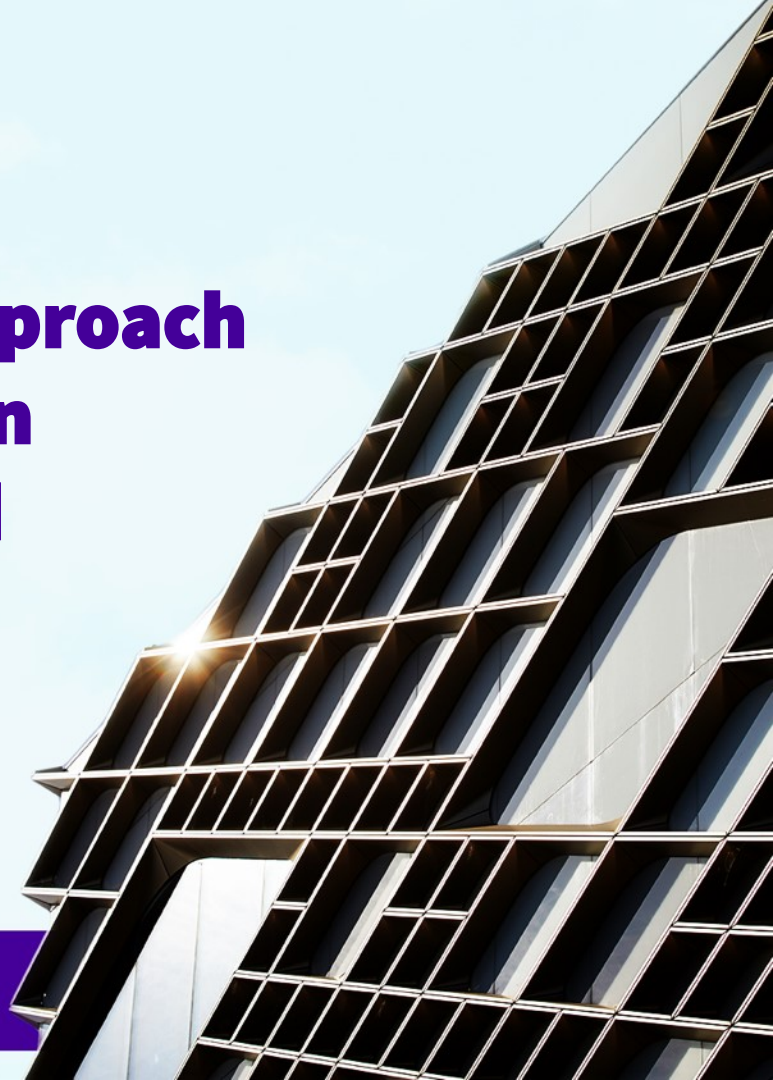


# **An age-period-cohort (APC) approach to studying long-term trends in adiposity measures in England**

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Magdalena Opazo Breton

UK Ageing Research Funders' Forum, London 7<sup>th</sup> February 2025



# Obesity Data



**26%**

Obesity is a growing public health concern

Obesity varies with age

Risks associated with obesity increase with age

Trends in obesity effected by an aging population

# Obesity Data

## Health Survey for England

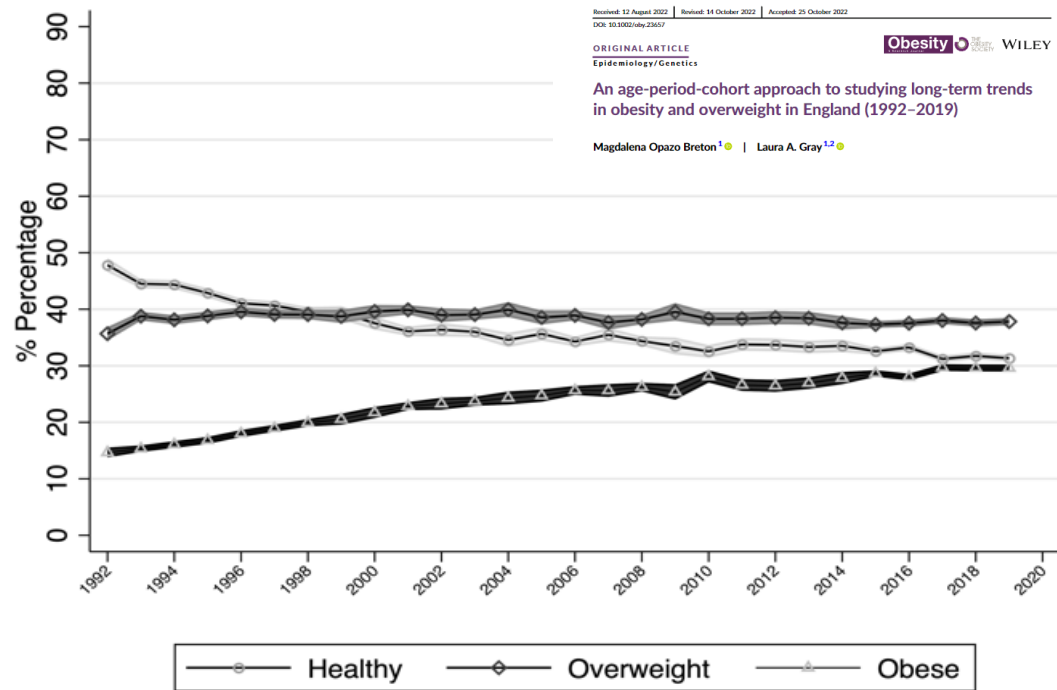
BMI, height, weight for children and adults

Waist circumference in adults and children over 11 years

Annual data

Same variables available for children and adults

# Obesity and Overweight Trends in England



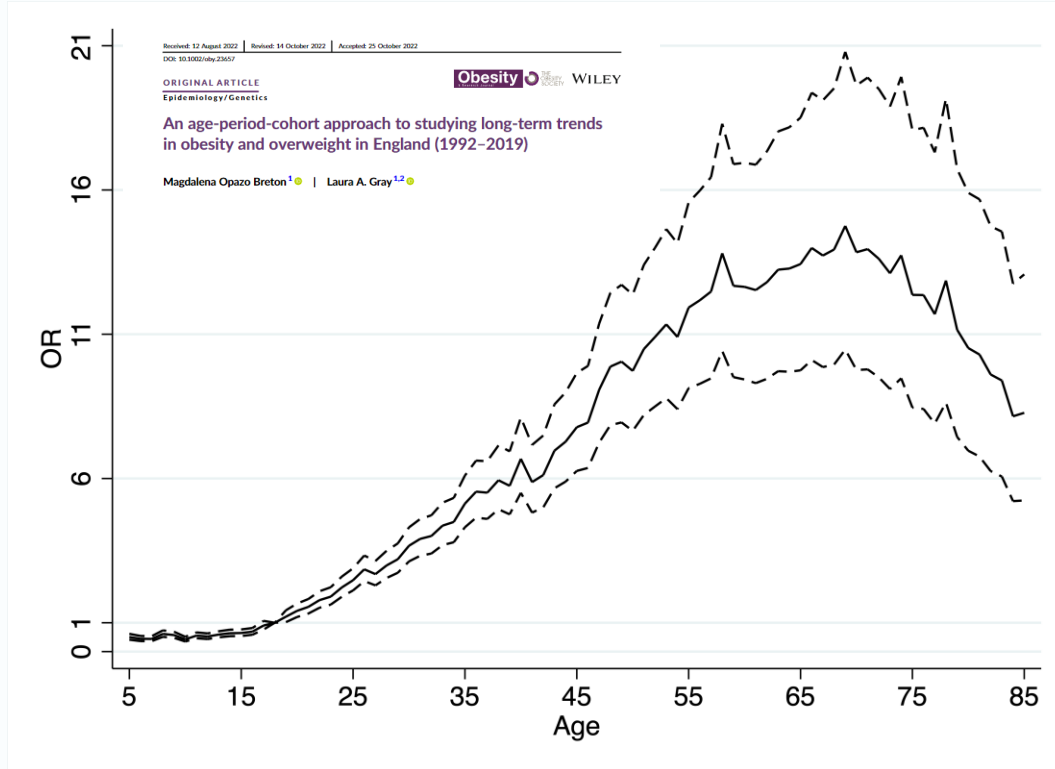
Traditionally defined using BMI thresholds

Increase in prevalence of obesity 1992–2019

Prevalence of overweight remains stable

Decrease in 'healthy' weight

# Obesity and Aging



Traditionally defined using BMI threshold ( $\text{BMI} > 30 \text{ kg/m}^2$ )

Obesity increases until around 65 years before reducing in prevalence

BMI is problematic in older adults

# Measurement of Obesity

Waist vs weight measurements

Body mass index (BMI)

$\geq 30 \text{ kg/m}^2$

Waist circumference (WC)

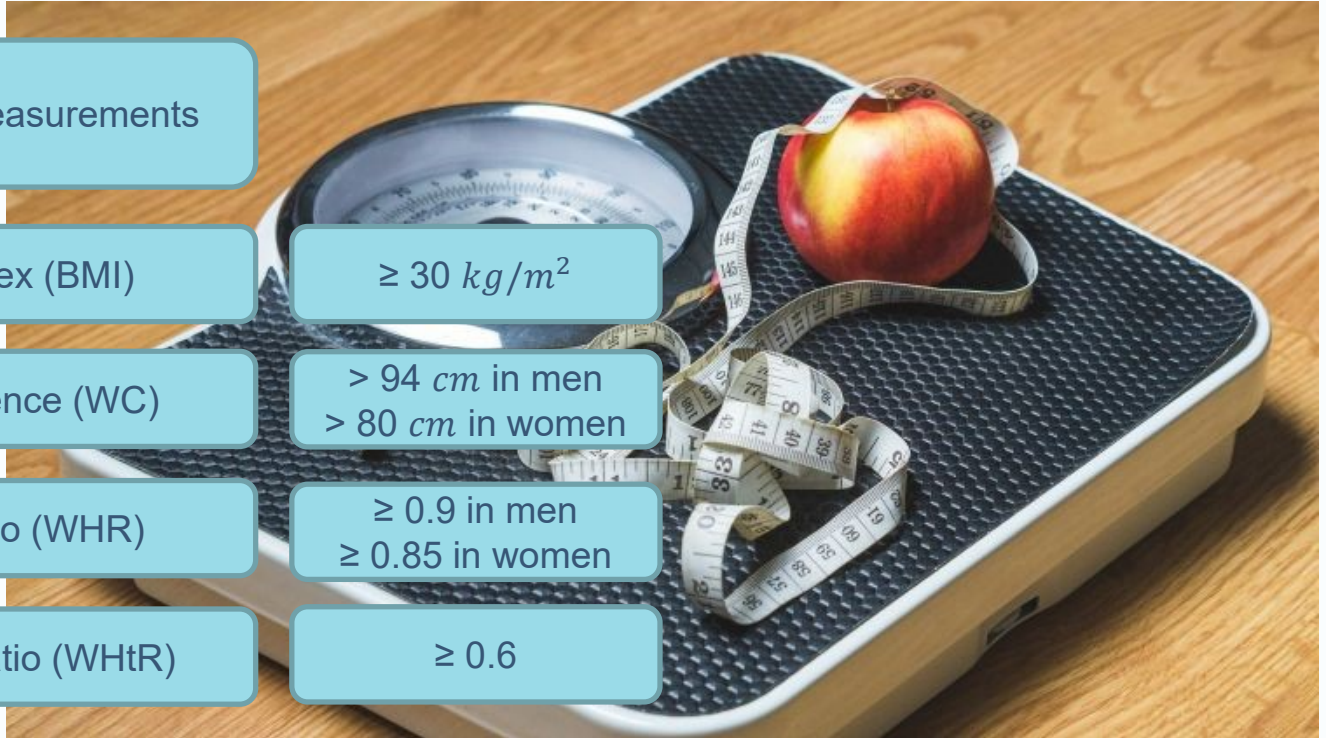
$> 94 \text{ cm}$  in men  
 $> 80 \text{ cm}$  in women

Waist-to-hip ratio (WHR)

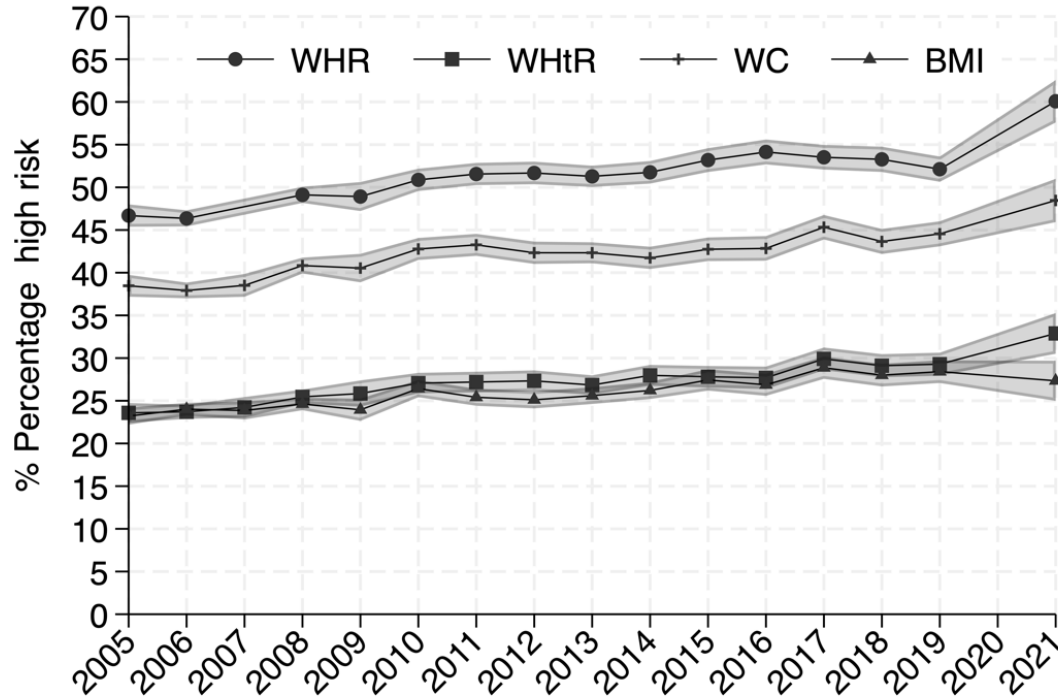
$\geq 0.9$  in men  
 $\geq 0.85$  in women

Waist-to-height ratio (WHtR)

$\geq 0.6$



# Obesity Trends in England



All measures show a steady increase over time

Rise during 2020 lockdown

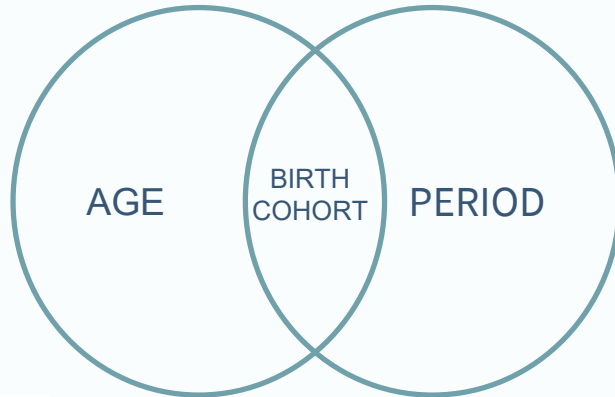
Aging population? Environmental?  
Generational?

# What is driving these trends?

AGE: How does the prevalence obesity change with age?

PERIOD: How does the proportion of people living with obesity change over time?

COHORT: Are their generational differences in obesity trends?



**PROBLEM: PERFECT COLLINEARITY**

**$\text{PERIOD} - \text{AGE} = \text{BIRTH COHORT}$**



# Data Groups

## Health Survey for England

11 to 85 year olds in England



HSE age groups

Data from 2005 to 2021



3-year time periods

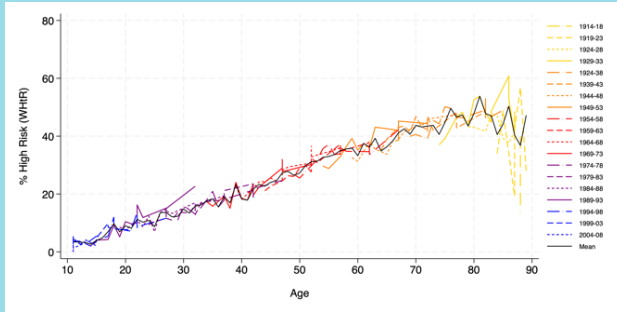
Born between 1929 and 2008



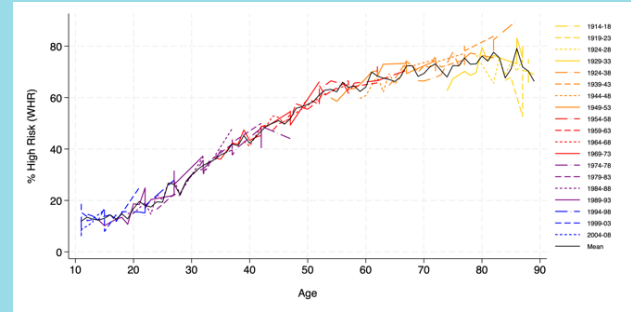
5-year birth cohorts

# Age Trajectories by Birth Cohort

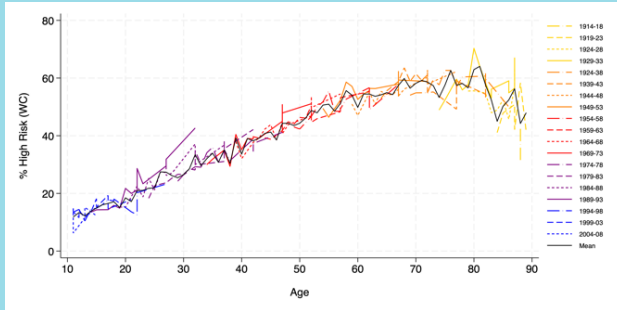
WHtR



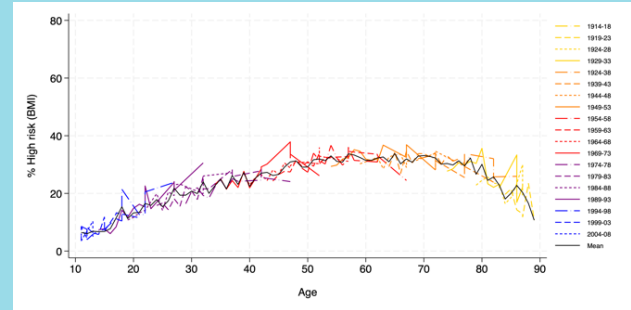
WHR



WC

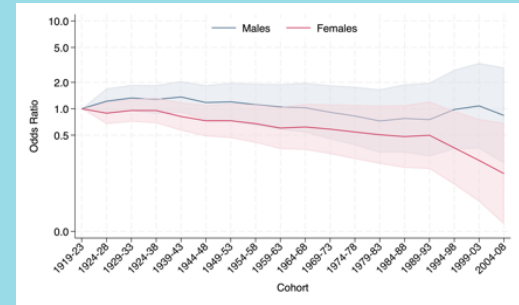
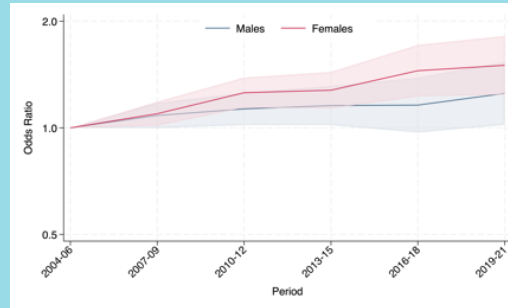
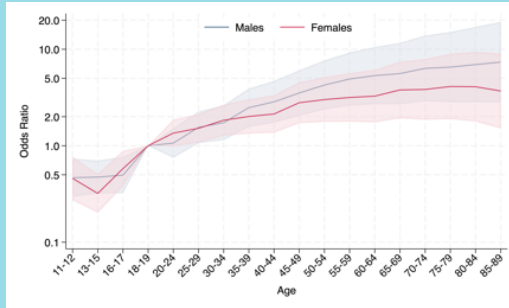


BMI

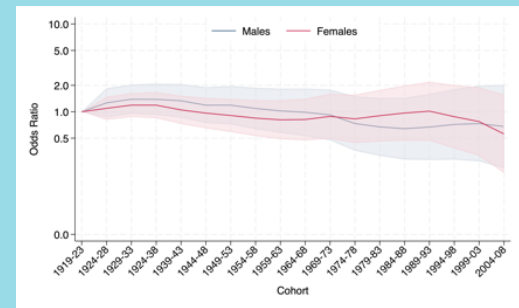
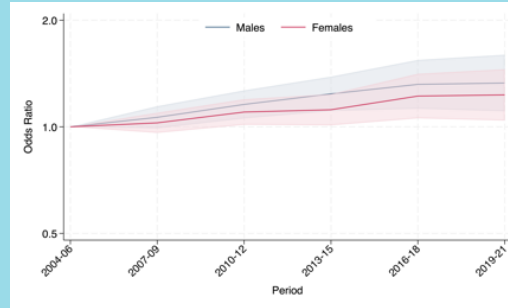
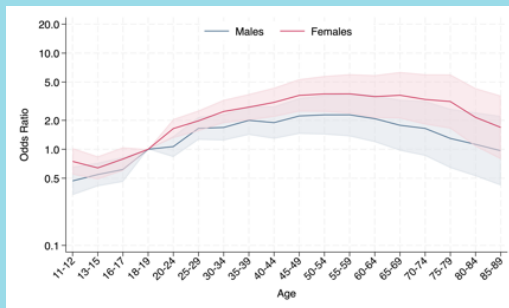


# Age-Period-Cohort (APC) Analysis

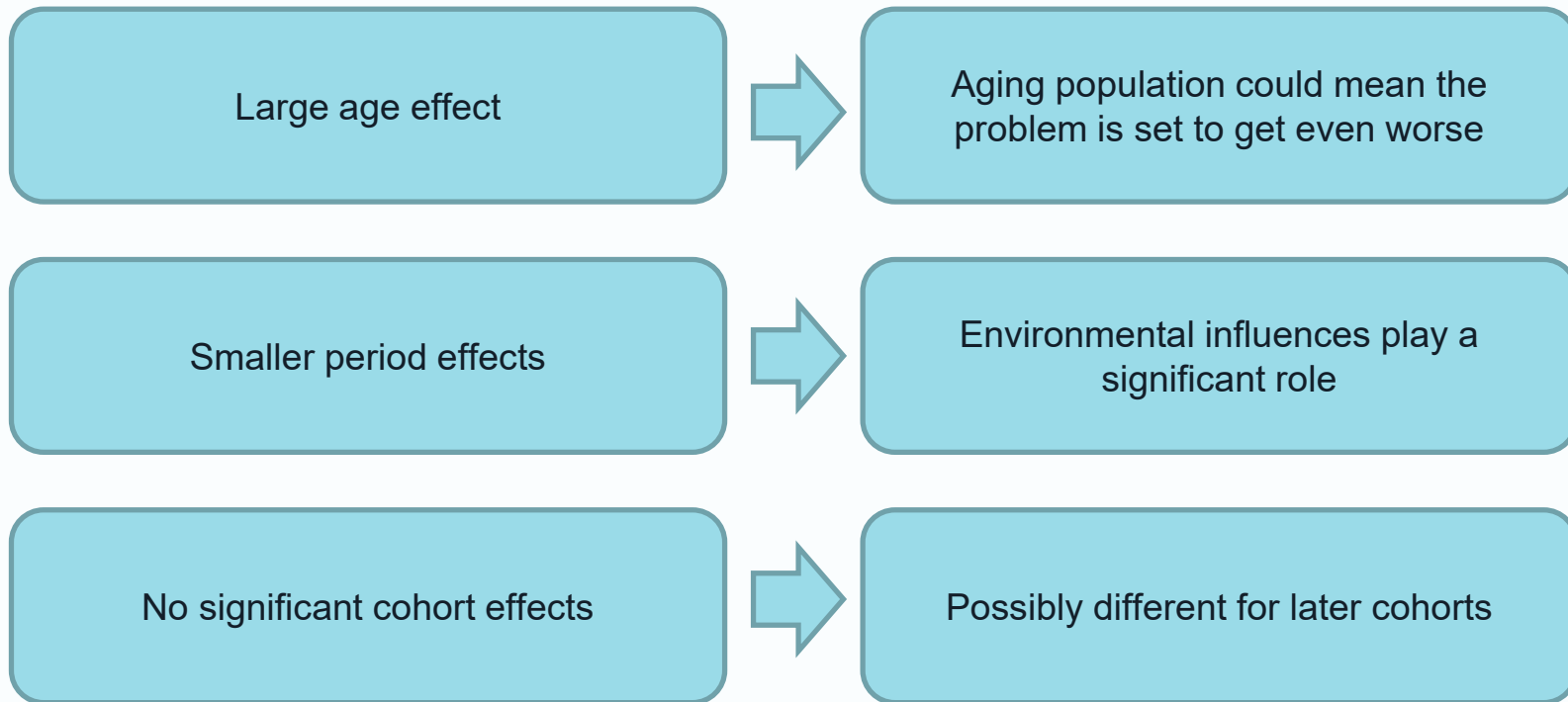
## Waist to height ratio (WHtR)



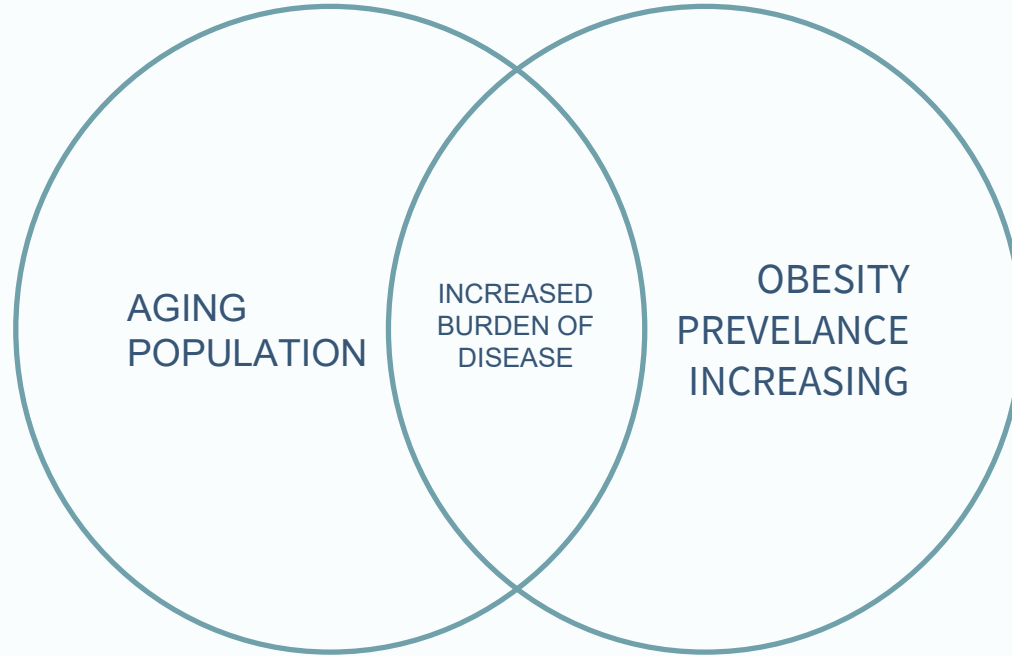
## Body mass index (BMI)



# Policy Implications



# Aging Population and Obesity Epidemic



# Thank you

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