

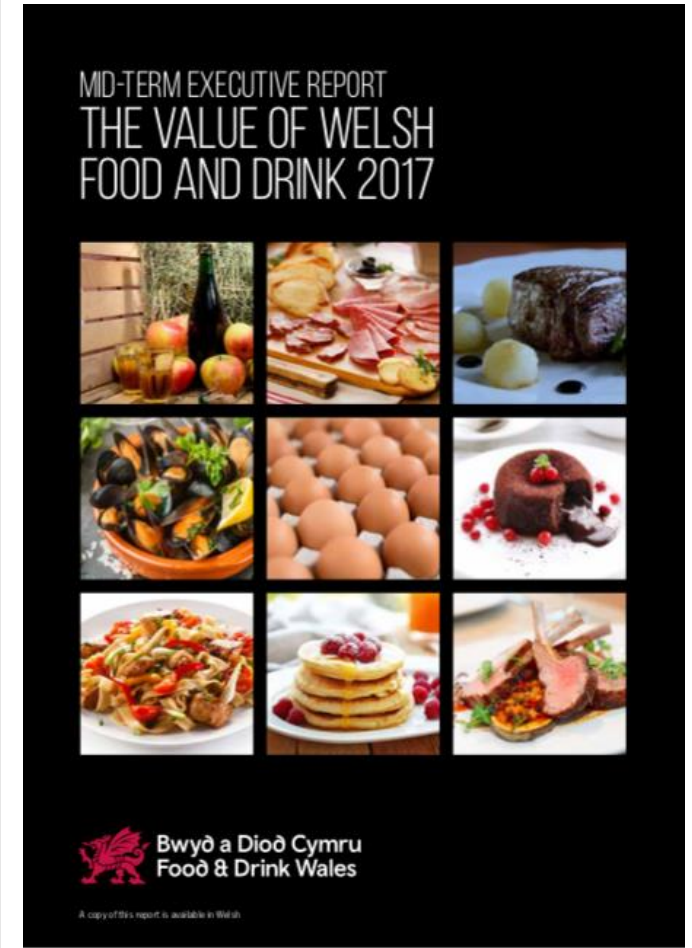


Plant-based Threat or Opportunity?



Nutri-Wales: Context

- The Value of Welsh Food and Drink Report - significant under-investment in R&D
- Nutri-Wales formed to stimulate joint research, product development, access to new markets and benefit the Welsh economy as well as the nutritional health of Wales
- 237 companies and organisations engaged with Nutri-Wales over the last two years
 - 126 food companies
 - 13 “outside the food sector” companies
 - 21 service providers
 - 58 engaged in some form of R&D projects
- Nutri-Wales Team working on strong pipeline of disruptive R&D projects
- Future Foods Programme: a product of the emerging and increasing demand for commercially-driven R&D generated by the Nutri-Wales Cluster



Today's presentation

- The marketplace - what is going on?
- What are the market drivers?
- Threat or opportunity?
- If opportunity, then how?
- Collaboration and Innovation
- Talk to us

Plant-based; what's that all about?

News | Opinion | Sport | Culture | Lifestyle

Veganuary gathering pace

2/3rds people buying a free-from and dairy alternatives being a ¼ of all free-from sales

It appears to be fashionable

Perceived as healthy



Veganuary ends on record high with 250,000 participants

Pledges for 2019 plant-based campaign exceeded those in previous four years combined

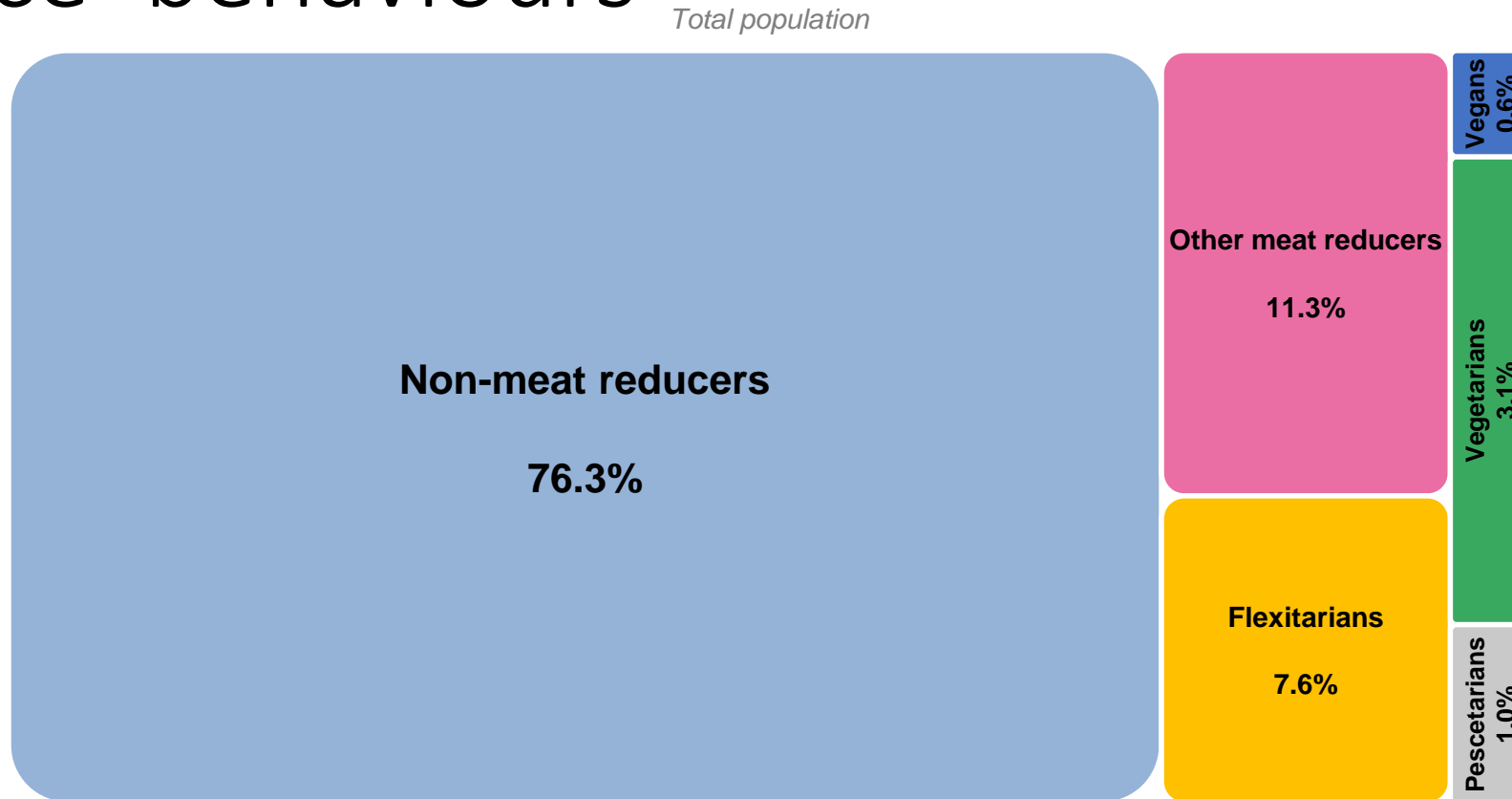
It's happening

Fraser McKevitt, head of retail and consumer insight at Kantar Worldpanel, comments:

“Looking back on 2018 as a whole, one of the most notable consumer trends is the shift to a more plant-based diet. Today, 1% of all households include a vegan, 5% have a vegetarian and 10% have flexitarians in their ranks. This move has contributed to consumers eating a total of 4.4 billion meat-free dinners in 2018, an increase of 150 million meals on the year before.....

.....Meanwhile, over two-thirds of customers bought an item labelled ‘free-from’* over the past month, with dairy alternatives like plant milks making up a quarter of total free-from sales.”

Almost ¼ of the population exhibiting 'meat avoidance' behaviours



If people are avoiding meat, how long before they start avoiding cows' milk too?

Flexitarians behind the move towards 'meat avoidance'

YOY % change

+1%

-1%

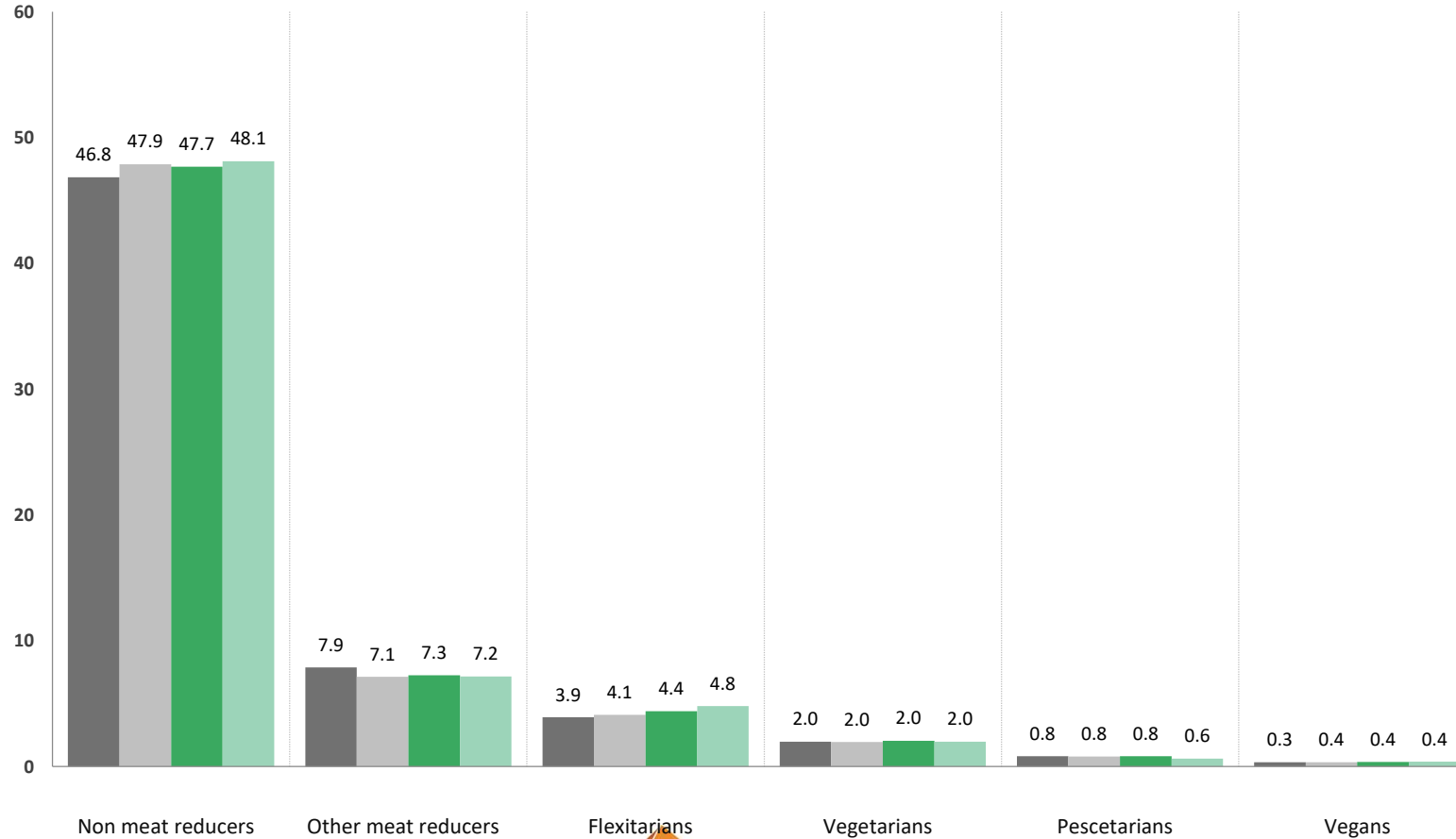
+10%

-2%

-23%

+3%

Millions of people





3 in every 10
savoury evening
meals feature no
meat or fish

140 million more
than last year



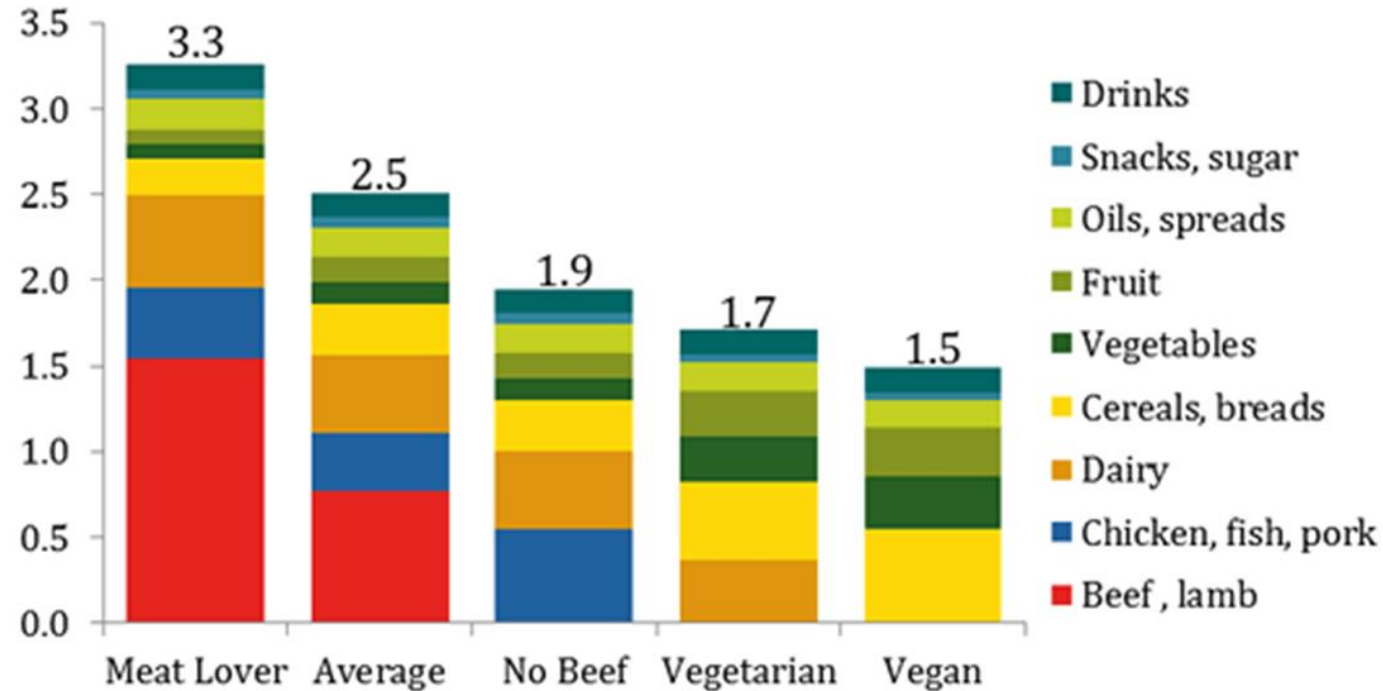
Plant-based meals account
for **1bn meals a year**
(3.8% of all savoury main
meal occasions)

Vegans only account
for **14%** of these plant
based meals

What is driving this?

- Environmental concerns
 - Dairy and meat/livestock constantly cited as a problem (and the biggest contributor)
- Water usage – plant-based uses far less water
- Animal welfare
 - Vegan PETA type communications beginning to drip through
- Plastic packaging concerns

Foodprints by Diet Type: t CO₂e/person



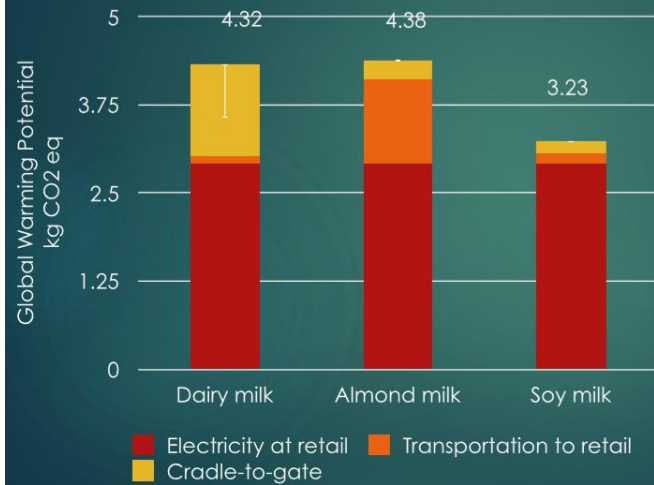
Note: All estimates based on average food production emissions for the US. Footprints include emissions from supply chain losses, consumer waste and consumption.. Each of the four example diets is based on 2,600 kcal of food consumed per day, which in the US equates to around 3,900 kcal of supplied food.

Sources: ERS/USDA, various LCA and EIO-LCA data



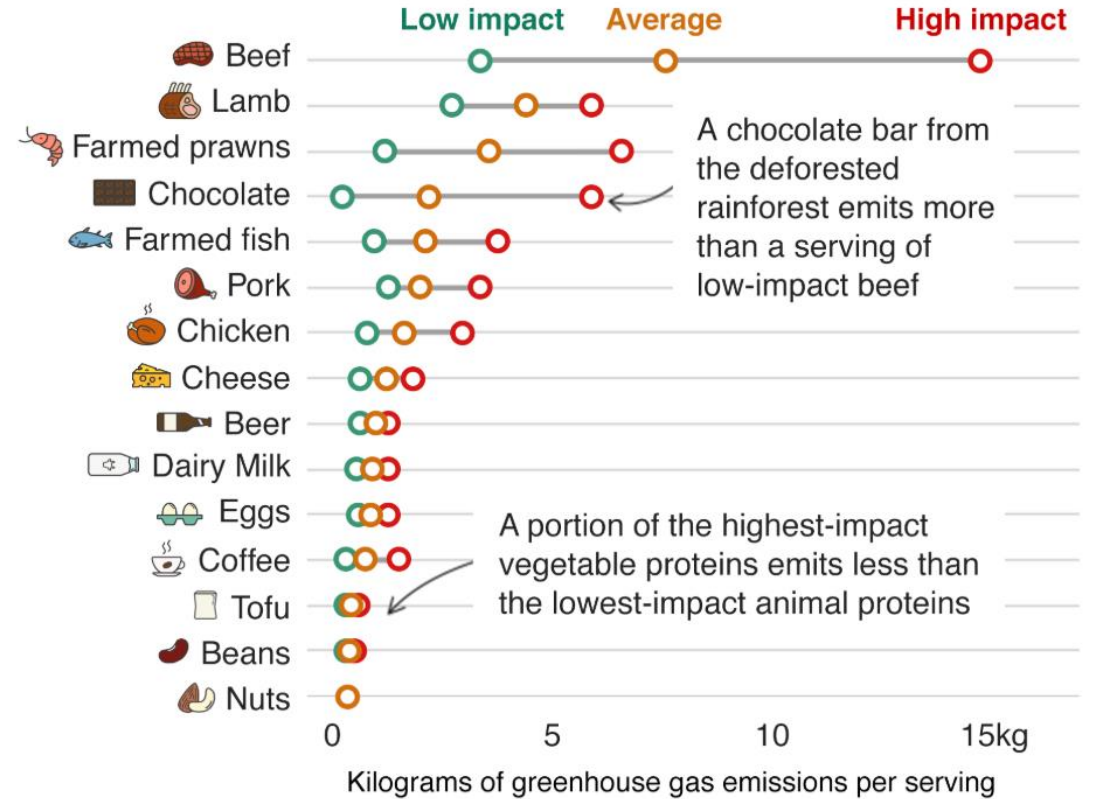
But it's not saving the planet

Cradle-to-retail (per liter of milk)



- **Almond milk** impacts similar to dairy milk from long-distance transportation, despite lower **production phase impacts**
- **Retail phase** dominant phase due to electricity consumption

Kilograms of greenhouse gas emissions per serving



Source: Poore & Nemecek (2018), Science

BBC

But it's NOT milk!!

- The Duck test
 - If it walks like a duck, has feathers like a duck, quacks like a duck, chances are.....





Pea milk is apparently the next dairy-free drink trend



Laura Abernethy Sunday 3 Feb 2019 11:44 am



2.1k
SHARES

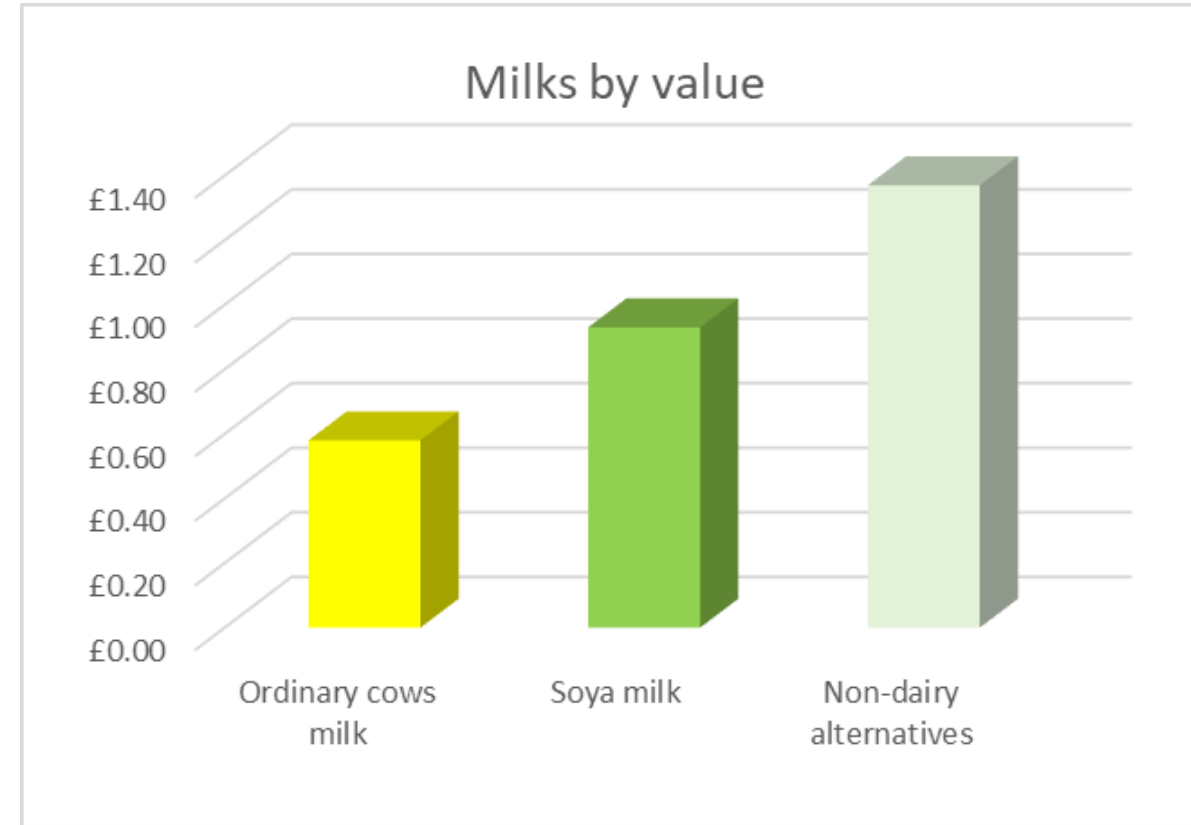


What's it worth?

Consumers are prepared to pay a lot more for a non-animal based product.

- about 3.5% of the total liquid milk market is non-dairy
- potentially worth over double the value / litre of cows' milk

Strong growth in volume and value at around 15% year on year makes this of real interest. Combining these two categories means that non-dairy milks equate to something in the region of 3.4% of the total retail liquid milk market. But, the value of a litre of alternative milk is in the region of £1.37/litre over double the average value of dairy (cows') milk



Nutrition

Why is dairy not more persuasive ?

Health wellness

Life stages

- Pre-birth
- School age
- Teenagers
- Young male adults
- Healthy aging

Source: The Vegan Society Web site

- Breastfeeding requires extra protein and zinc, so make sure that your meals contain good sources, such as beans, chickpeas, lentils, tofu, cashew nuts, chia seeds, ground linseed, hemp seeds, pumpkin seeds and quinoa
- The calcium requirement for breastfeeding is nearly 80% more than the general requirement for adults, so it is strongly recommended that you include plenty of calcium-rich foods in your daily diet, such as calcium-fortified foods and calcium-set tofu
- Ensure a reliable intake of vitamin B12 from fortified foods or a supplement
- Ensure a reliable iodine intake by using a supplement
- Take a daily supplement containing vitamin D
- Consider microalgae omega-3 fat supplementation



Bwyd a Diod Cymru
Clwstr Maeth-Cymru
Food & Drink Wales
Nutri-Wales Cluster



Collaborate to Succeed | Cydweithio i Lwyddo



The law of unintended consequence

Simplistic messages

Environment

Plant-based

Veganuary

Are these messages driving people away from dairy?

Protein

Fat

Calcium



PROTEIN TRUFFLES

96% RATING ★★★★★ 202

We call it the Truffle Shuffle... High in protein, high in fibre, low in sugar. Simply sublime. You may hear some other words muttered as a Protein Truffle is devoured... Sumptuous, incredible, unreal. We've heard them on repeat as our original Protein Truffles underwent over 100 taste tests in their full re-invention & reformulation. The outcome? Well, the Protein Truffle is now even more tasty, even more flavoursome & still packed with nutritional prowess that puts it in a league of its own.



PROTEIN BROWNIES

95% RATING ★★★★★ 115

Soft baked. Incredible tasting. Low in Sugar. High in protein. And it's a Brownie, not possible right? Wrong. These Protein Brownies are a true Protein Bakery legend, now re-imagined in a brand-new recipe. Devastatingly great nutritional and so cheeky in flavour they wink at the sight of a taste-bud, they're simply our most audacious Brownies to date. Unrivalled was the word we pinned to our innovations board when we tasked our nutritionists & bakers to re-imagine our classic snack. Over 100 taste tests down, we can puff chests & ruffle feathers whilst shouting about stats like; less than a gram of sugar, over 10g of protein and officially high in fibre. If you don't know about these

 **INDEPENDENT**

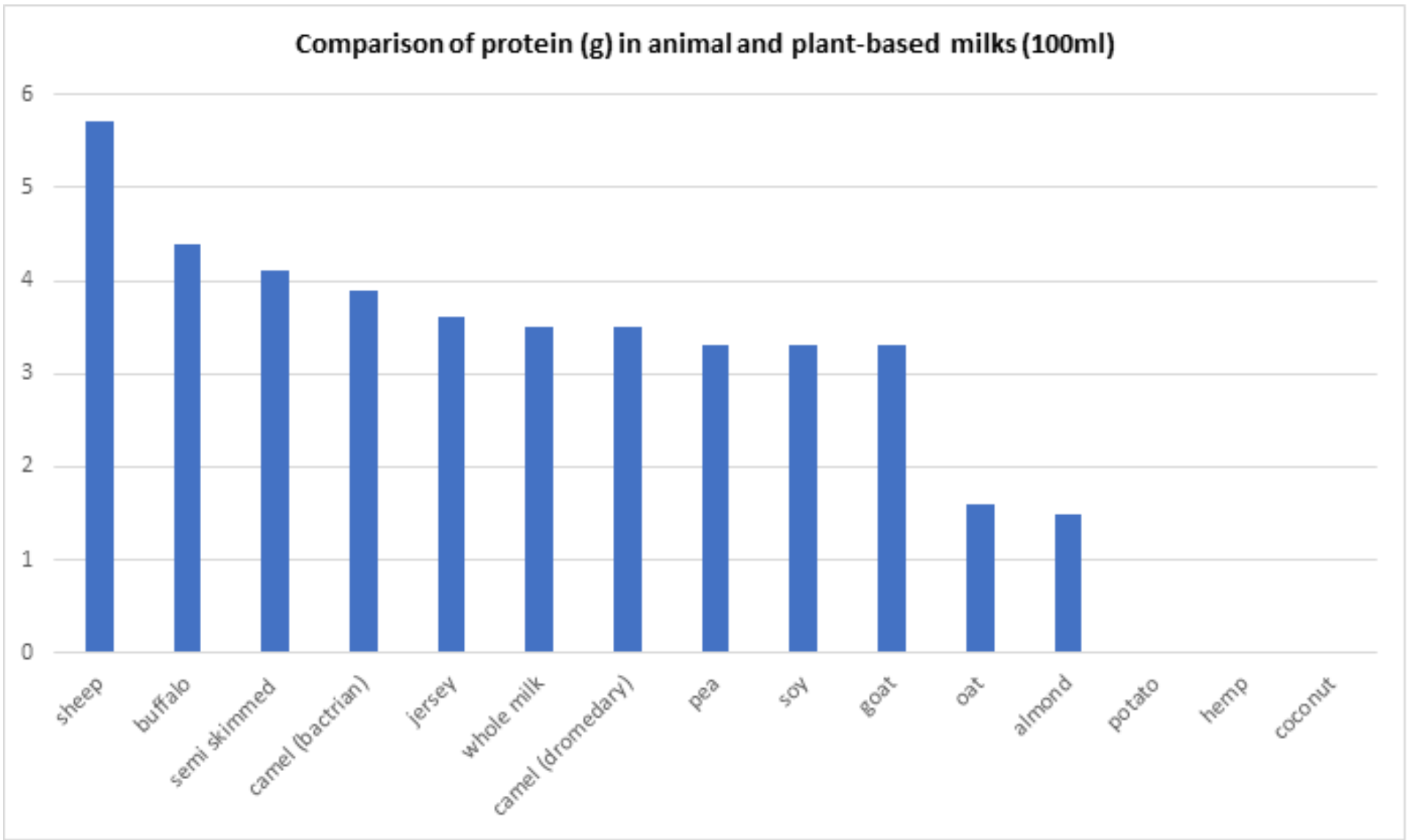
NEWS POLITICS VOICES FINAL SAY SPORT CULTURE VIDEO **INDY LIFE** INDY BEST LONG READS INDY100 VOUCHERS MINDS

 **HUAWEI**
Huawei P30 Pro
£48.75 a month
20GB data
£30 upfront
Find out more
Excludes and terms apply

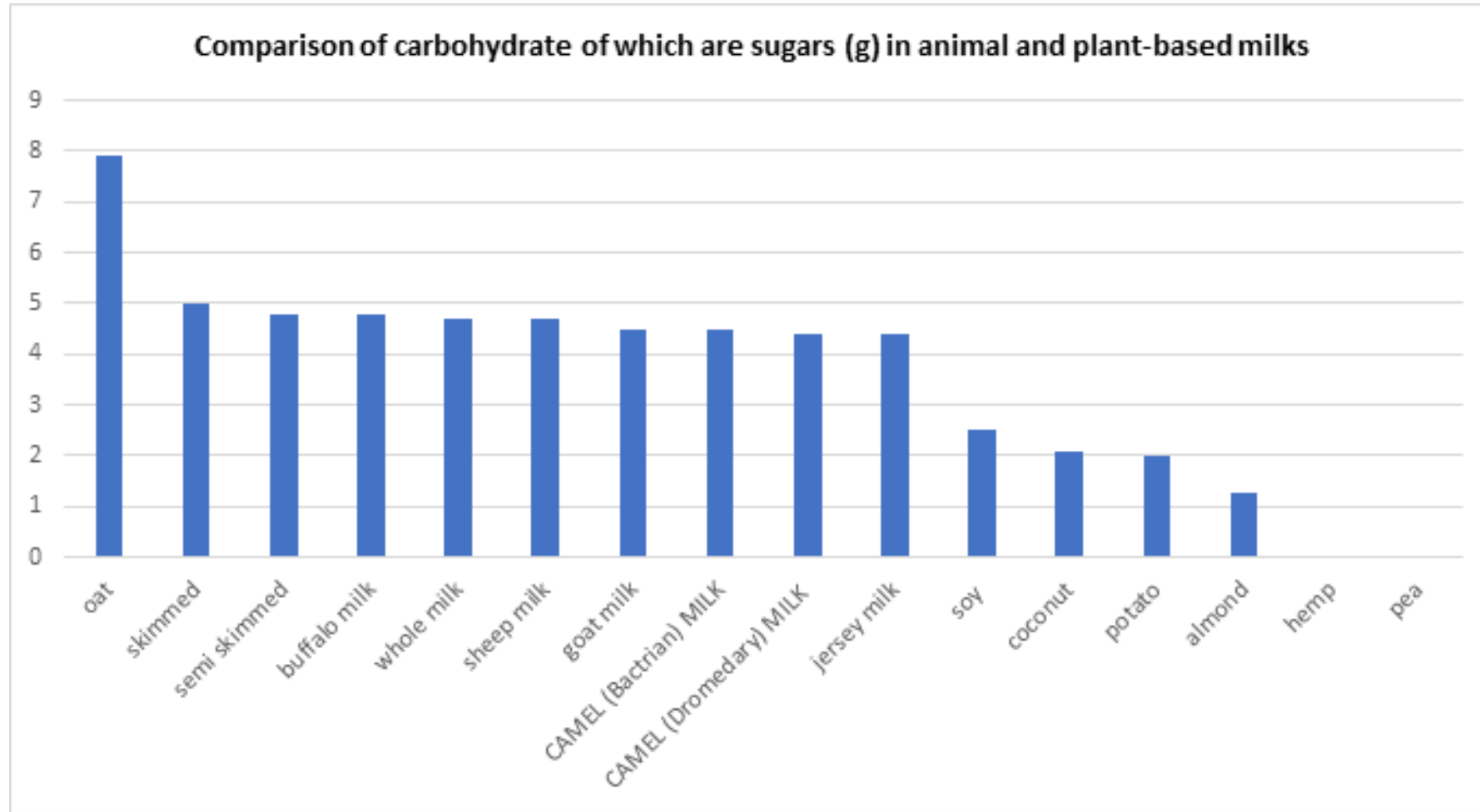
**CHOCOLATE MILK BETTER THAN
SPORTS DRINKS FOR POST WORKOUT
RECOVERY, STUDY FINDS**

Keep things simple - and delicious - after your workout

 Customise your plan to lower your monthly bill
Find out more
Excludes and terms apply



Avoiding sugar?



Comparison of carbohydrate of which are sugars (g) in animal and plant-based milks per 100ml.

Matching the messages?

- Inertia
- The power of guilt
- It starts in the womb
- Supplements (sourced from where?)

Source: The Vegan Society Web site

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- Ensure a reliable iodine intake by using a supplement
- Take a daily supplement containing vitamin D
- Consider microalgae omega-3 fat supplementation

Messages; but are they getting through?

- Dairy presents positive health effects with regards to several non-communicable diseases, e.g. dairy consumption is correlated with lower risk of obesity in children and lower risk of developing type 2 diabetes (especially through the consumption of fermented dairy products)
- Regular dairy consumption has shown a positive effect on the reduction of risk to stroke and hypertension
- Dairy consumption has a positive effect on the bone mineral density
- According to the World Cancer Research Fund, there is probable evidence that dairy consumption decreases the risk of colorectal, bladder, gastric and breast cancer

Summary

- Plant-based is happening
- It offers incremental volume and value
- It is inferior for nutrition
- It is superior for the environment
- It is becoming more popular
- It may get a legislative advantage as in, plant-based will become a prescribed choice or livestock may get a cost added



Work with us

- New products require new ways of working
 - Big companies are finding small and accelerator programmes as a source of innovation
 - Managing the risk
 - Aggregating demand for aseptic process and packing
 - New or scaleable technologies; retort?
 - Finance; investor ready programme
 - Research and development work? We can help; collaborations, NutriWales and Future Foods programme
 - Programmes to tackle waste, new packaging solutions (bio-plastics)
 - CEA and the functional foods that might follow through collaboration with dairy
- **Let's talk** john.taylerson@bic-innovation.com