

Prof. Jude Capper

@bovidiva



Sustainable dairy and beef: Nutrient density and greenhouse gas emissions

27th June 2022

Source: Dr. Jude L. Capper, 2022

Dairy Industry Strategy Group



COM

Guilt is a primary motivator for people considering going vegetarian or vegan

"I sometimes feel guilty when consuming meat and dairy products"

66% of meat-eaters and flexitarians thinking of giving up meat said "yes" compared to 25% of national population

**No guilt
34%**

**Feel guilty
66%**



Prof. Jude Capper

@bovidiva



Source: Created by Dr. Jude L. Capper, 2020. Information from: YouGov (2019) Is the future of food flexitarian? <https://yougov.co.uk/topics/resources/articles-reports/2019/03/18/future-food-flexitarian>

Dairy Industry Strategy Group



COM

Welfare, health and environmental concerns are paramount for people giving up dairy

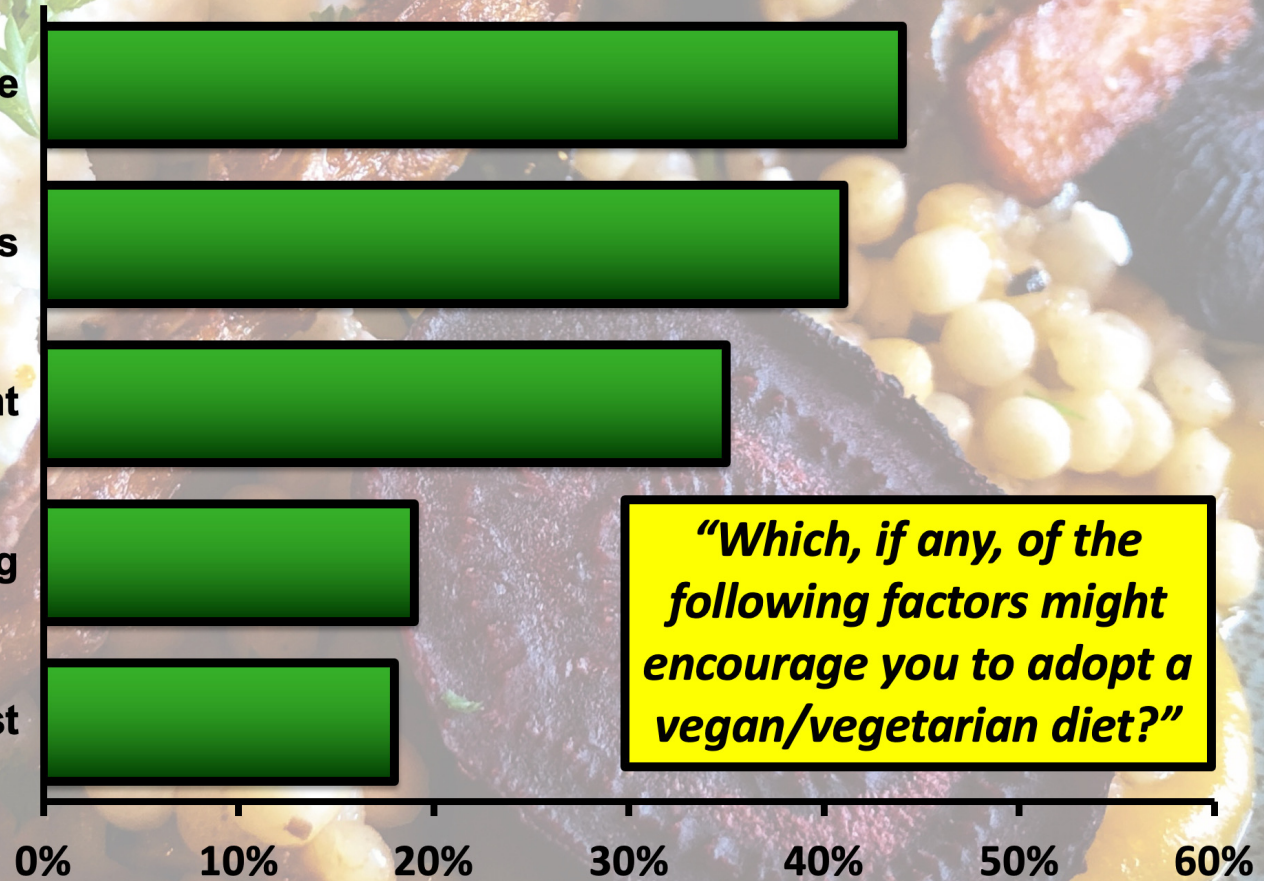
Animal welfare

Healthiness

Environment

Labelling

Economic cost



Source: Created by Dr. Jude L. Capper, 2021. Information from: YouGov (2019) Is the future of food flexitarian?
<https://yougov.co.uk/topics/resources/articles-reports/2019/03/18/future-food-flexitarian>

Prof. Jude Capper
@bovidiva



Dairy Industry Strategy Group



Plant-based dairy alternatives make environmental claims per unit of volume

Prof. Jude Capper
@bovidiva



MIGHTY M.L.K. Environmental Impact (per 250ml serving):

- If 1,000,000 people switched to MIGHTY M.L.K. for 1 year, we could...
 - save enough water to fill over 38 Stadiums
 - as well as saving 19,000 Acres OF LAND
 - offset enough CO₂ emissions to fill 63,000 hot air balloons

M.LKOLOGY Environmental Impact (per 250ml serving):

- If 1,000,000 people switched to M.LKOLOGY for 1 year we could...
 - offset enough CO₂ emissions to fill 54,000 hot air balloons
 - as well as saving 8,000 Acres OF LAND
 - save enough water to fill over 27 Stadiums

OUR ECO IMPACT (per 100ml)

IMPACT	Per 100ml*	Per Serving**	Grade
Carbon (CO ₂ eq.)	47g	120g	A+
Water Usage (L eq.)	180L	440L	D
Water Pollution (PO ₄ ³⁻ eq.)	0.90g	0.74g	A
Biodiversity (Species Loss Index)	0.010	0.025	A

*Calculated for supermarket sale in the UK. Online record: mavira.com/NPDS
**This pack contains four 250ml servings

Source: Created and photo by Dr. Jude L. Capper, 2022.

Dairy Industry Strategy Group



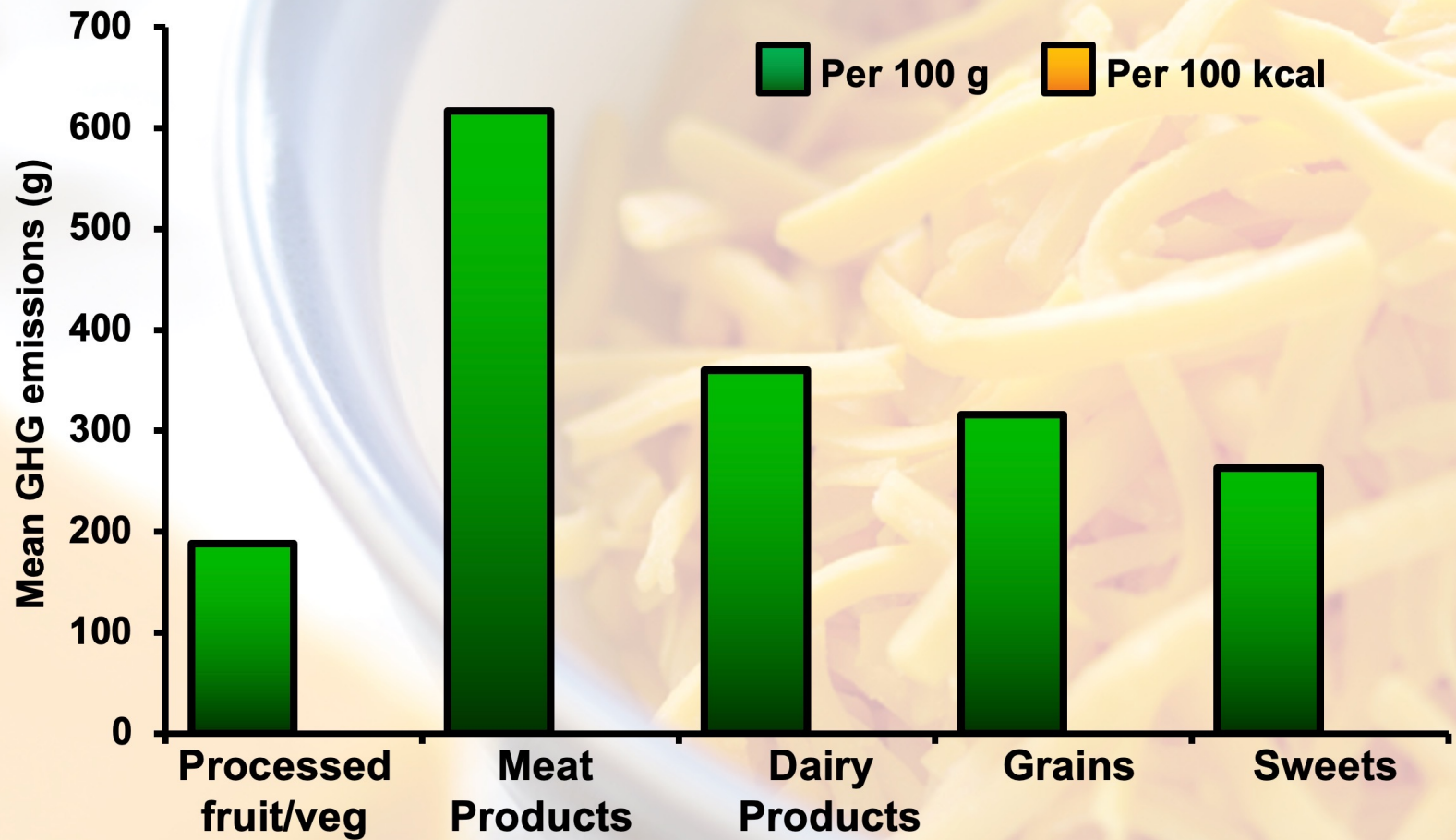


Prof. Jude Capper
@bovidiva



B

Food GHGe rankings vary according to metric



Source: Created by Dr. Jude L. Capper, 2022; data from Drewnowski et al. (2015) Am. J. Clin. Nutr. <https://doi.org/10.3945/ajcn.114.092486>

Dairy Industry Strategy Group





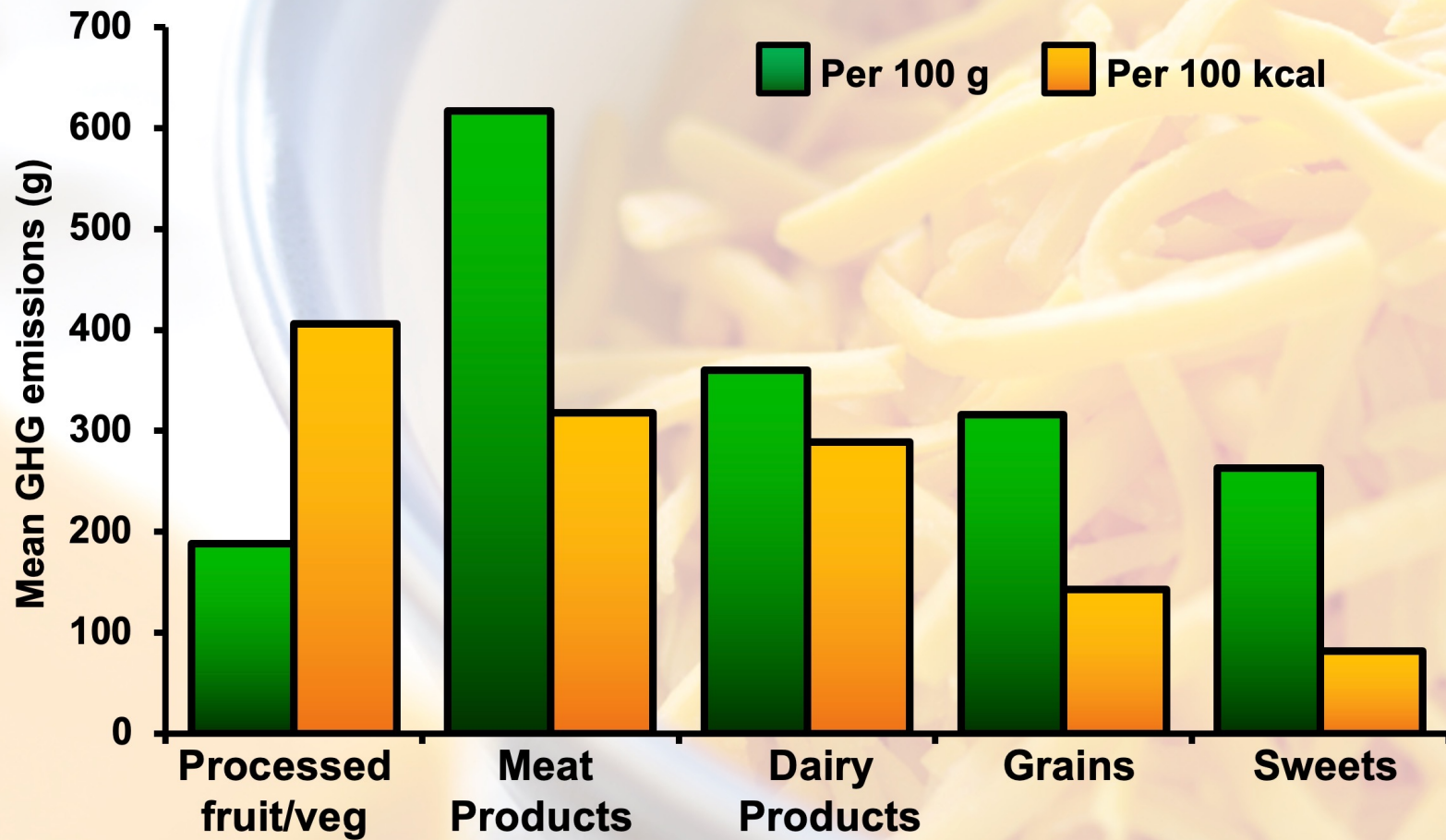
Prof. Jude Capper

@bovidiva



B

Food GHGe rankings vary according to metric



Source: Created by Dr. Jude L. Capper, 2022; data from Drewnowski et al. (2015) Am. J. Clin. Nutr. <https://doi.org/10.3945/ajcn.114.092486>

Dairy Industry Strategy Group



D

Drinks vary in nutrient density and greenhouse gas emissions

	Nutrient density	Carbon footprint g CO ₂ /100 g drink
Whole milk	53.8	99
Orange juice	17.2	61
Soya juice	7.6	30
Oat juice	1.5	21
Red wine	1.2	204
Soda	0.0	109
Beer	0.0	101
Water	0.0	10

Source: Created by Dr. Jude L. Capper, 2020. Data from: Smedman et al. (2010). Nutrient density to climate impact (NDCI) index of beverages. Food & Nutr. Res.

Prof. Jude Capper

@bovidiva

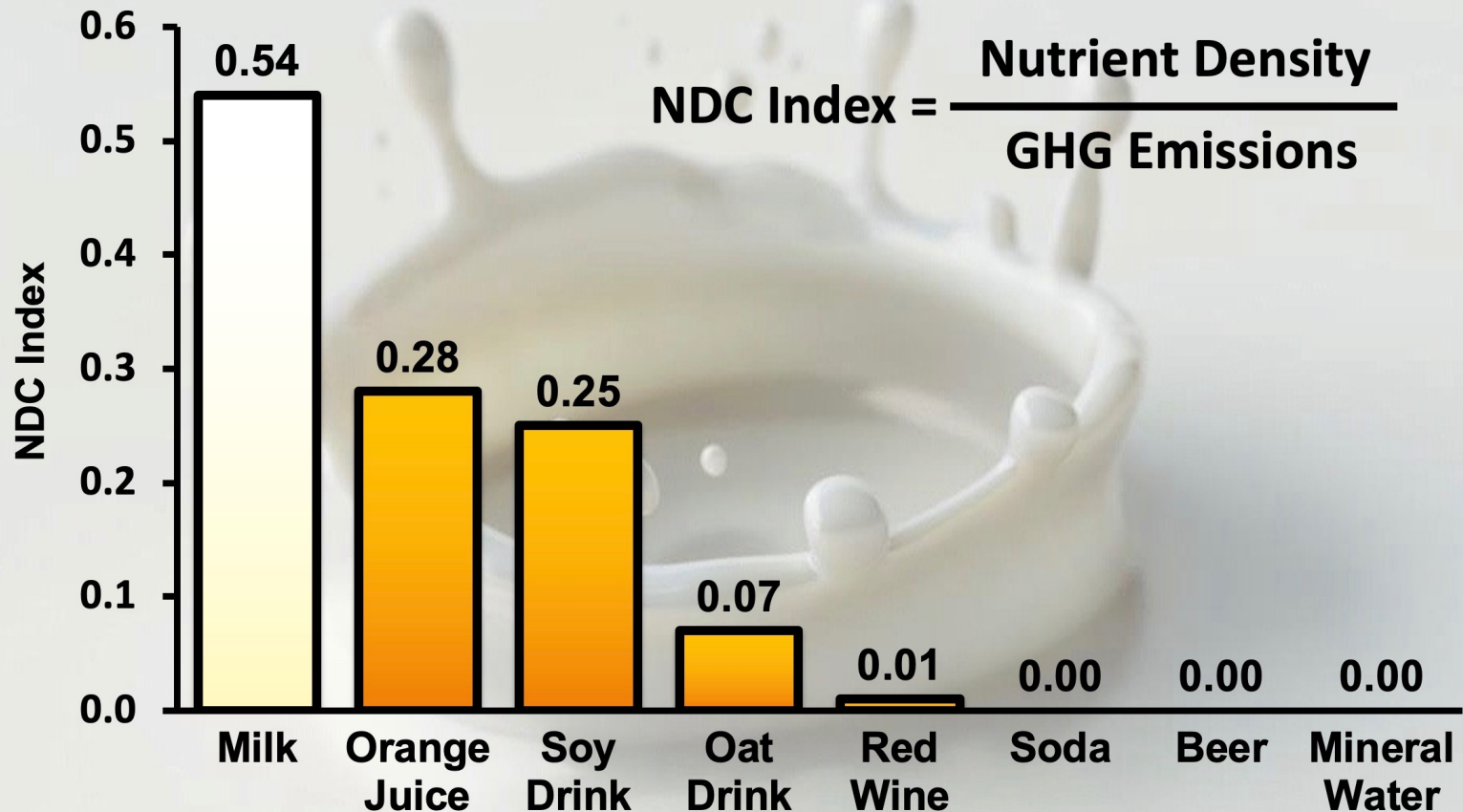


Dairy Industry Strategy Group



D

Nutrient density should be included when assessing carbon footprint



Source: Created by Dr. Jude L. Capper, 2020. Data from: Smedman et al. (2010). Nutrient density to climate impact (NDCI) index of beverages. Food & Nutr. Res.

Prof. Jude Capper

@bovidiva



Dairy Industry Strategy Group



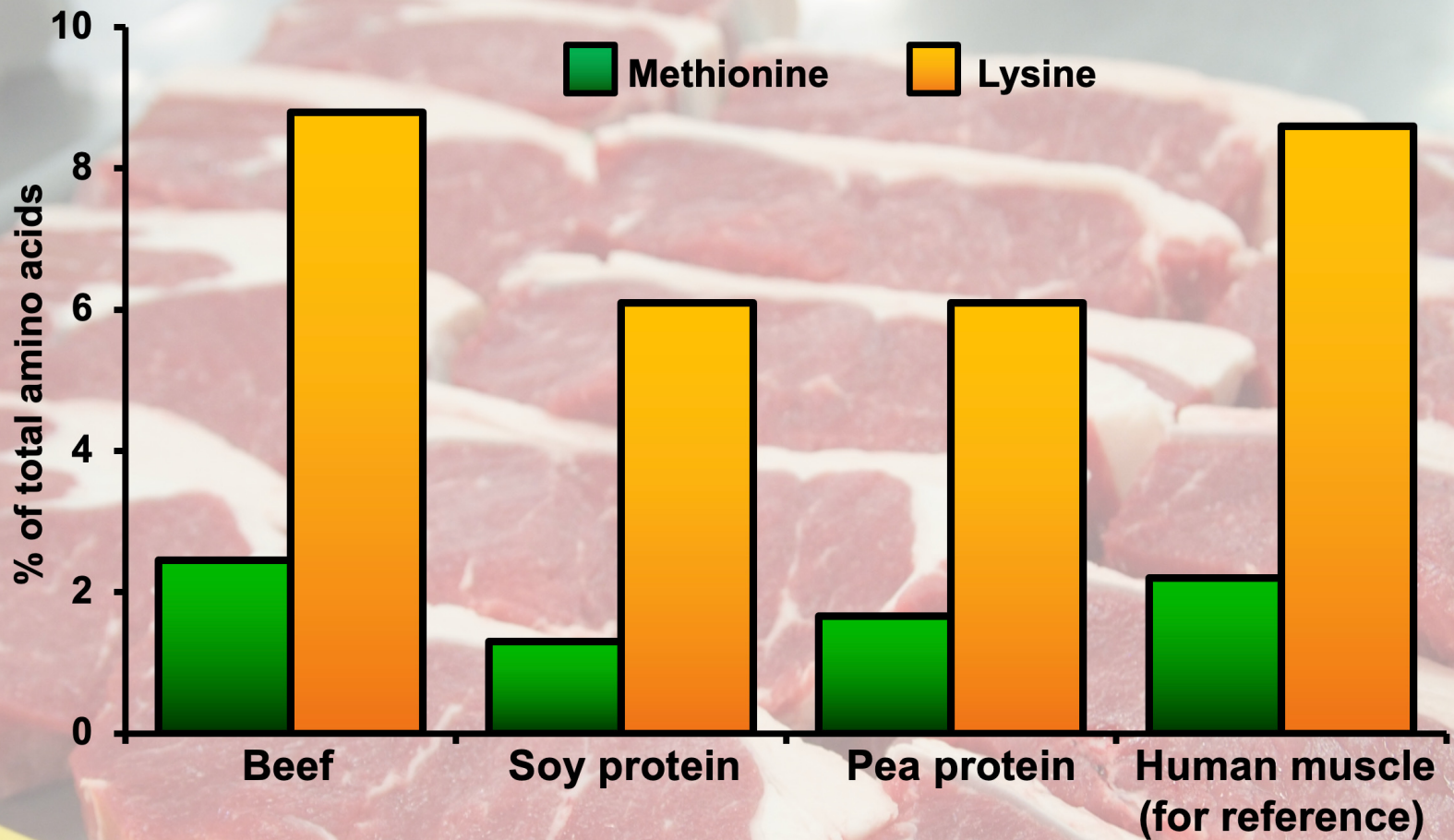


Prof. Jude Capper
@bovidiva



B

Essential amino acid content varies according to protein source



Source: Created by Dr. Jude L. Capper, 2021; data from van Vliet et al. (2020) Front. Sustain. Food Syst. <https://doi.org/10.3389/fsufs.2020.00128>

Dairy Industry Strategy Group



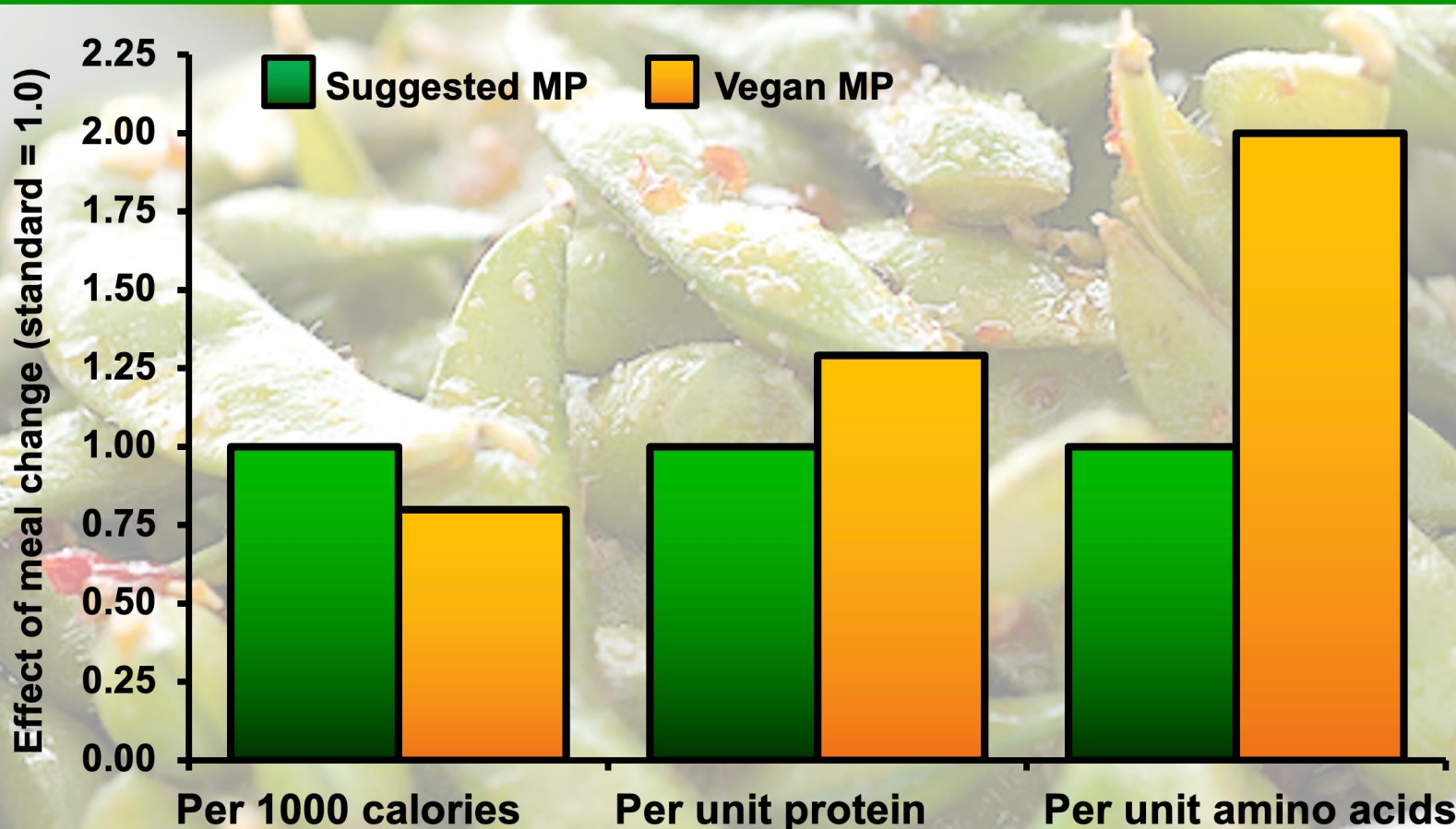
Prof. Jude Capper

@bovidiva



B

GHGe in Korean suggested meal plan and vegan meal plan vary by metric



Source: Created by Dr. Jude L. Capper, 2022; SMP SMP provided 2.13 times more amino acids than the VMP, with 2.25 times more essential amino acids and 2.03 times more non-essential amino acids. Data from Park et al. (2020) J. Anim. Sci. Tech. <https://doi.org/10.5187/jast.2020.62.1.64>

Dairy Industry Strategy Group





D

Plant-based alternatives tend to be more expensive than meat-based products



Sainsbury's Beef Burgers,
Taste the Difference x4 680g

£4.50 £6.62 / kg

British chuck and British flank beef burgers with salt and pepper.



Vivera Plant Veggie Burgers
200g

£2.50 £12.50 / kg

Plant-based seasoned burger made from rehydrated soya and wheat protein. This product contains added iron and vitamin B12.

Plant-based burgers 1.89x more expensive per kg product (£12.50 vs. £6.62)

Source: Created by Dr. Jude L. Capper, 2020. Products chosen are culturally equivalent, occupy similar segments within each market and were not subject to any promotional or special offer. Screen shots from the Sainsburys app: <https://www.sainsburys.co.uk/shop/gb/groceries/get-ideas/app>



D

Drinks vary in nutrient density and price

	Positive nutrients* g/250ml	Price, £/250 ml
Whole milk	12.0	0.18
Skimmed milk	10.8	0.18
Soya juice	12.5	0.43
Oat juice	6.8	0.38
Almond juice	4.5	0.45
Rice juice	2.5	0.36

***Positive nutrients comprise protein, unsaturated fat and fibre; does not include carbohydrates, saturated fats, salt**

Source: Created by Dr. Jude L. Capper, 2020. Beverage cost and nutrition data derived from the Sainsburys shopping app as of 5/11/2019.

Prof. Jude Capper
@bovidiva



Dairy Industry Strategy Group



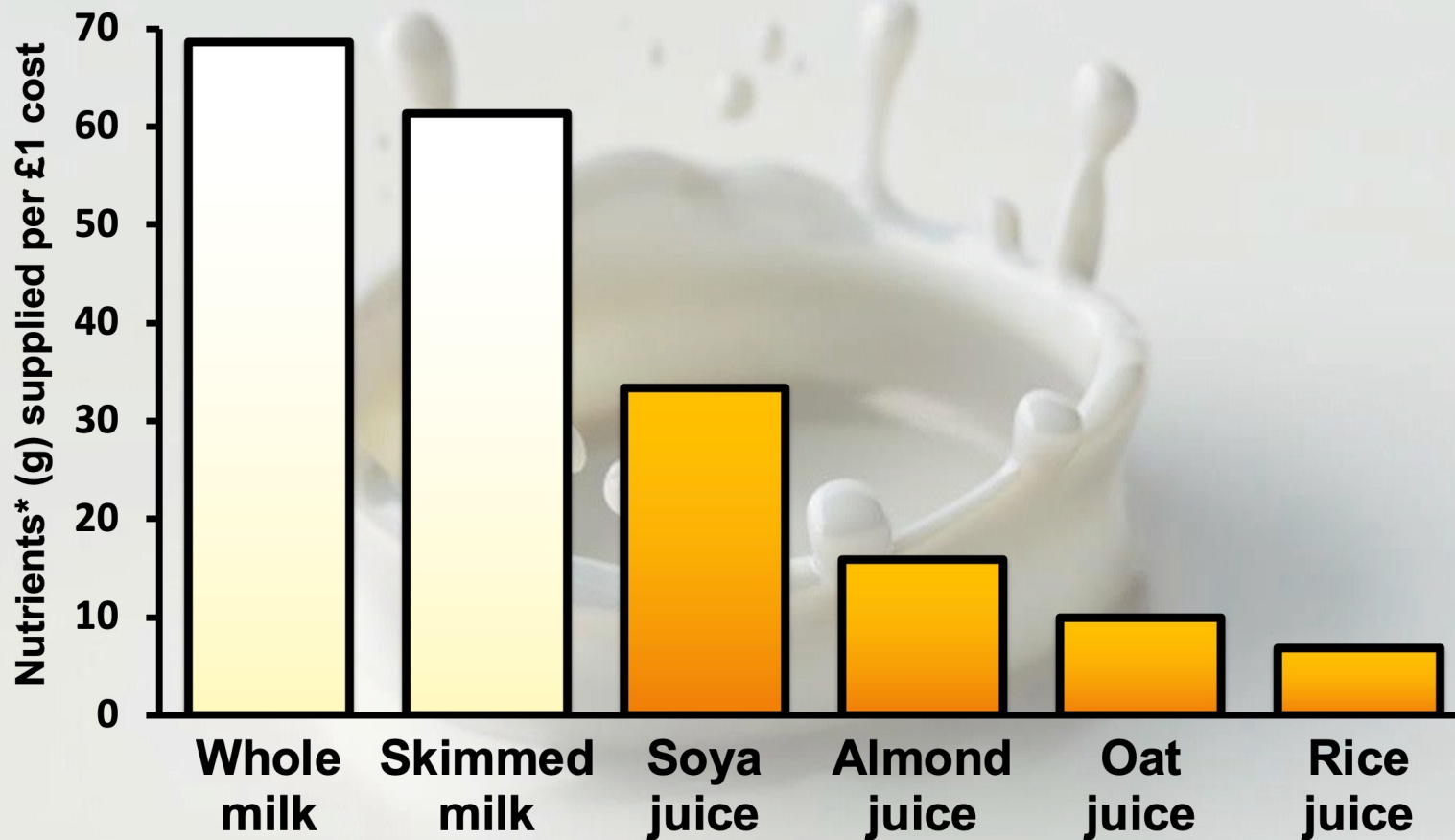
Prof. Jude Capper

@bovidiva



D

Dairy supplies more positive nutrients per £1 than plant-based alternatives



Source: Created by Dr. Jude L. Capper, 2020. Beverage cost and nutrition data derived from the Sainsburys shopping app as of 5/11/2019. *Positive nutrients comprise protein, unsaturated fat, fibre; does not include carbohydrates, saturated fats, salt

Dairy Industry Strategy Group



B

Thank you!

jcapper@harper-adams.ac.uk

<http://bovidiva.com/presentationlinks>

Prof. Jude Capper

@bovidiva



Questions?



Dairy Industry Strategy Group



Source: Created by Dr. Jude L. Capper, 2020. Cartoon from: <http://snipurl.com/methanecartoon>