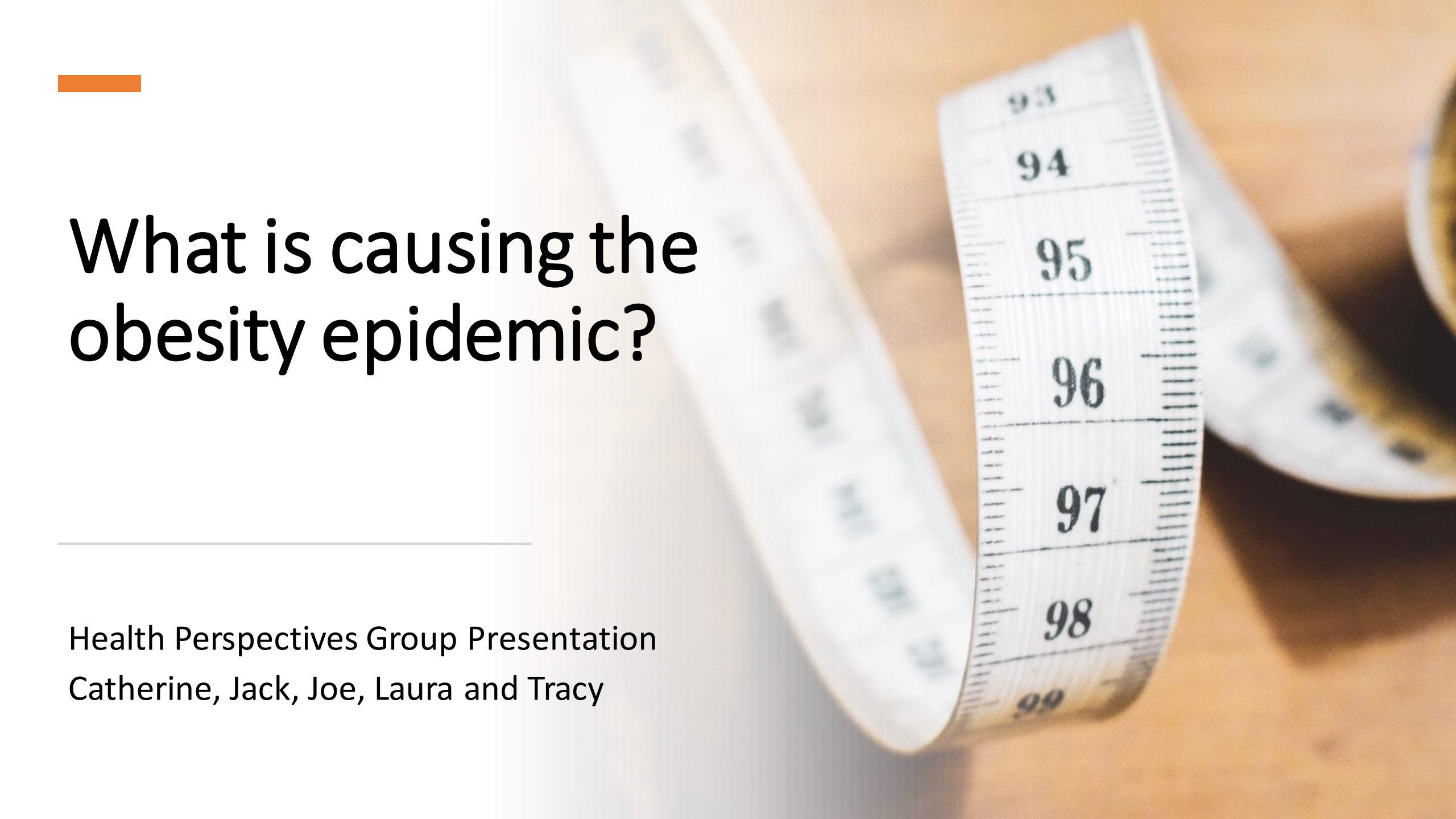


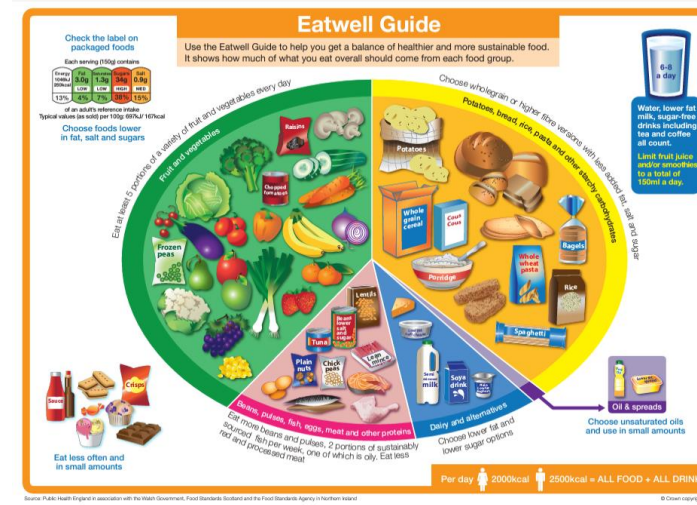


What is causing the obesity epidemic?

Health Perspectives Group Presentation
Catherine, Jack, Joe, Laura and Tracy

4 Different Perspectives

Laura – UK guidelines



Joe – Food industry



Tracy – Portion sizes

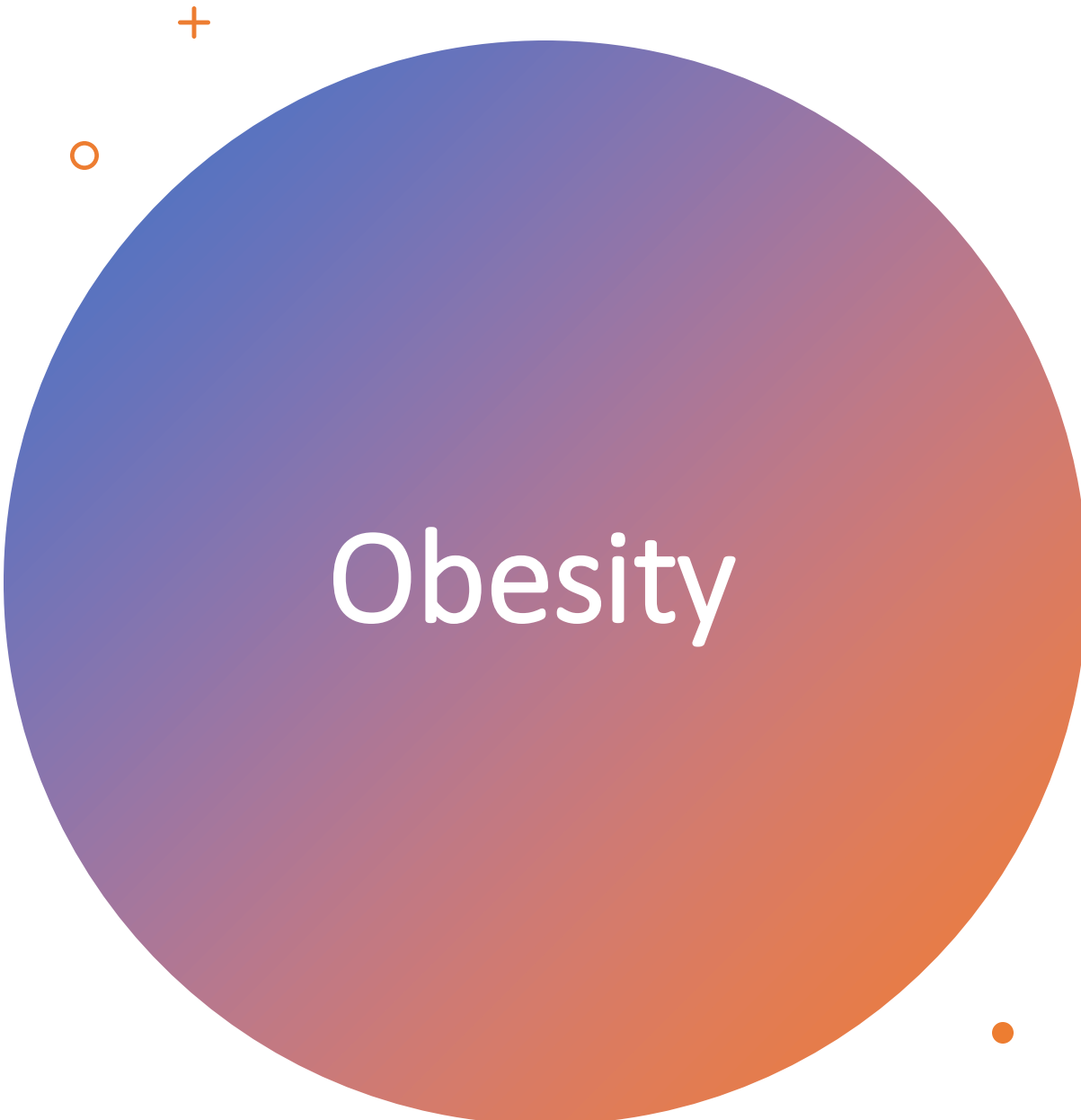


Jack – Physical activity



What do you
think is causing
the obesity
crisis?





Obesity

- Tackling obesity is one of the greatest long-term health challenges currently faced in England (GOV.UK, 2020)
- 2030 over one billion adults worldwide will be obese (WHO, 2024)
- By 2050, obesity is predicted to affect 60% of adult men, 50% of adult women, and 25% of children if present trends continue (Swanton, 2008)
- Around 63% of adults are above a healthy weight and 1 in 3 children leaving primary school are overweight or living with obesity (Office for Health Improvement and Disparities, 2024).

The Human Body: Diseases associated with being overweight and or obese

4 Million people die as a result from being overweight or obese each year (WHO, 2017, Gadde *et al.*, 2018)

Heart disease

Type two diabetes

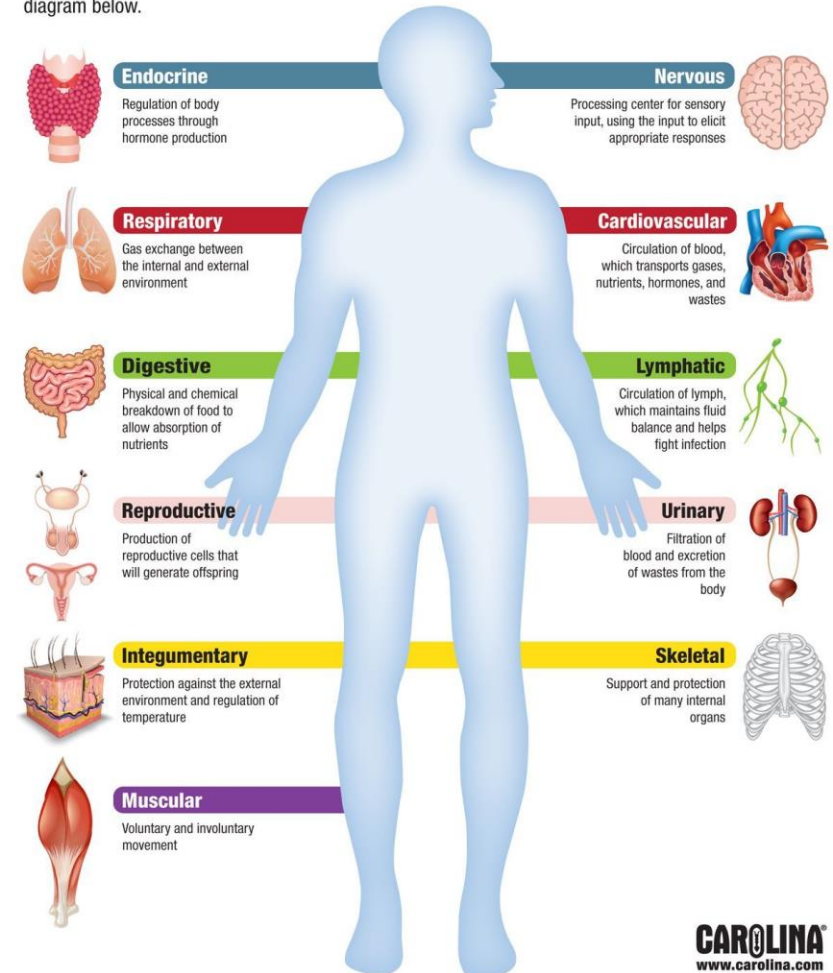
Stroke

Cancer

Musculoskeletal disorders

Human Body Systems

There are 11 main systems that keep our bodies functioning. Learn the primary roles of each in the diagram below.



British Heart
Foundation



- <https://youtu.be/TMDldXoDLrQ>



Global Burden of Disease

Body Mass Index: Good or Bad?



A normal BMI has the potential to cause false reassurance, while an increased BMI might cause needless anxiety (Abraham and Hand, 2021).



BMI can't distinguish between fat distribution and muscle distribution therefore giving a wrong impression that a body builder is obese (Tafeit et al., 2019).

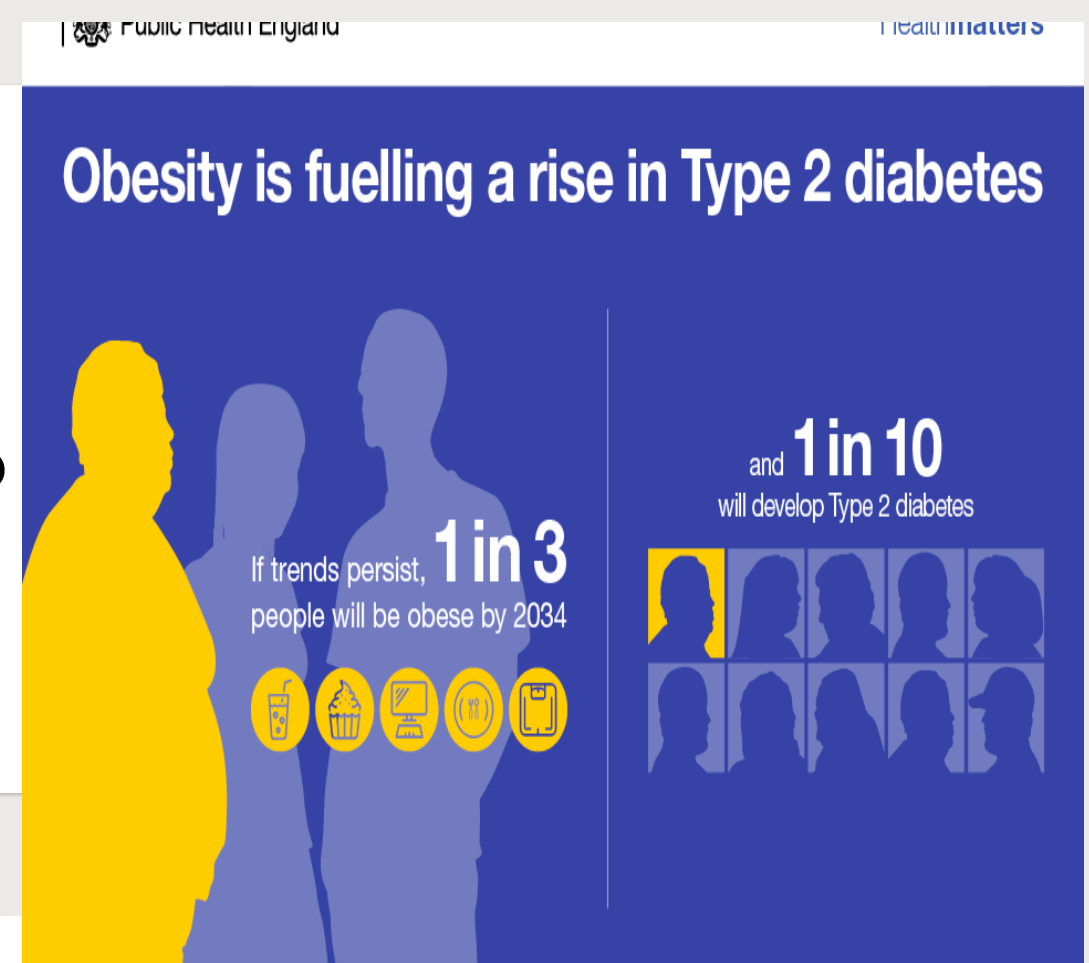
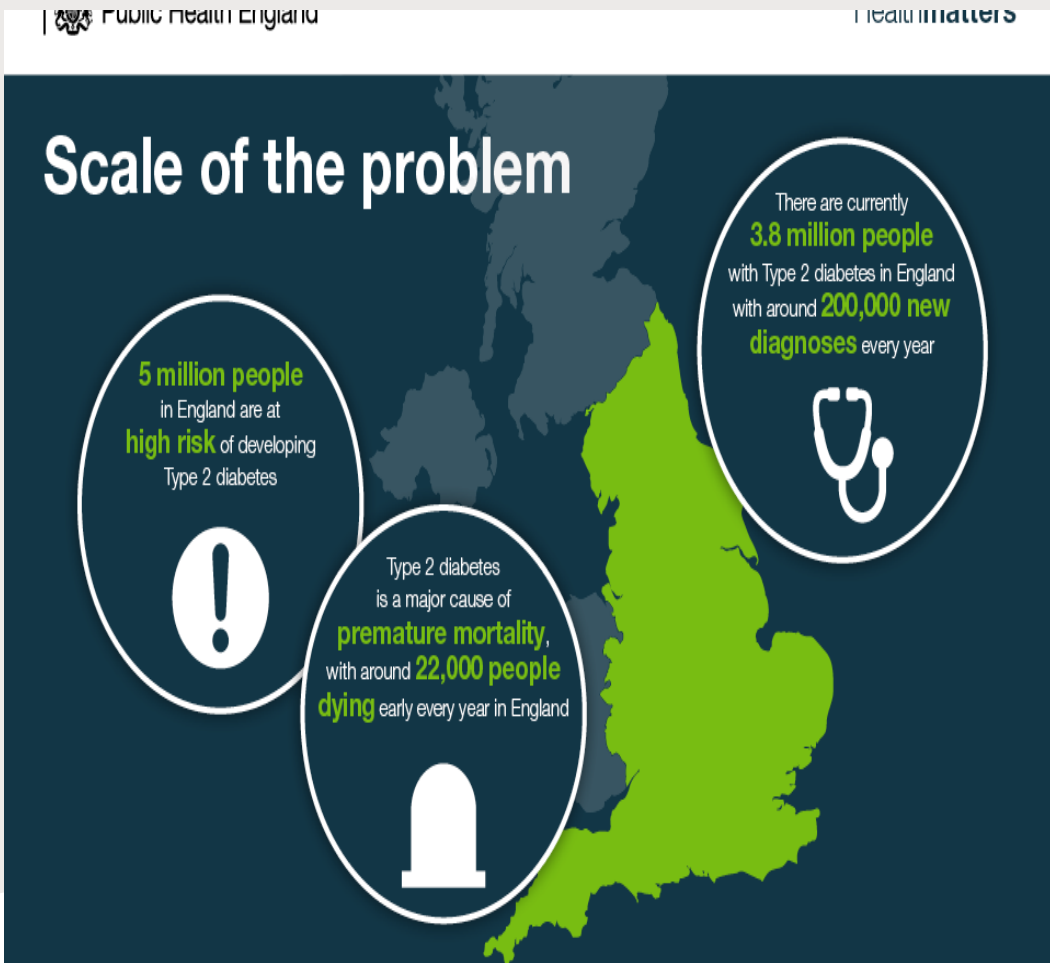
Overweight Linked to Diabetes



Podcast by Ong and Stafford, (2023)

About 50% of the burden due to type 2 diabetes can be attributed to high body mass (Ong and Stafford, 2023)

Type 2 diabetes is increasing in the younger population (Candler, T.P. et al., 2018)



Public Health England, 2018

What is causing this global epidemic?

- Portion Sizes
- Lack of Physical Fitness
- Social Media
- Food Industry



Catherine (2104854) references: Slides 4-11 and 71-73

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Catherine (2104854) references: Slides 4-11 and 71-73



How do the UK
Dietary Strategies
to combat obesity
compare to other
countries?

1994

The Balance of Good Health

Rate of Obesity 14.9%

Inclusion of High Fat and Sugar on the plate



Zaninotto et al (2008); Nuffield Trust (2023)

The eatwell plate

Use the eatwell plate to help you get the balance right. It shows how much of what you eat should come from each food group.



2007

The Eat Well Plate

Rate of obesity 25%

Inclusion of beans on the protein segment

2016 The Eat Well Guide

Rate of obesity 26.9% and rising

Removal of knife and fork
'Guide' as opposed to 'Plate'

Non-essentials to diet moved to the outside of the plate



Public Health England (2016)

Nuffield Health, 2020

Current state of the UK



Higher or Lower?



Coventry (2011)

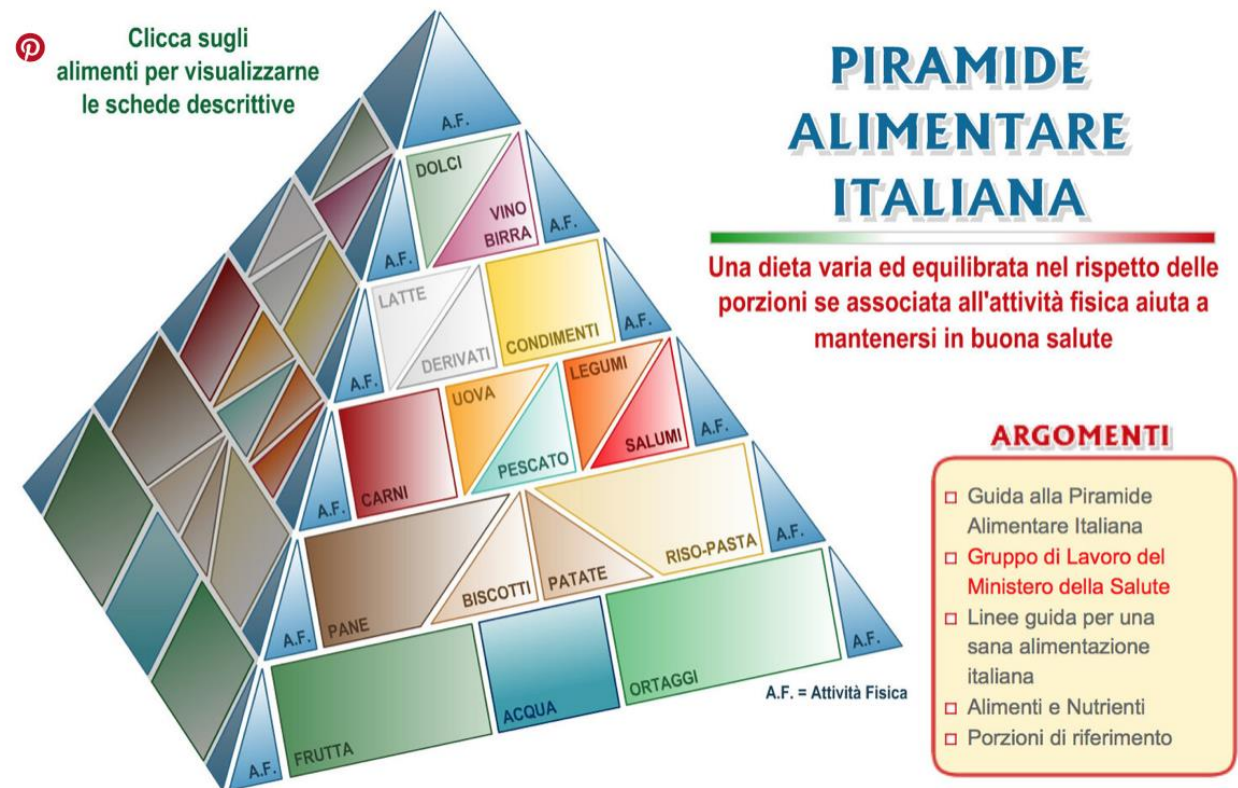


Italy?

Italian Model of Health

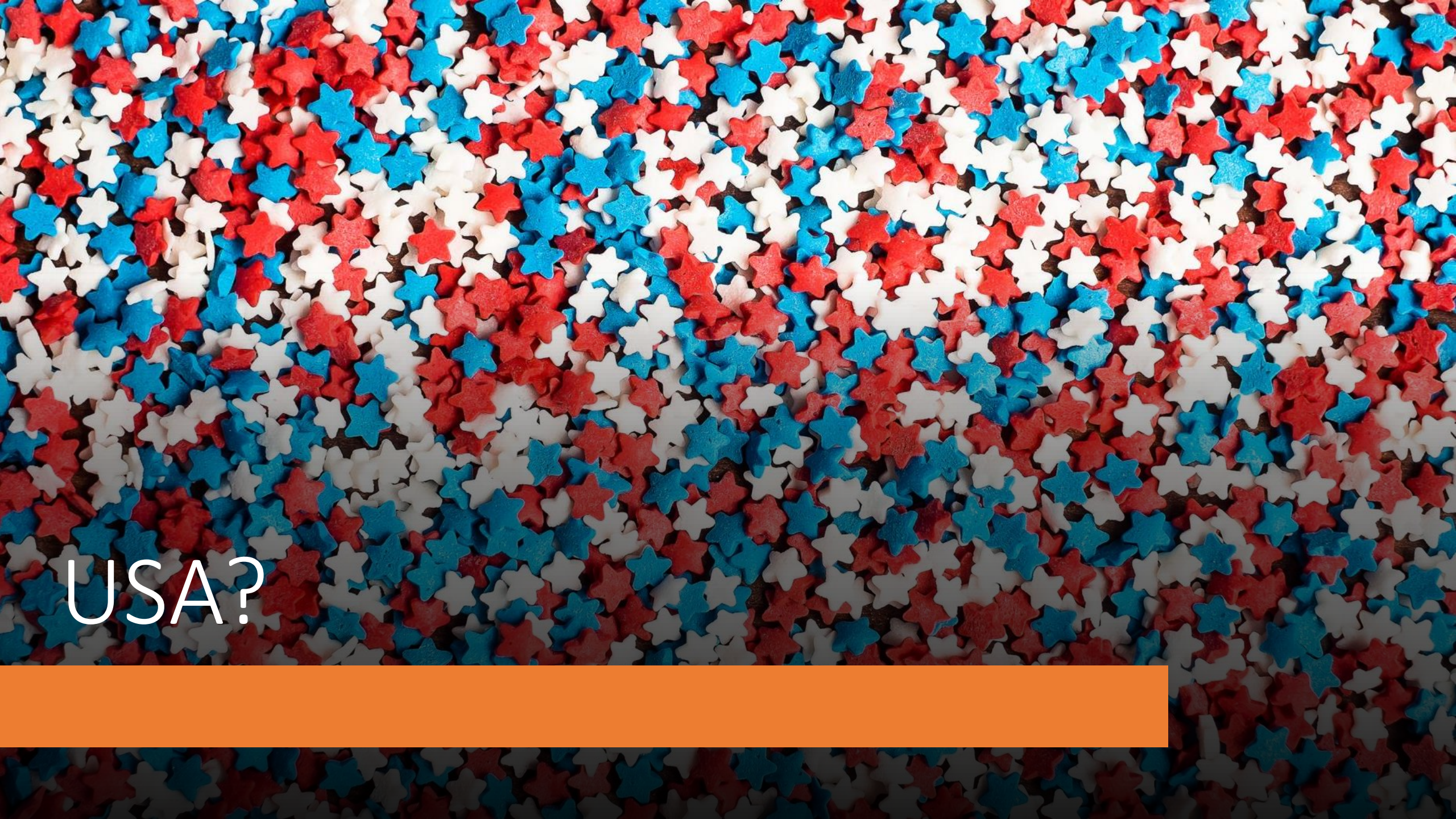
Rate of Obesity 12%, Childhood and rural rates increasing

Pyramid shows classic Mediterranean diet, but reality is veering from it



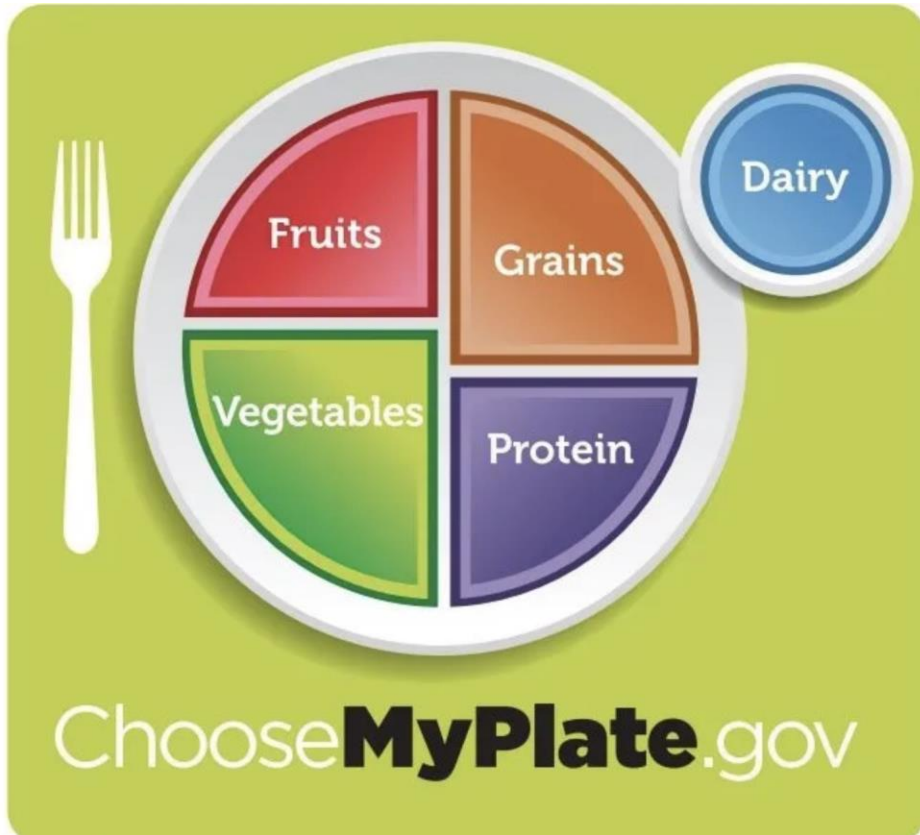
Rossi et al, 2022

EASO, 2021; Camara et al, 2021



USA?





Wallace et al, 2019

MyPlate

Rate of Obesity 36% and climbing

Knife and fork still used giving an unclear message

No mention of fluid intake or exercise

Food composition more calorie dense and fast food
more easily accessed

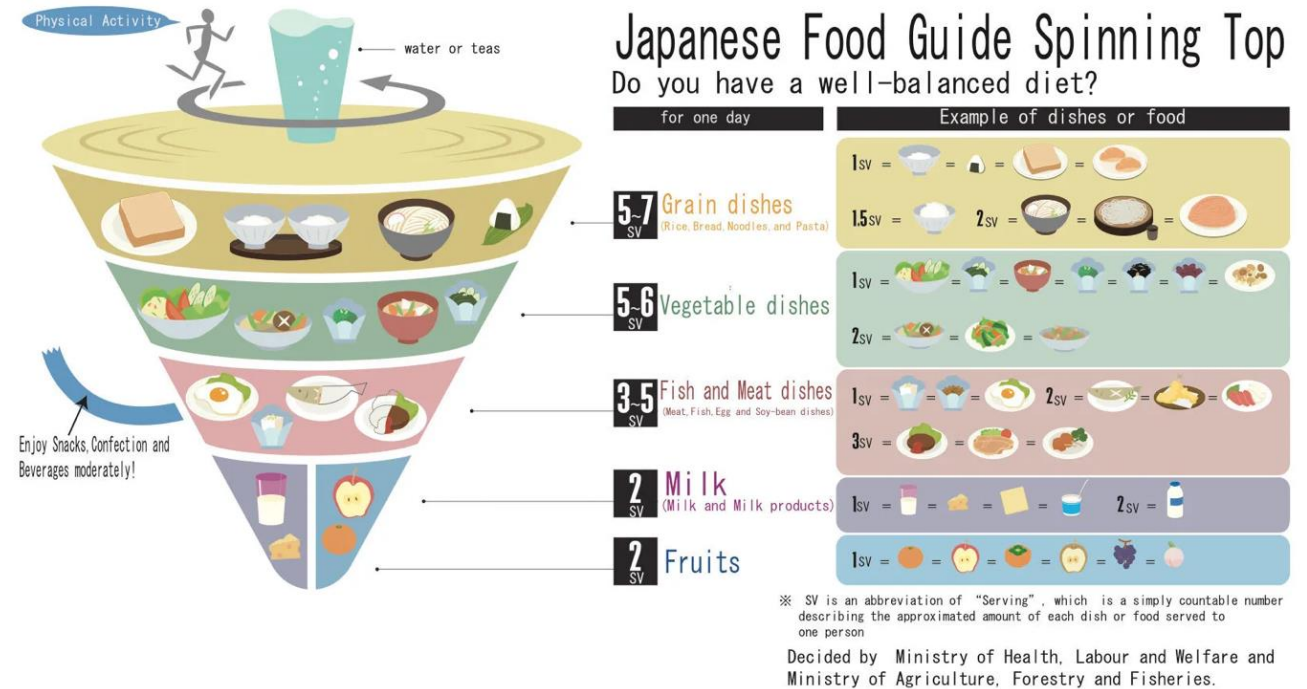


Japan?

The Spinning top of Good Health

Rate of Obesity 3.6%

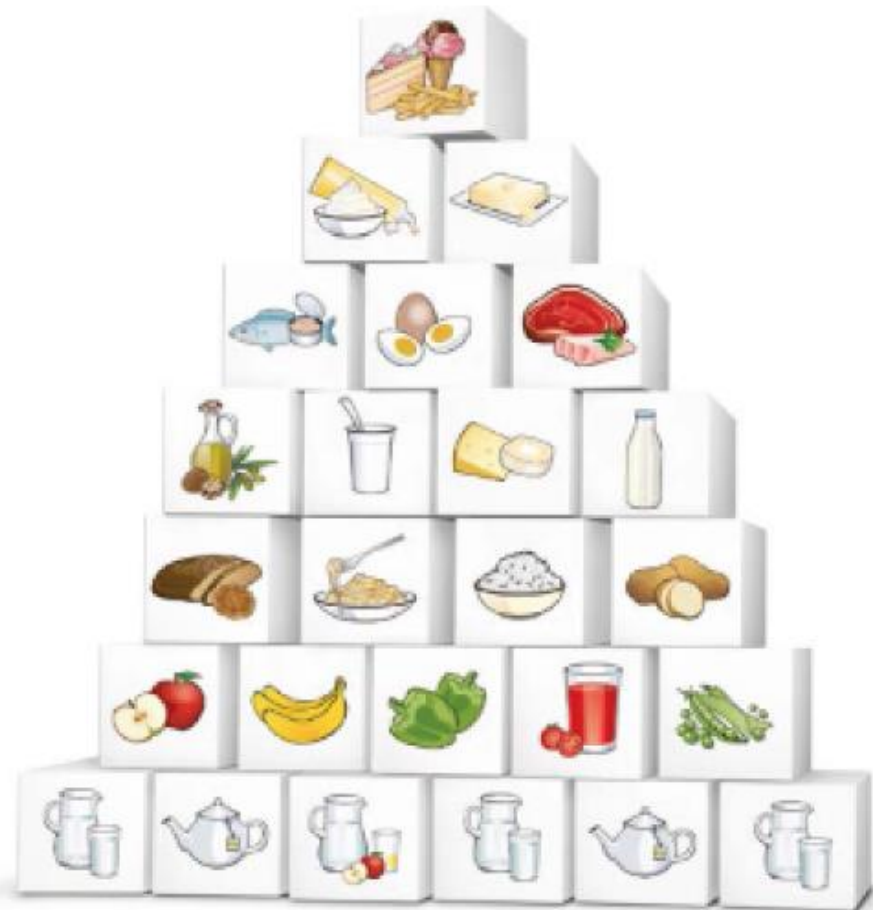
Rural communities getting less so, so access to fast foods getting easier



Yoshiike et al, 2013



Austria?



Die österreichische Ernährungspyramide

Rate of Obesity 11% but Overweight at 52%

Heavy mention of the importance of water, but no mention of limiting fruit juice sugars



Qatar?

The Good Health Clam

Rate of Obesity 40%

Uses real imagery and not cartoon impression

Does mention water but theres no guidance on exercise – social factors



Ibrahim, 2023

So are the
guidelines to
blame?



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INCREASING PORTION SIZES ARE TO BLAME FOR THE OBESITY CRISIS

1. Demonstrate how **PERCEPTIONS HAVE CHANGED** on what is an 'appropriate' portion
2. Explain why **EATING AWAY FROM HOME** is a concern?



WHY IS THERE A CONCERN ABOUT PORTION SIZES?

Food portions started ↑ in the
1970s (Livingstone and Pourshahidi, 2014; Loth, 2023)

Larger portions = more energy and
more calories (Hetherington, 2018)

Estimated that UK adults consume
200 – 300 extra calories per day (UK
Government, 2023)

Possible link between growing
portion sizes and obesity (Ledikwe et al.,
2005; Robinson, et al., 2023; WHO, 2022; Welsh Government,
2022)

WHAT IS A PORTION?

- A portion is the amount of food you eat at one time (British Nutrition Foundation, 2021)
- A serving is what is advised by the manufacturer's (British Dietetic Association, 2021)

A portion could be larger or smaller than guidelines or serving size



Nutrition Facts

Serving Size 2/3 cup (55g)

Servings Per Container About 8

Amount Per Serving

Calories 230

Calories from Fat 40

PERCEPTION

Lack of awareness?

Portion Distortion. How much are we really eating?
(British Heart Foundation, 2013)

- Portion size guidance has not changed since 1993
(Rippen et al., 2019)
- 78% of participants ($n = 140$) unaware of on-pack portion size
- 88% poured nearly 50% more



PERCEPTION (cont'd)

Effect of breakfast cereal type on portion size and nutritional implications (Lewis et al., 2021)

- UK study ($n = 169$) 10 breakfast cereals
- **ALL** larger than serving size
- Cornflakes *37g (10 - 93g)
- Weetabix *37.6g (9.4 – 94g)
- Granola *95g (21 – 312g) ($\uparrow$ energy intake $p < 0.001$) **14g of sugar!**

*Median



PORTION SIZE EFFECT

Portion size of food affects energy intake in normal-weight and overweight men and women (Rolls et al., 2002)

- Larger portions led to 30% greater energy intake ($P < 0.0001$)

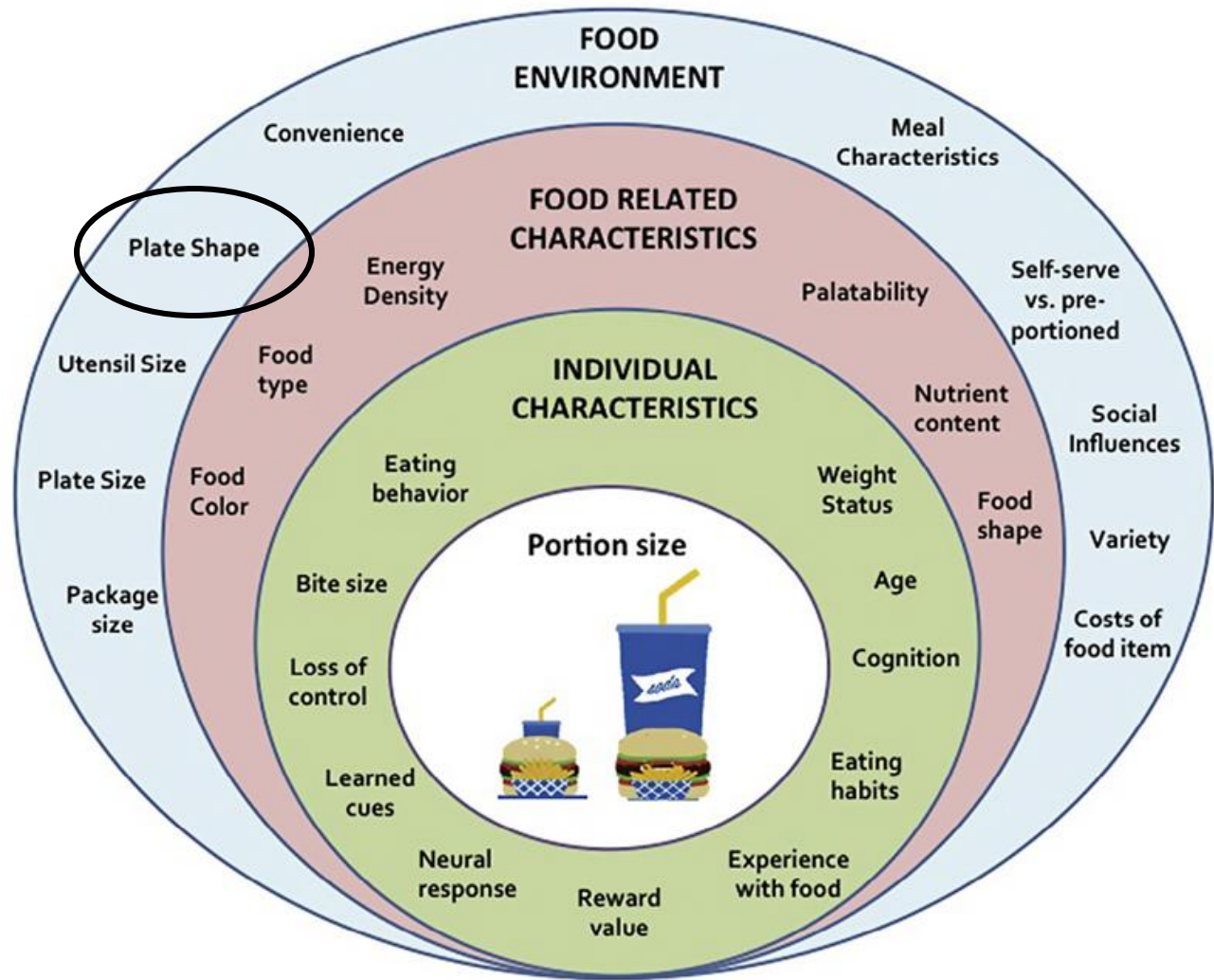
Portion, package or tableware size for changing selection and consumption of food, alcohol and tobacco (Hollands et al., 2015)

- ↑ Calories by 12% - 16%

Understanding WHY someone eats more can lead to strategies to stop overeating and obesity (Robinson et al., 2014; Zuraikat et al., 2019)

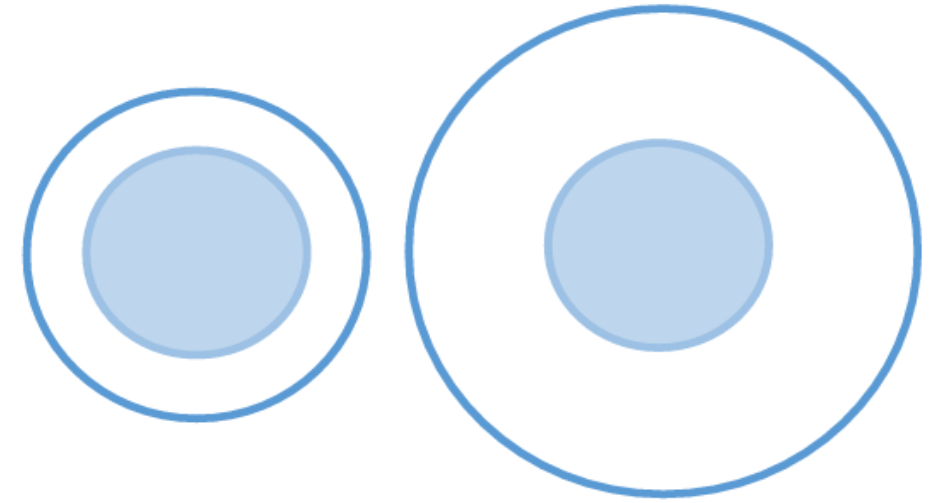
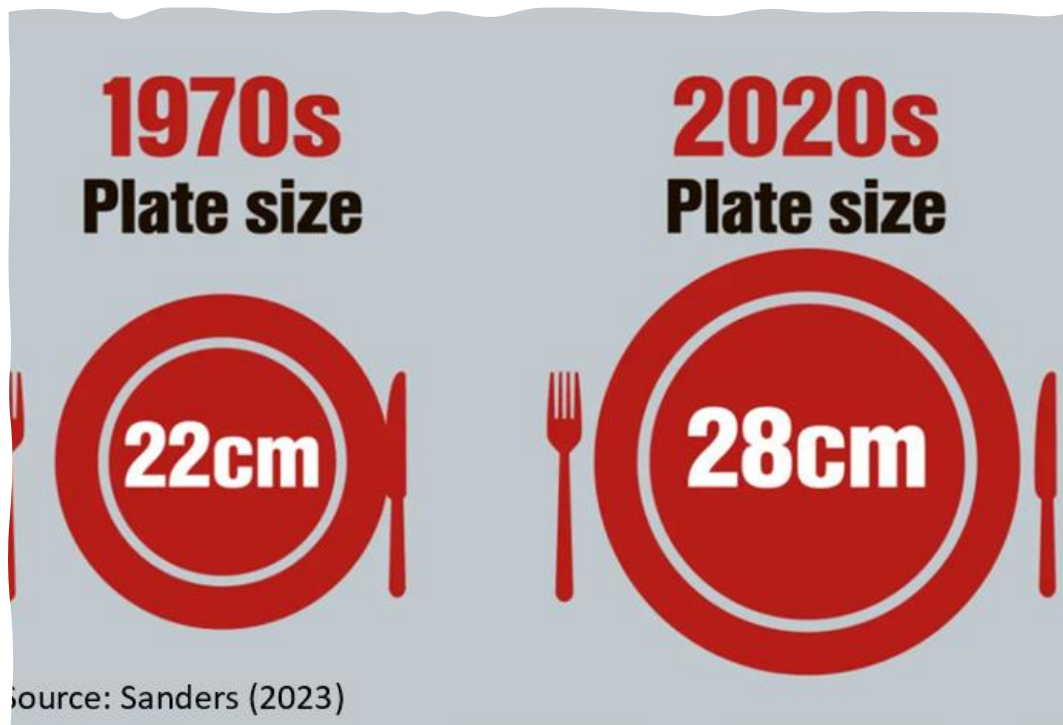
MECHANISMS INFLUENCING PORTION SIZE EFFECT

(Herman et al.,
2015; English et al., 2015)



Source: English et al. (2015)

PLATE SIZE



Delboeuf illusion shown with concentric circles

Source: English et al. (2015)

- Perception of portion on plate
'Delboeuf illusion' (Van Ittersum and Wansink, 2011)
- Perception does not always
result in reduced intake (Rolls et al., 2007; Robinson et al., 2014; Libotte et al., 2014)

WHY IS EATING AWAY FROM HOME A CONCERN?



Portions served in restaurants and fast-food chains are much larger and are ↑ in energy, fat, sugar and salt than at home (Gesteiro et al., 2022; Public Health England, 2018; Labisi et al., 2023)

1 in 5 meals are eaten out-of-home (Welsh Government, 2022)

(Over)eating out at major UK restaurant chains: observational study of energy content of main meals (Robinson et al., 2018)

- 46% ($n = 13,396$) restaurant meals averaged 977 kcals

WHAT CAN BE DONE?

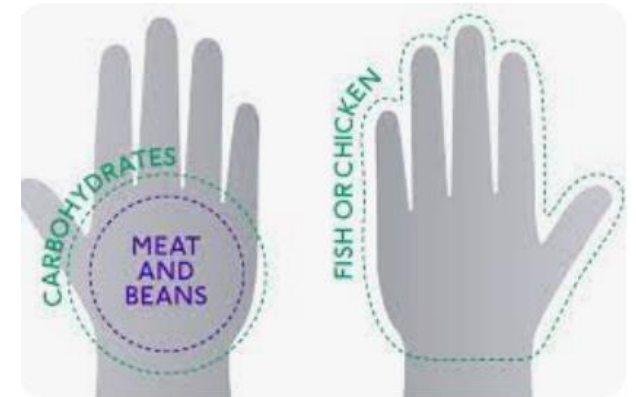
More education of appropriate portion sizes and visual cues (Almiron-Roig et., 2020; UK Government, 2023; Carruba et al., 2023)

Portion control tableware differentially impacts eating behaviour in women with and without overweight (Vargas-Alvarez et al., 2023)

- 44% ↓ portion size
- 48% ↓ energy intake
- The food industry needs to do their part!



Source: Diabestes.co.uk (2019)



British Heart Foundation

Source: British Heart Foundation (2023)

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How and why is the food industry to blame for the increase in obesity rates?

The consumer food environment – food availability, affordability, acceptability



Food production

Agriculture
Manufacturing



Food Availability

At home
Out of home



Advertising

Product/Place/Price/Promotion

Food production

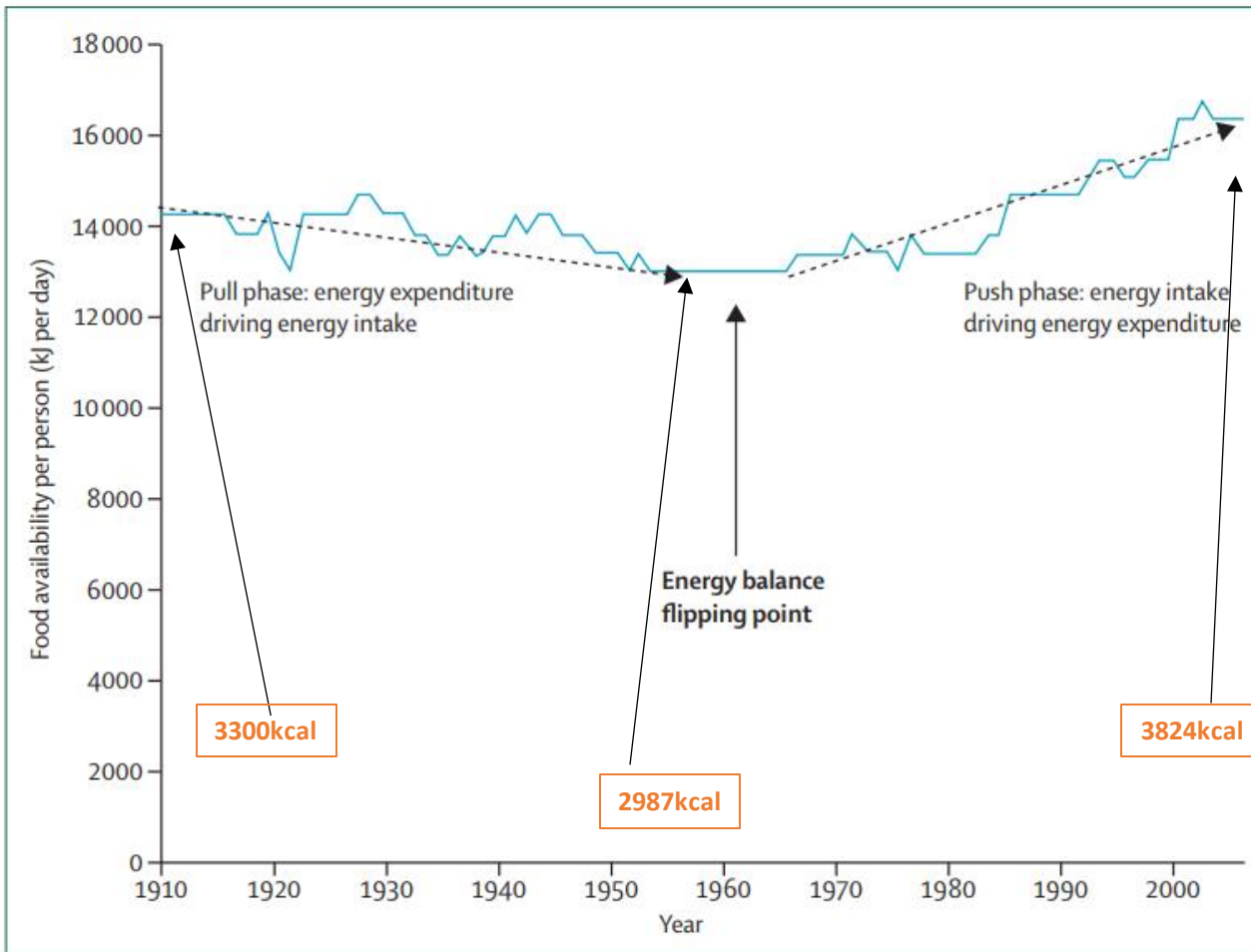


Figure 3: Food availability for the USA, 1910–2006⁵⁸

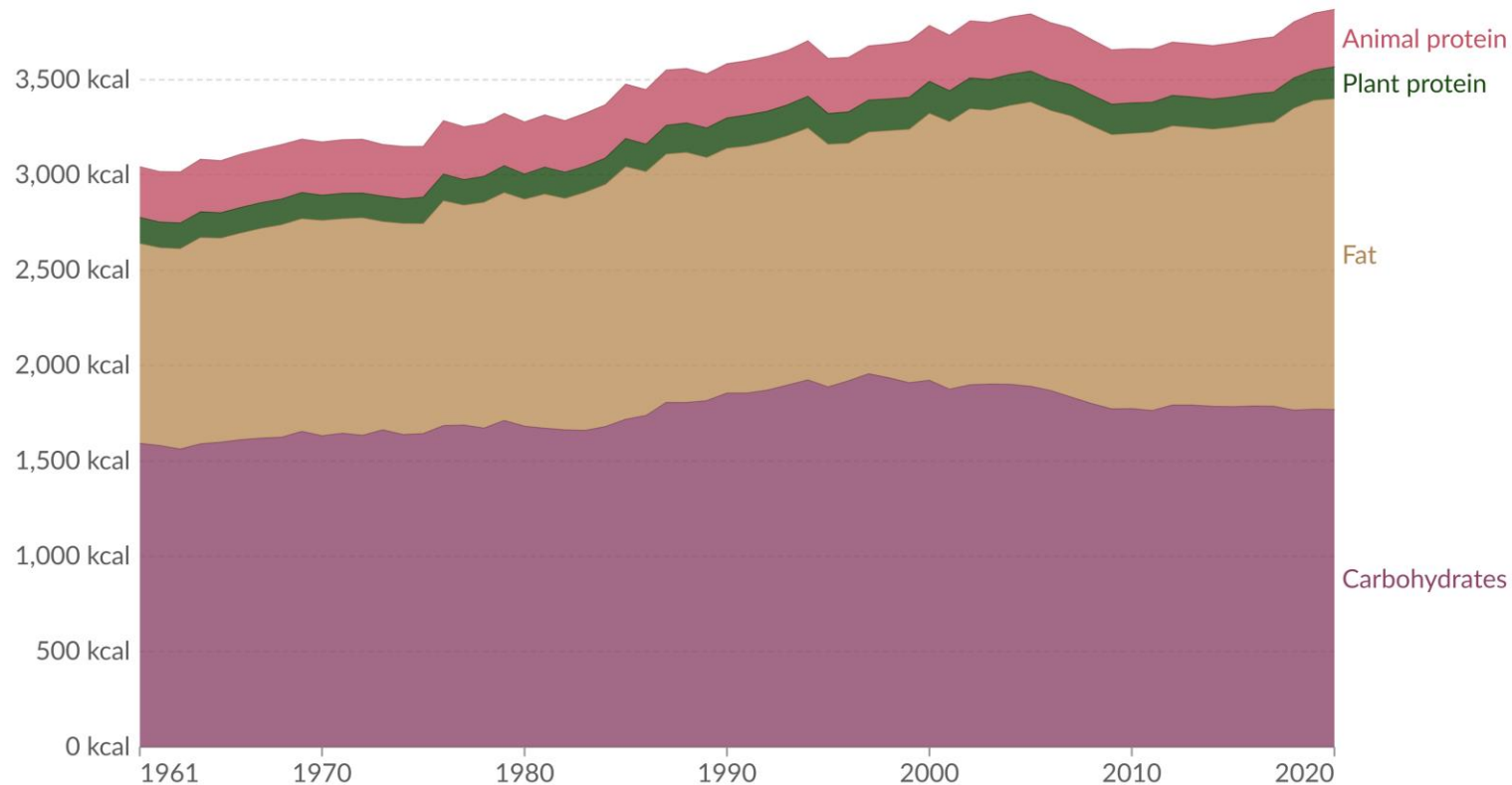
There are two distinct phases: a decrease in food energy supply (postulated to be pulled down by reduced energy expenditure requirements for daily living), followed by an increase in food energy supply (postulated to be pushed up by increasing food access). An energy balance flipping point is proposed, marking the change in how the US population generally achieved energy balance.

- *Pre-1960s typically* subsistence farming
- State investment to feed growing population & malnutrition
- 1970s Agriculture Policies "*Get Big or Get Out*" (2)
- Productivity improved (Mechanization, fertilizers, storage & transportation)
- Vertical integration – think meat processing (2)
- Encouraged economic global marketplace
- Calorie rich, cheaper & widely available (5)

Daily caloric supply derived from carbohydrates, protein and fat, United States, 1961 to 2020

Our World
in Data

The average per capita supply of calories derived from carbohydrates, protein and fat, all measured in kilocalories per person per day.



Data source: Our World in Data based on the Food and Agriculture Organization of the United Nations
OurWorldInData.org/diet-compositions | CC BY

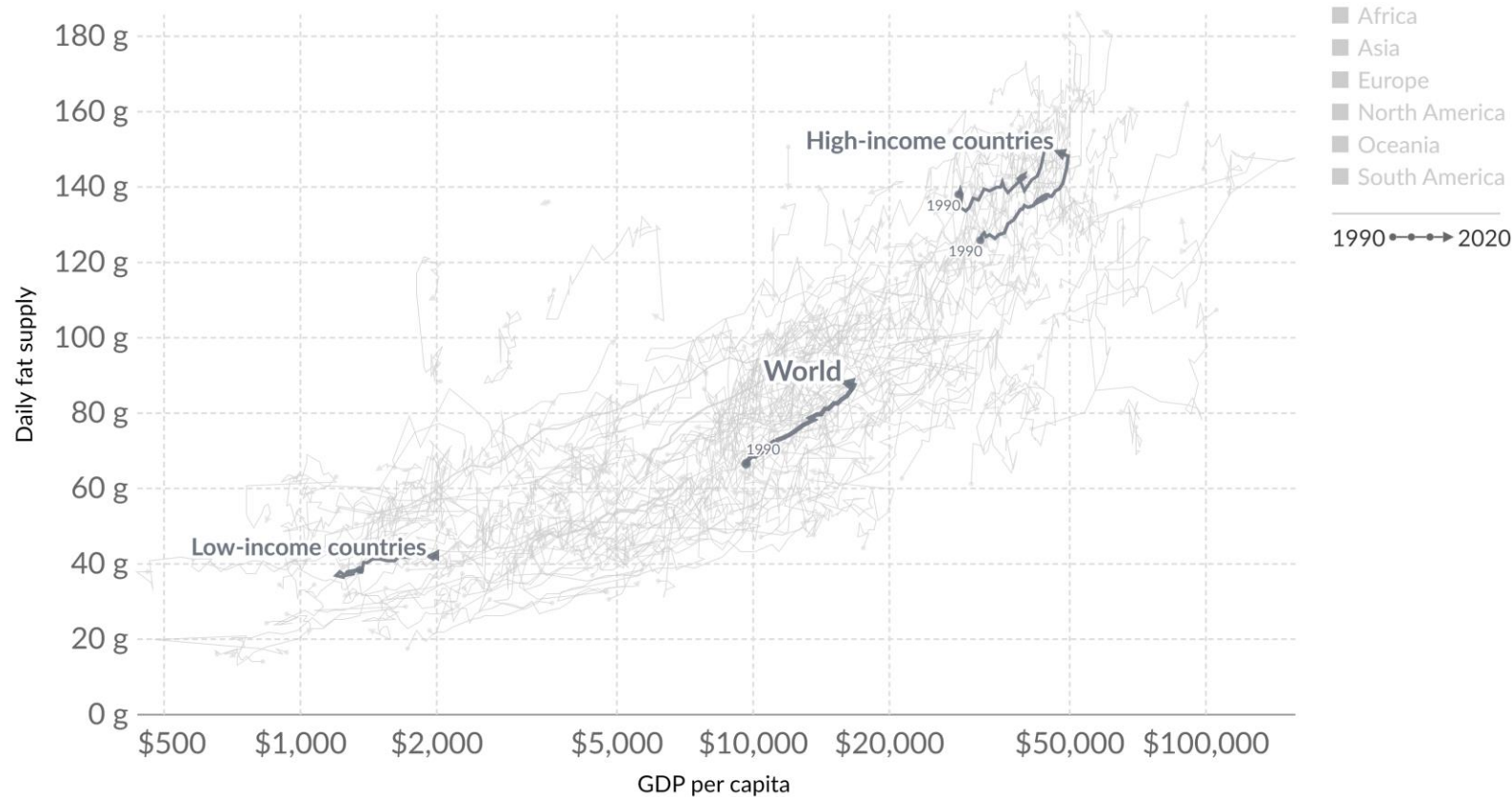
Impacts of increased food production

Macronutrients

- Fat has double from 45g
- Protein 19g to 31g
- Carbohydrates +11%

Daily per capita fat supply vs. GDP per capita, 1990 to 2020

Daily per capita supply of fat is measured in grams per person per day. Gross domestic product (GDP) per capita is measured in constant international-\$, which adjusts for inflation and cross-country price differences.



Data source: Food and Agriculture Organization of the United Nations; Data compiled from multiple sources by World Bank
OurWorldInData.org/food-supply | CC BY

Global Prosperity Vs Fat supply?

Meat Consumption
has increased 5 times
from 1960s ⁽⁶⁾

Cost of a Chicken is
22% less than 1970s ⁽⁶⁾

Food Availability

Supermarkets

(Account for 93% of consumer purchases)

Size - 10000 – 15000sq ft (1996) to 100000sq ft (2000) ⁽⁸⁾

Stock – 1k (1930) – 8k (1976) – 26k (1986) – 40k (2000) ⁽⁸⁾

Food Affordability

1957 33% of our income on food 2017 that proportion had shrunk to 8%. ⁽⁶⁾

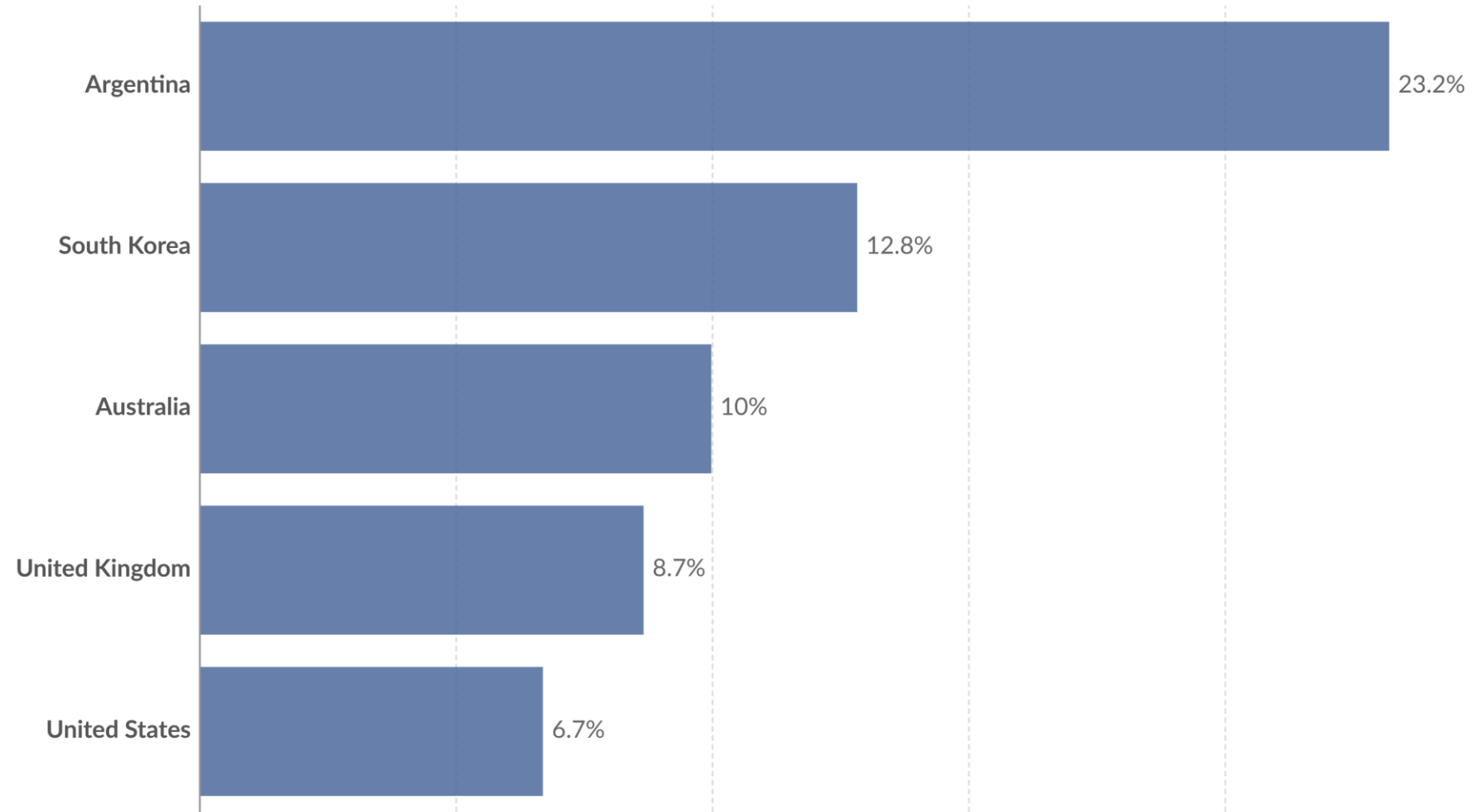
Current picture is changed in UK ⁽¹⁵⁾

- Average 11.8%
- Poorest Households 14.8%

Share of consumer expenditure spent on food, 2021

Food expenditure only includes food bought for consumption at home. Out-of-home food purchases, alcohol, and tobacco are not included.

Our World
in Data



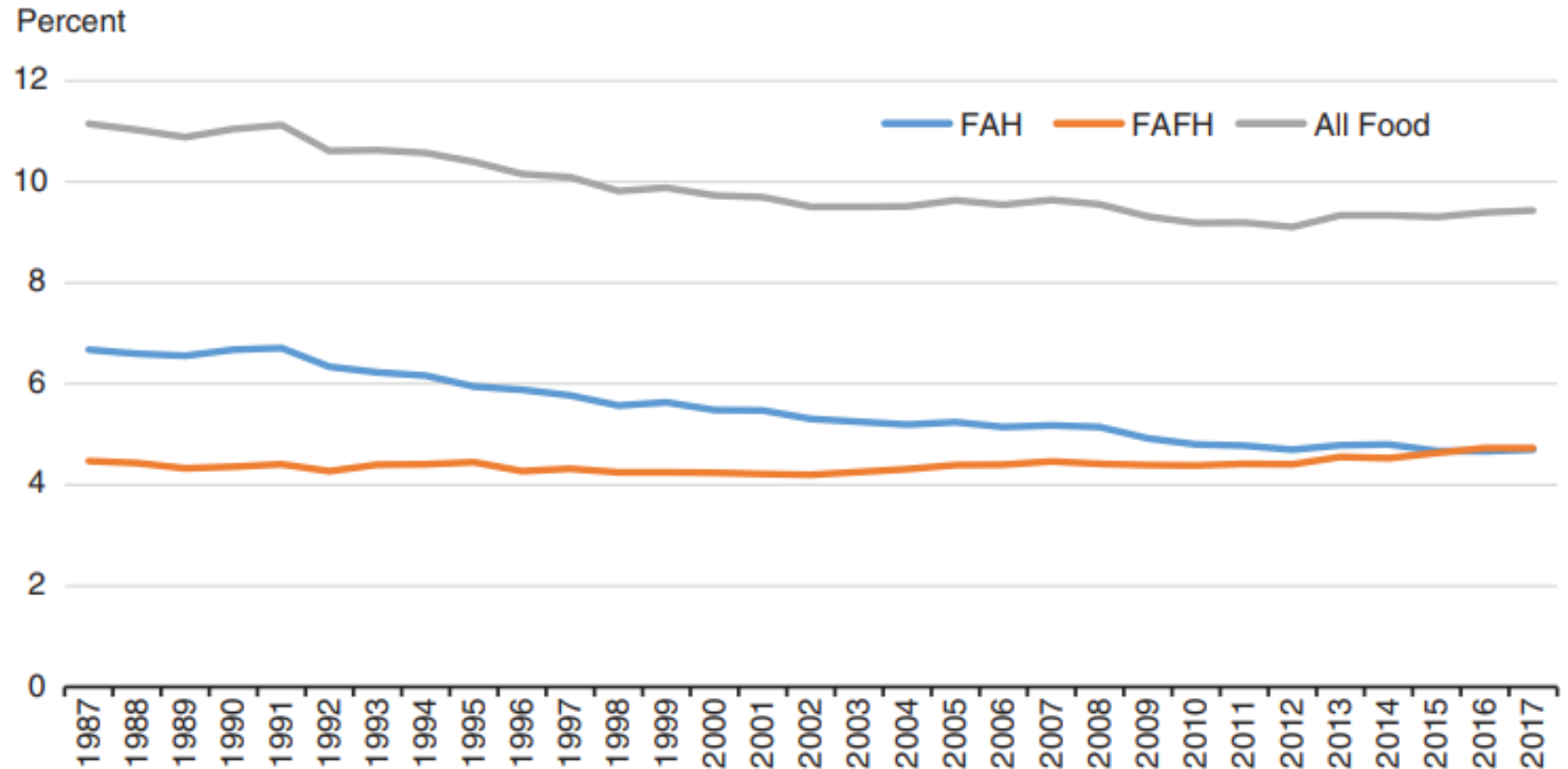
Data source: USDA Economic Research Service (ERS)

OurWorldInData.org/food-prices | CC BY

Food Availability

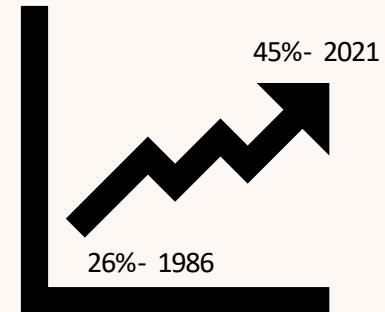
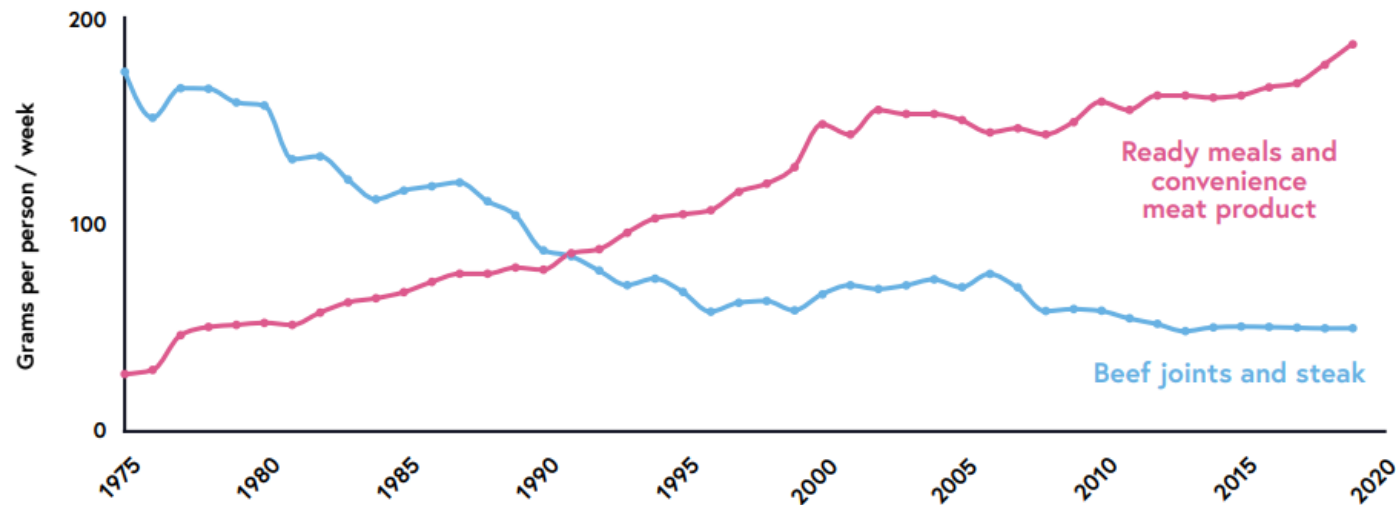
- FAFH – 44% 1987 increased to 50.2% by 2010 ⁽⁹⁾
- FAFH – 17% (1978) 34% (2012) ⁽¹⁰⁾
- HI 5½ / LI 4.2 visit per week ⁽¹⁰⁾
- QSR / FAFH Outlets – Diet inequalities ⁽¹⁴⁾

Household food expenditures as a percent of personal disposable income, 1987-2017



Food Availability – Ready to eat (rte)

Over the last 50 years we have increased our consumption of ready meals and decreased our consumption of cuts of meat²³



Home Technology (11)

Refrigeration Microwaves

1948 – 2% 1974 - introduced

1959 – 13% 1984 – 2.5million

1970 – 60% 1988 – 12million

National Food Strategy “The Plan” (2021) <https://www.nationalfoodstrategy.org/>

“Snackification”

UK Consumes 5 times the volume of crisps since 1970s ⁽⁶⁾

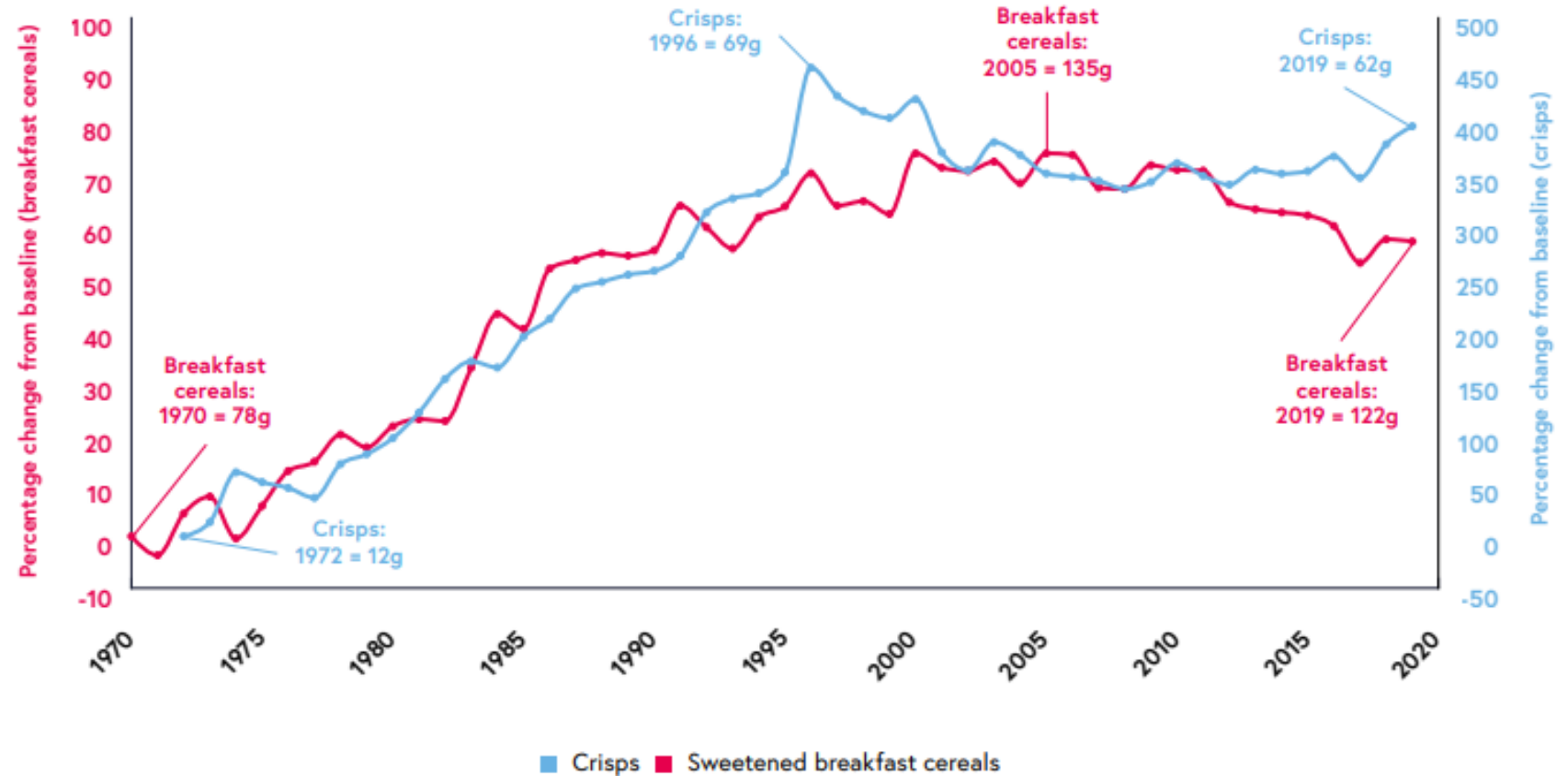
Over 40% of snacking is while watching TV or streaming ⁽¹²⁾

Snacking 20-30% of calorie intake ⁽¹³⁾

Vending Machines / Non-food retailing ⁽⁸⁾

- (1963) 1 for every 1,700
- (2007)- 1 for every 1,000(+70%)

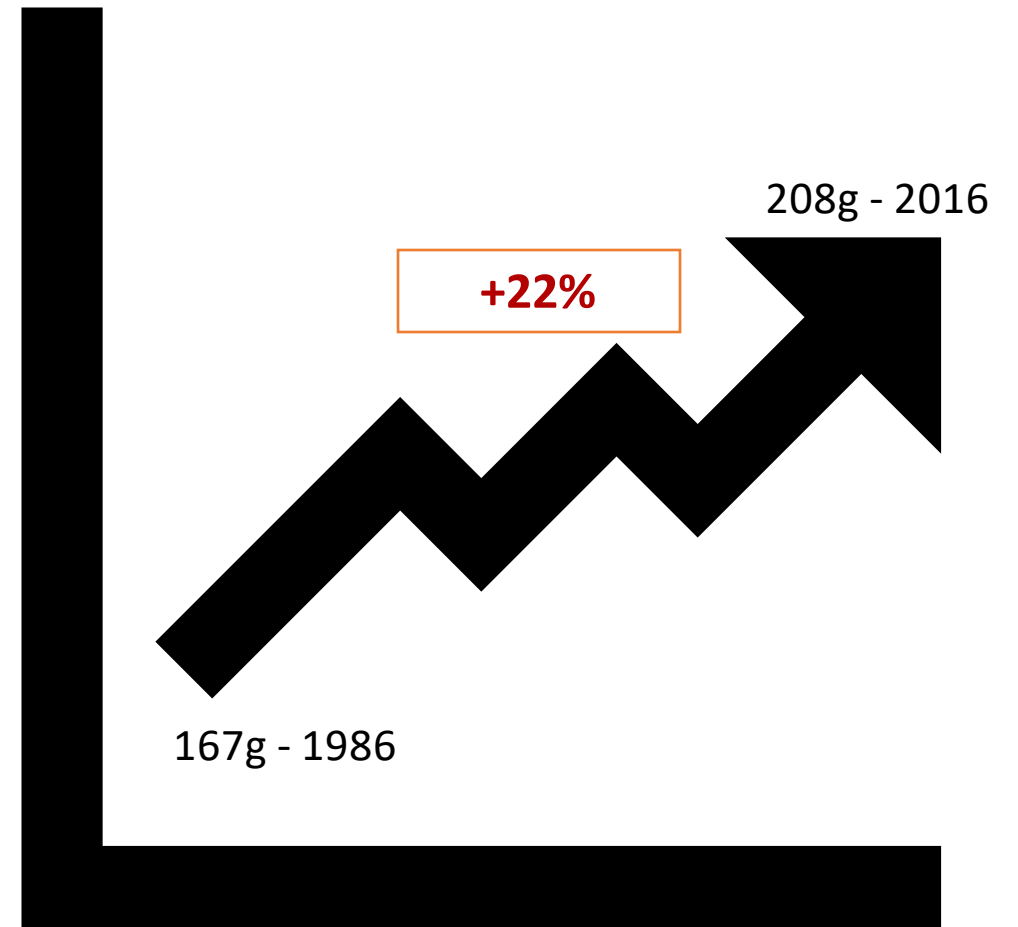
Purchasing of crisps and sweetened breakfast cereals has risen sharply since the 1970s⁴³



National Food Strategy “The Plan” (2021)

Fast Food

- Proximity linked to childhood obesity ⁽¹⁶⁾
- 1 in 4 food outlets ⁽¹⁸⁾
- Density 21% least deprived vs 31% most deprived ⁽¹⁸⁾
- Labour 114 per 100k vs 77 Conservative voting areas ⁽¹⁹⁾
- Both high & lower Income associated with proximity ⁽¹⁷⁾
- Portion Sizes have increased ⁽¹⁰⁾



Portion Size Fast Food Restaurants US

Signature Item – Burger, Wrap, Burrito , Sandwich etc.

McCrary et al., (2019) - Fast-food offerings in the United States

Advertising – 4 P's

- Product - Packaging used to sway positive adoption
- Price - Value Meals “bundling” or “multipacks”
- Place - Competitive foods in schools & health (Chicken Nuggets)
- Promotion - Advertising (Baby Formula) & Product Placement

Why is this important for food advertising?

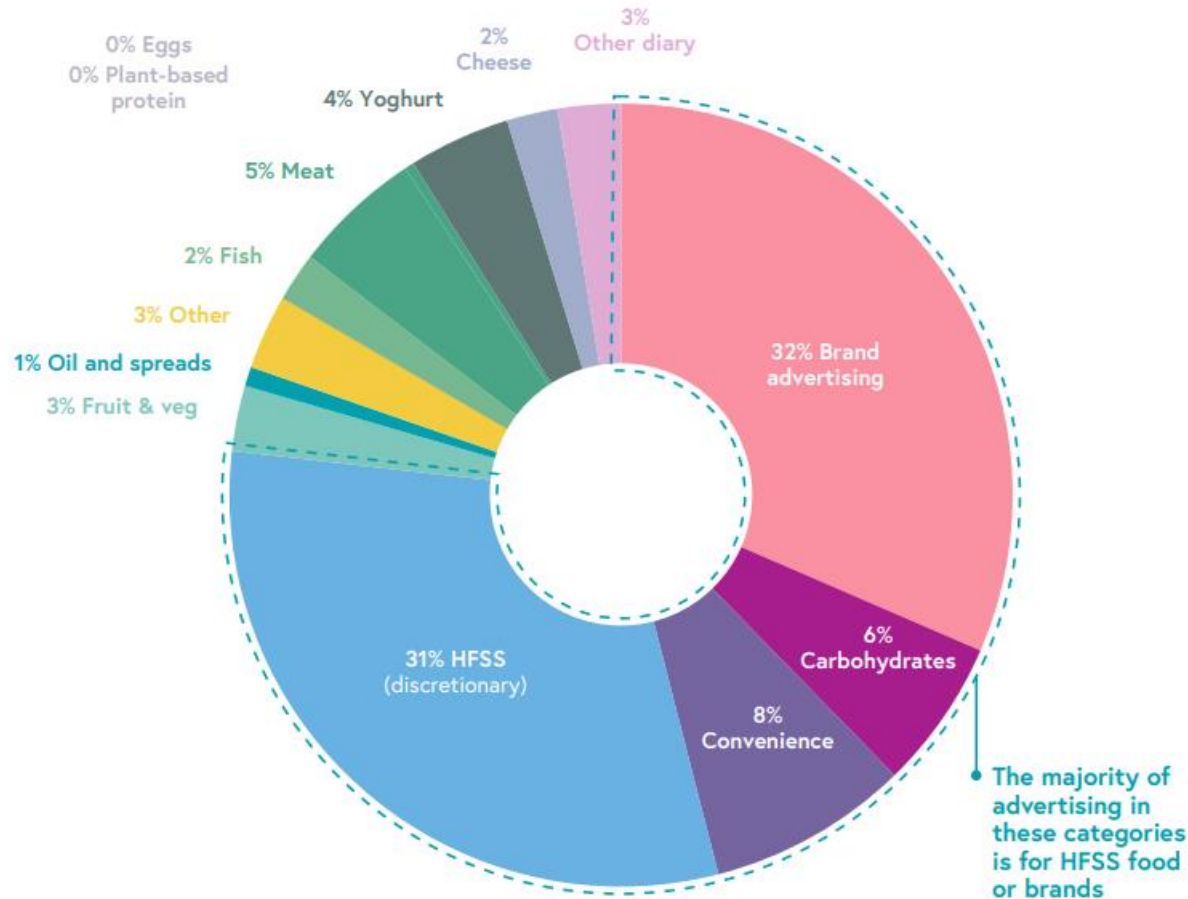
1985 - £19199 (7.7%) 2022 - £131368 (8.8%)

Highly competitive market & % of household incomes hasn't changed much in 36 years (22)



Advertising Foods HFSS

Most marketing money is spent promoting unhealthy products²³



- 81% of food advertising targeting children TV ⁽²⁰⁾
- Government Intervention – 9pm curfew / restrictions ⁽²³⁾
- 75% mobile advertising HFSS ⁽²¹⁾
- Cross Tracking devices & family members ⁽²¹⁾
- What's changing the current food environment 'Food Delivery Apps'
 - 39% cooking from scratch ⁽²⁰⁾
 - Once a day users ⁽²⁴⁾

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Lack of physical activity is to blame for the obesity crisis

Global fitness & exercise

► ADULT ACTIVITY LEVELS



1 in 4 adults don't meet the global recommended physical activity levels.



Sources:
<https://www.who.int/news-room/fact-sheets/detail/physical-activity>
<https://www.who.int/news-room/fact-sheets/detail/physical-activity>
<https://www.who.int/news-room/fact-sheets/detail/physical-activity>
<https://www.who.int/news-room/fact-sheets/detail/physical-activity>

5m premature deaths could be prevented each year if the global population was more active.

► MOST & LEAST ACTIVE COUNTRIES



12 hours /week

NETHERLANDS
 On average, Dutch people exercise for more than 12 hours each week.



3 hours /week

BRAZIL
 Brazilian people exercise for just 3 hours each week.

+THE GOOD BODY

Survival of the fittest

► ACTIVITY BY GENDER



26.3%



18.8%

Men are more active than women:
 26.3% of men meet the national standards for exercise, compared to only 18.8% of women.

18 - 34 year olds
 are the most active age group, with more than half exercising at least three times a week.

► CHILDREN'S FITNESS

11.8%

of people living in poverty meet the exercise standard.

Sources:
<https://www.who.int/news-room/fact-sheets/detail/physical-activity>
<https://www.who.int/news-room/fact-sheets/detail/physical-activity>
<https://www.who.int/news-room/fact-sheets/detail/physical-activity>
<https://www.who.int/news-room/fact-sheets/detail/physical-activity>



Only 24% of children participate in 60 minutes of physical activity each day.

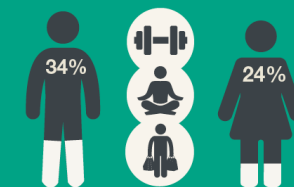
+THE GOOD BODY

How active are we?

1 in 4 women and 1 in 5 men in England are classed as physically inactive – doing less than 30 minutes of moderate physical activity per week.

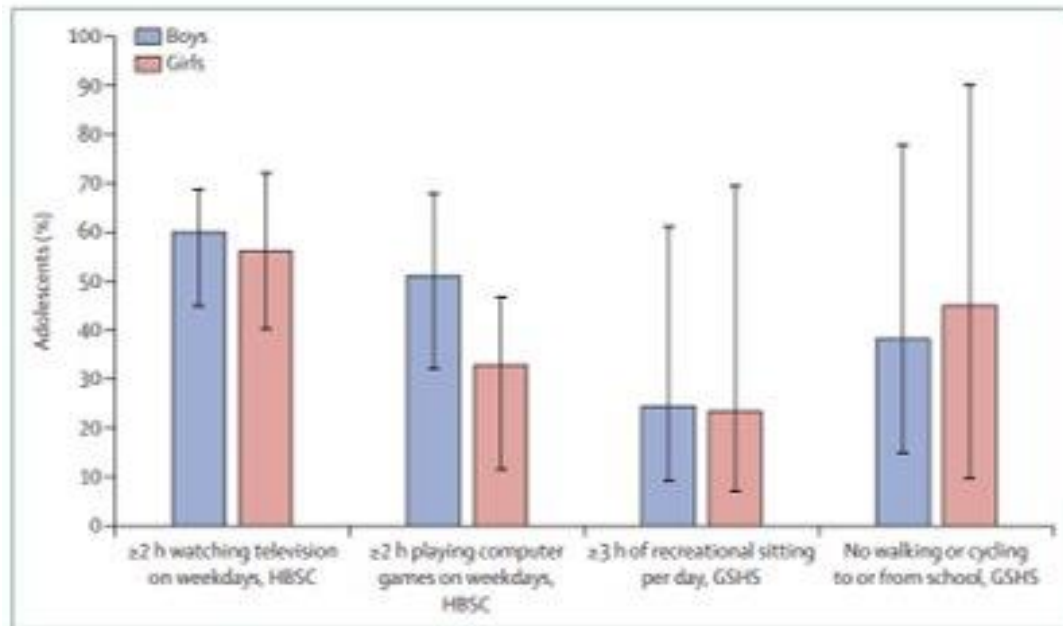


Only 34% of men and 24% of women undertake muscle-strengthening activities at least twice a week.

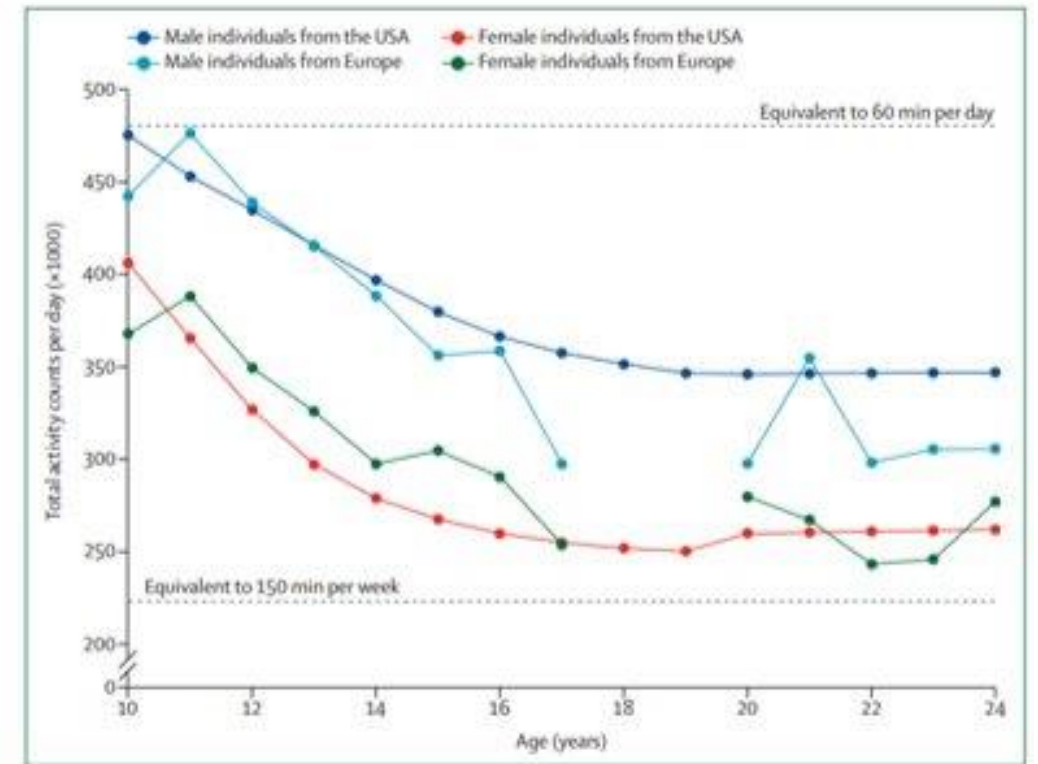


Men are more likely than women to average 6 or more hours of total sedentary (sitting) time on both weekdays and at weekends.





Sluijs et al., (2021)





Does Physical activity link with Obesity Levels?

- Higher involvement within sport has a correlation to lower BMI levels (Kahn et al., 2002)
- Within older people, increased interest in physical education leads to people being more active and therefore losing weight (Crombie et al., 2004)
- Children who do not participate in school PE lesson regularly have a higher chance of being overweight/obese (Hohl and Cook, 2013)
- When changing childrens perspectives of physical activity, they are more likely to be active all through their lifetime, their maintain a healthy weight (Young et al., 1996)

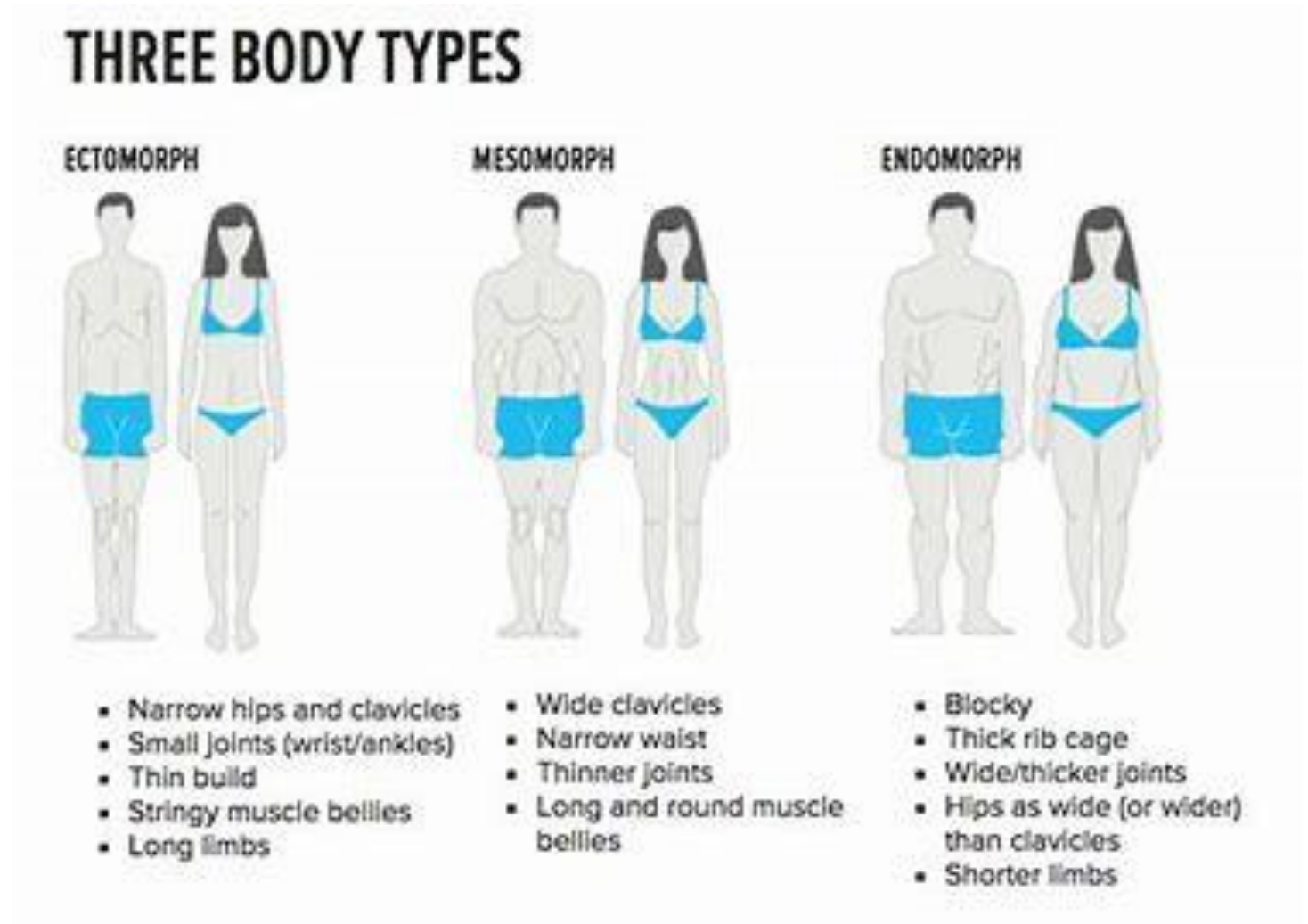
How to lose weight?

To lose weight you need to burn more calories than your intake (Elran-Barak, 2019)



Different Body types

- Ectomorph
- Mesomorph
- Endomorph



(Cinarli and Kafkas, 2019)

Endomorphs



Since COVID, It was found that a larger percentage of population display 'Mesomorphic Endomorph' (Rajkumar, 2020)



Endomorphs do not have problems building muscle but often have a more difficult time losing fat (Munday, 2023)



Although, Endomorphs benefit more from exercise as they lose weight faster, there are more endomorphs being sedentary than anyone else (Learner and Korn, 2019)

Infants (less than 1 year)

- Infants should be physically active several times every day in a variety of ways, including interactive floor-based activity e.g. crawling.
- For infants not yet mobile, this includes at least 30 minutes of tummy time spread throughout the day while awake (and other movements such as reaching and grasping, pushing and pulling themselves independently, or rolling over); more is better.



Toddlers (1-2 years)

- Toddlers should spend at least 180 minutes (3 hours) per day in a variety of physical activities at any intensity, including active and outdoor play; spread throughout the day; more is better.



Pre-schoolers (3-4 years)

- Pre-schoolers should spend at least 180 minutes (3 hours) per day in a variety of physical activities spread throughout the day, including active and outdoor play. More is better; the 180 minutes could include at least 60 minutes of moderate-to-vigorous intensity physical activity.



Children and Young People (5-18 years)

- Children and young people should engage in moderate-to-vigorous intensity physical activity for an average of at least 60 minutes per day across the week. This can include all forms of activity such as physical education, active travel, after-school activities, play and sports.
- Children and young people should engage in a variety of types and intensities of physical activity across the week to develop movement skills, muscular fitness, and bone strength.
- Children and young people should aim to minimise the amount of time spent being sedentary, and when physically possible should break up long periods of not moving with at least light physical activity.



Adults (19-64 years)

- For good physical and mental health, adults should aim to be physically active every day. Any activity is better than none, and more is better still.
- Adults should do activities to develop or maintain strength in the major muscle groups. These could include heavy gardening, carrying heavy shopping, or resistance exercise. Muscle strengthening activities should be done on at least two days a week, but any strengthening activity is better than none.
- Each week, adults should accumulate at least 150 minutes (2 1/2 hours) of moderate intensity activity (such as brisk walking or cycling) or 75 minutes of vigorous intensity activity (such as running), or even shorter durations of very vigorous intensity activity (such as sprinting or stair climbing), or a combination of moderate, vigorous and very vigorous intensity activity.
- Adults should aim to minimise the amount of time spent being sedentary, and when physically possible should break up long periods of inactivity with at least light physical activity.



Older Adults (65 years and over)

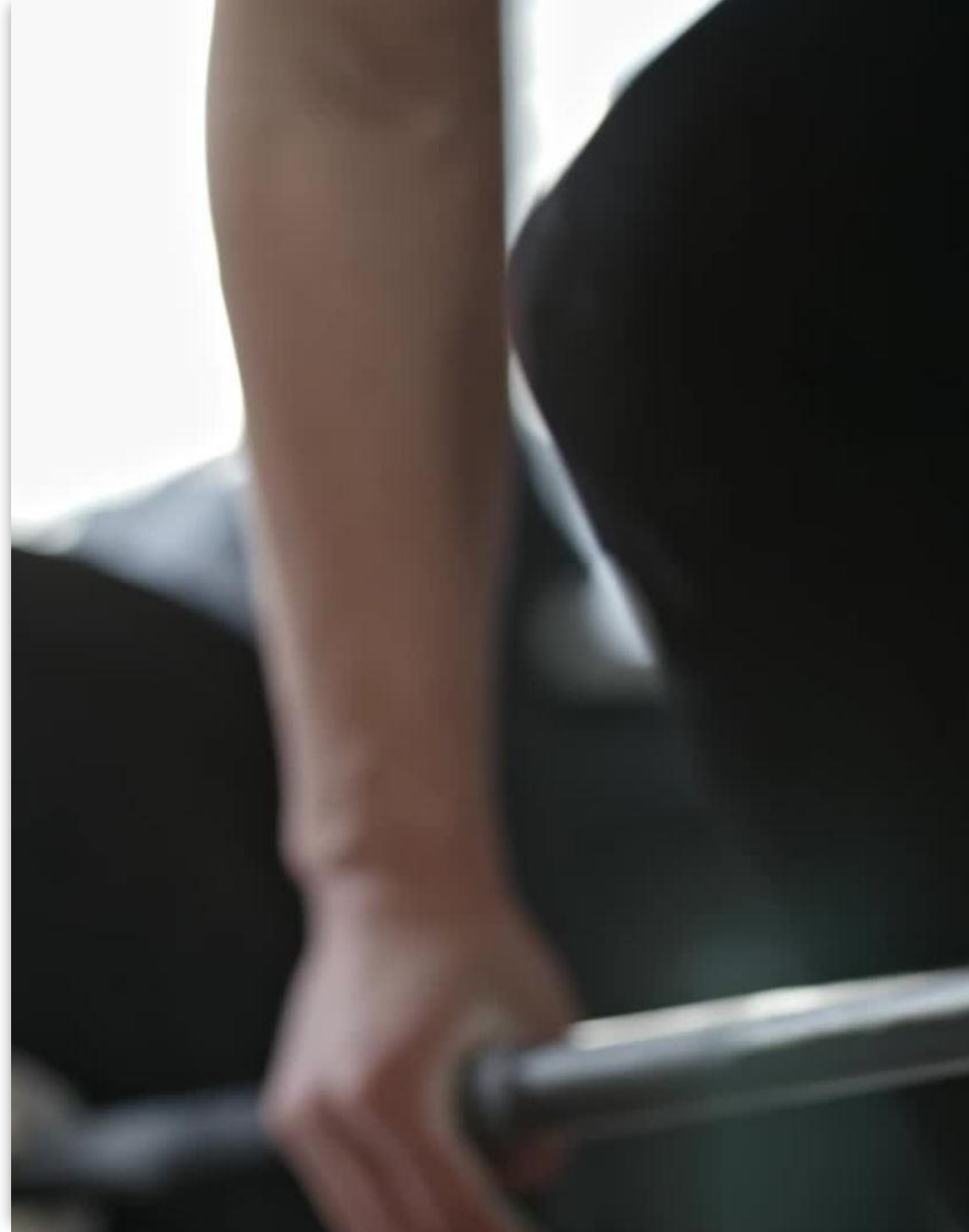
- Older adults should participate in daily physical activity to gain health benefits, including maintenance of good physical and mental health, wellbeing, and social functioning. Some physical activity is better than none: even light activity brings some health benefits compared to being sedentary, while more daily physical activity provides greater health and social benefits.
- Older adults should maintain or improve their physical function by undertaking activities aimed at improving or maintaining muscle strength, balance and flexibility on at least two days a week. These could be combined with sessions involving moderate aerobic activity or could be additional sessions aimed specifically at these components of fitness.
- Each week older adults should aim to accumulate 150 minutes (two and a half hours) of moderate intensity aerobic activity, building up gradually from current levels. Those who are already regularly active can achieve these benefits through 75 minutes of vigorous intensity activity, or a combination of moderate and vigorous activity, to achieve greater benefits. Weight-bearing activities which create an impact through the body help to maintain bone health.
- Older adults should break up prolonged periods of being sedentary with light activity when physically possible, or at least with standing, as this has distinct health benefits for older people.



Government guidelines for Physical Activity

Is exercise being overly commercialised?

- Although exercise can help, we found that even weeks without exercise and just eating correctly can lead to better weight loss (Bellicha et al, 2021)
- Awareness of calories has a bigger impact on losing weight than being active (Sweat and Manore, 2012)
- Understanding how much calories your body burns naturally has a greater impact on health in the long run than doing exercise (Nestle and Neshiem, 2012)



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Has your
perspective
changed?



Conclusion

Need to do all of them!



Eat smaller portion sizes



More appropriate government guidelines



Be physically active



Stop advertisement on unhealthy fast food



The image features a vibrant sunset background with a bright sun low on the horizon, casting a golden glow. Four people are silhouetted against this light: two adults and two children. On the left, an adult is captured mid-jump with arms raised high. In the center, a child is jumping, holding two balloons. To the right, another adult is jumping with arms outstretched. In the foreground, a small child is walking towards the right. The overall mood is joyful and energetic.

Healthy Living
Happy
Life..

Thank you
for listening



Perspectives on Health and Physical Activity (BMPE6003)

Group meetings and discussions for group seminar presentation

Date: 3rd October 2023

Location: Carmarthen campus

Presentation group members: Catherine, Jack, Joe, Laura and Tracy

A group discussion on topics started, and a WhatsApp group was set up to facilitate communication outside the university. We all agreed that as our group contains health, nutrition, and lifestyle students and PE students, we should focus on a topic that would be acceptable/appropriate to both groups.

Date: 17th October 2023

Location: Carmarthen campus

Initial thoughts on the topic for seminar presentation.

Provisional Title: Are increasing portion sizes why obesity rates are so high?

Tracy: Briefly explain what we mean by portion size and why they were first introduced. This will include a practical demonstration of how they have changed over the decades in the UK.

Laura: How do different countries tackle portion control? At the end of Laura's presentation, she will highlight obesity rates in other countries, leading to Catherine's presentation.

Catherine: Childhood obesity rates in the UK: Is this due to increased portion sizes, energy-dense food, or something else?

Jack: How have media and, more recently, social media influenced society's perception of portion sizes? Is it a good thing as more people have access to recipes and nutritional information—or a bad thing as there is misinformation, etc?

Joe: Is the food industry to blame for the increase in portion sizes, or are there other factors to consider?

The presentation ends by asking for opinions on the correlation between portion sizes and obesity rates.

Group minutes 1 of 3

Date: 9th November 2023

Location: Carmarthen campus

The group needs to give a 5-minute presentation next week identifying progress and what sections each will discuss. Further discussion is needed to ensure that the presentation has a central theme. A decision was made to change direction, and now the central theme is obesity, not portion sizes.

New title: What is causing the obesity epidemic? 4 Different perspectives.

Catherine: What is obesity, and what are the health risks?

Laura: What are the UK dietary guidelines, and how are they different to other countries? Is this the reason for the obesity crisis?

Tracy: How and why are increasing portion sizes to blame for the obesity crisis?

Joe: How and why is the food industry to blame for increasing obesity rates?

Jack: How and why is lack of exercise to blame for increasing obesity rates?

Date: 14th November 2023

Location: Carmarthen campus

Feedback from the 5-minute presentation from Alison.

Happy with the overall theme. However, Catherine's presentation must not be just descriptive, as all the presentations need to be critical.

Date: w/c 20th November 2023

Location: WhatsApp

There are no concerns at present, as everyone is progressing well with their slides for the presentation.

Date: w/c 18th December 2023

Location: WhatsApp

Everyone is progressing well with their research and slides for the presentation. The trial run was confirmed with Alison for 11th January 2024.

Group minutes 2 of 3

Date: w/c 8th January 2024

Location: WhatsApp

We all agreed that alterations to the final presentation must be made before the trial run on the 11th of January. Further discussion on how many slides to have each, in what order to present and ensuring all fonts match. Tracy emailed Alison to ask if a clicker is available for the presentation.

Trial run through (11th Jan), the final decision was made on how to start and end the presentation. Jack will start and Catherine will end. Feedback was given on everyone's presentation and some changes were made. A clicker was obtained from the IT department, and this will be available on Tuesday. Agreed that Joe will submit the presentation to Turnitin tomorrow.

Group minutes 3 of 3