort is needed to fix our 'local' issues..
- Declines in milk consumption have already had consequences and...risk of poor bone development especially in girls is concerning and may become a major issue
- Milk/dairy foods are key sources of important nutrients but have functionality beyond nutrient supply
- Dietary pattern, nutrition and health must be included in any debate about sustainable food production.....

It's more complicated than....



vs.



THANK YOU

