Uneven building blocks, inequitable burdens

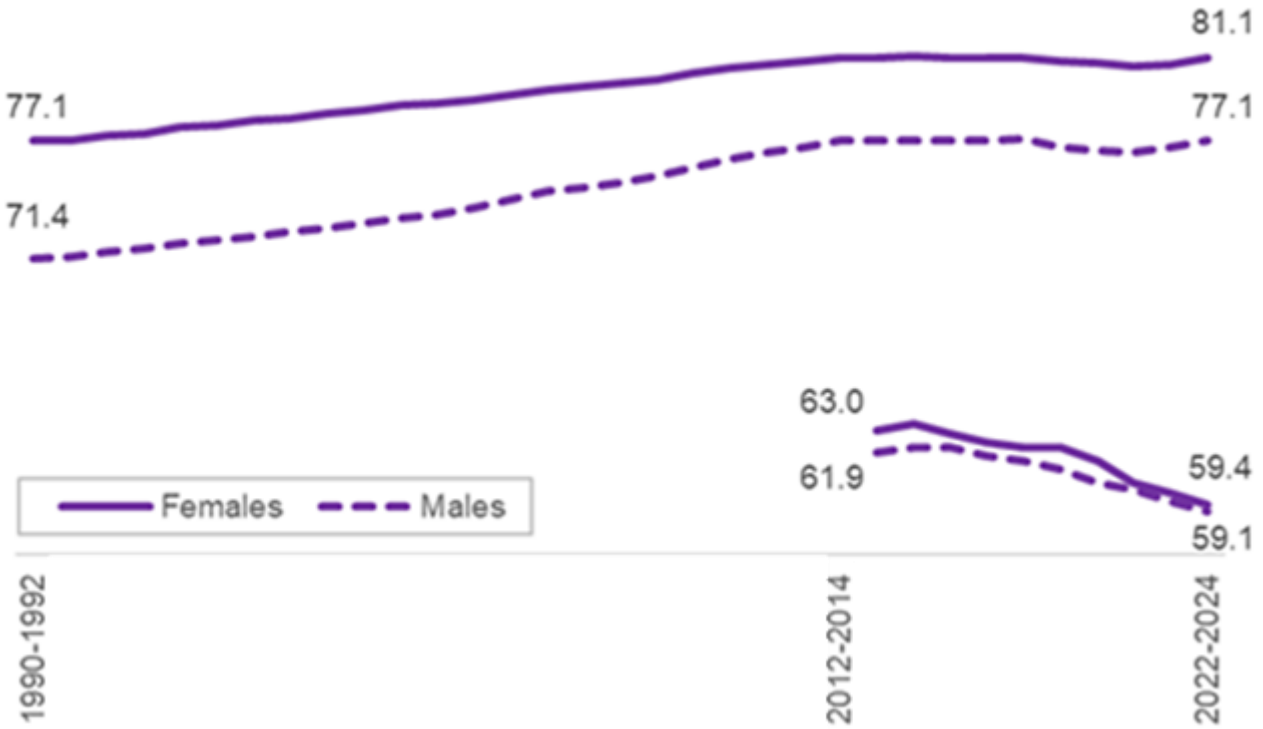
Insights from the Scottish Burden of Disease study

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An overview of Scotland's population health trends



- Following decades of annual improvements, **improvements in life expectancy stalled around 2012**
- Recent estimates are **showing signs of recovery**, with levels similar to the post-2012 pre-pandemic period
- **Healthy life expectancy has worsened**, demonstrating a shift; people are perceiving their health less positively in recent years, suggesting a **worsening of physical and/or mental wellbeing**

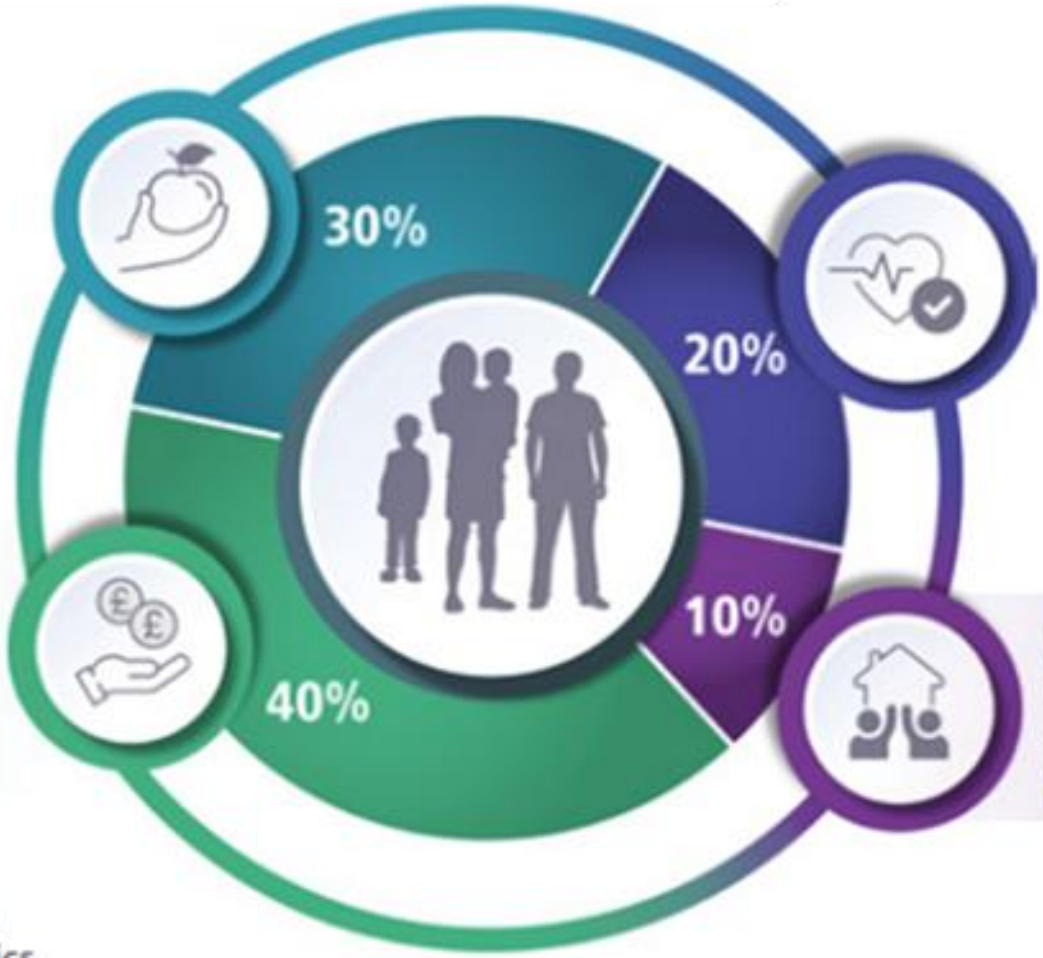
Underpinning these trends are persistent and wide inequalities



The building blocks shape health behaviours and disease burdens

Health behaviours
which are driven by the availability and affordability of products like healthy food, alcohol and tobacco.

Social and economic factors, like family income, education and having nurturing relationships from birth.



Health services
and our ability to get timely access to quality care.

Places and communities
which support us and allow us to access the activities and services we need.

Our experience of each of these factors can drive inequalities, and characteristics such as ethnicity, sex and disability can overlap and make inequalities worse.

Why burden of disease?

Campaign calls for higher care standards

ASTHMA is worse in Scotland than anywhere else in the world, a report reveals today. A higher percentage of Scots suffer from the condition than in 83 other countries.

Scotland's drug deaths increase as country worst in world for overdoses

Outrage over Scottish Government's inability to turn the tide of deaths and get people in treatment.

Woman bedridden for two years by Lyme disease from tick bite

After lockdown, we owe young people better mental health care

There is no doubt that the Covid-19 pandemic has had a huge impact on children and young people across the country...

Two million in UK at risk of type 2 diabetes as obesity crisis grows

Record number are increasing likelihood of heart attack or stroke, NHS says

Burden of disease is an appropriate framework for measuring health inequalities

- Higher rates of premature mortality associated with deprivation
  - ✓ YLL estimates weight deaths relative to age at death
- Earlier onset of morbidity associated with deprivation
  - ✓ YLD estimates capture differences in prevalence
- Increased morbidity complexity and severity associated with deprivation
  - ✓ Prevalence and incidence of all individual conditions, rather than one outcome or a selection
  - ✓ Different weightings assigned to different health outcomes
- Allows us to capture the full spectrum of deprivation
  - ✓ Capturing health losses in our least deprived communities, since living to aspirational lifespans is not disease free

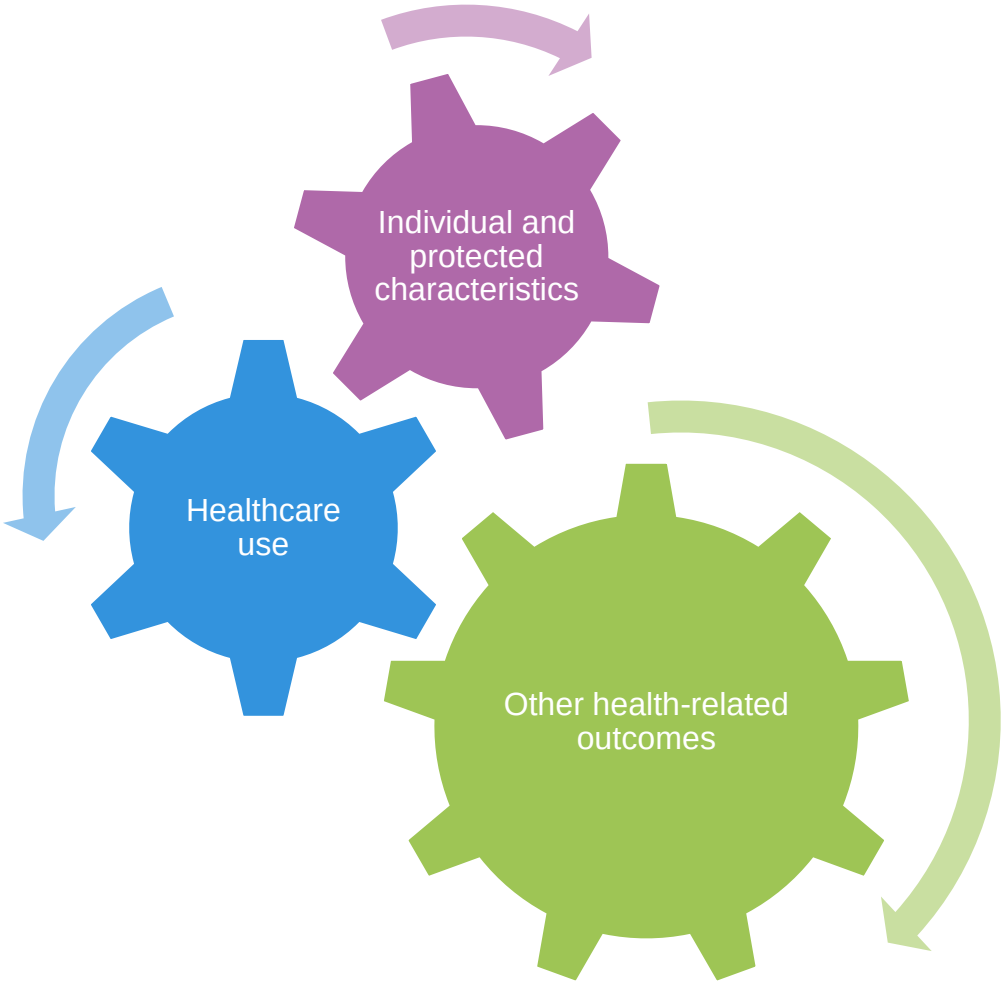
Why are we measuring inequalities in DALYs?

- Health inequalities aren’t a random process, they manifest through inequalities in the building blocks of health – such as income, wealth, and power

- When we quantify health inequalities, we aren't just measuring illness, we are measuring the preventable loss of health that divides our society and reduces its chance to prosper
  - A DALY attributable to inequality is more than a data point; it is a stolen year of healthy life

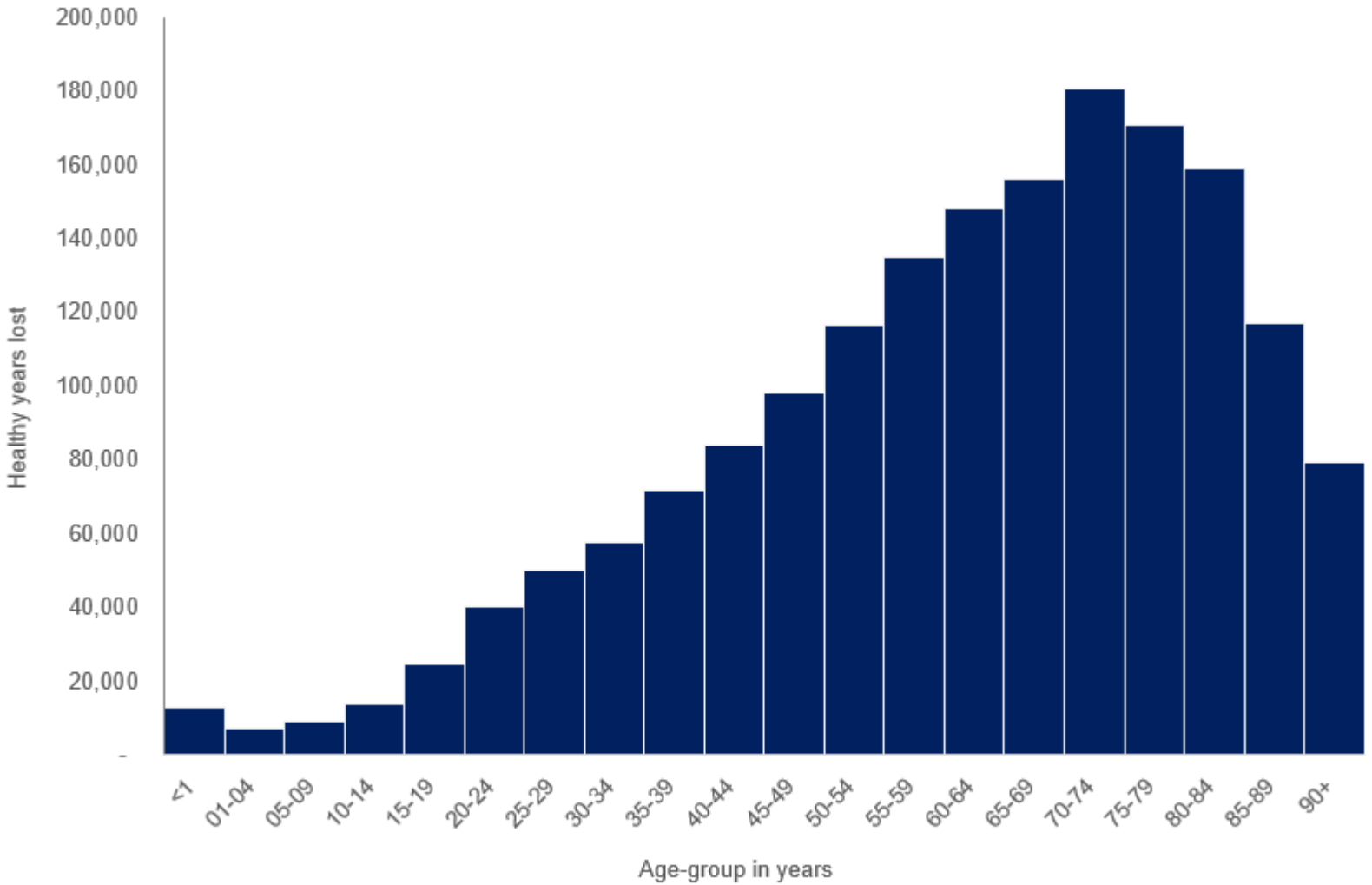
- DALYs reflect the real-world impact on life stages, and are potential barriers
  - x To engage with education
  - x Affecting the ability to work
  - x To contribute to communities and wider society

An overview of the SBOD data flow



- **Key population sub-groups**
  - Sex
  - Age
  - Socioeconomic status (area-based)
- **Healthcare utilisation data**
  - Hospitalisations
  - Community prescriptions
  - General practitioner consultations
  - Disease registers
  - Disease-specific collections e.g. dental health
- **Other health-related outcome data**
  - Death registrations
  - Notifiable diseases
  - Surveys e.g. health status, crime and justice

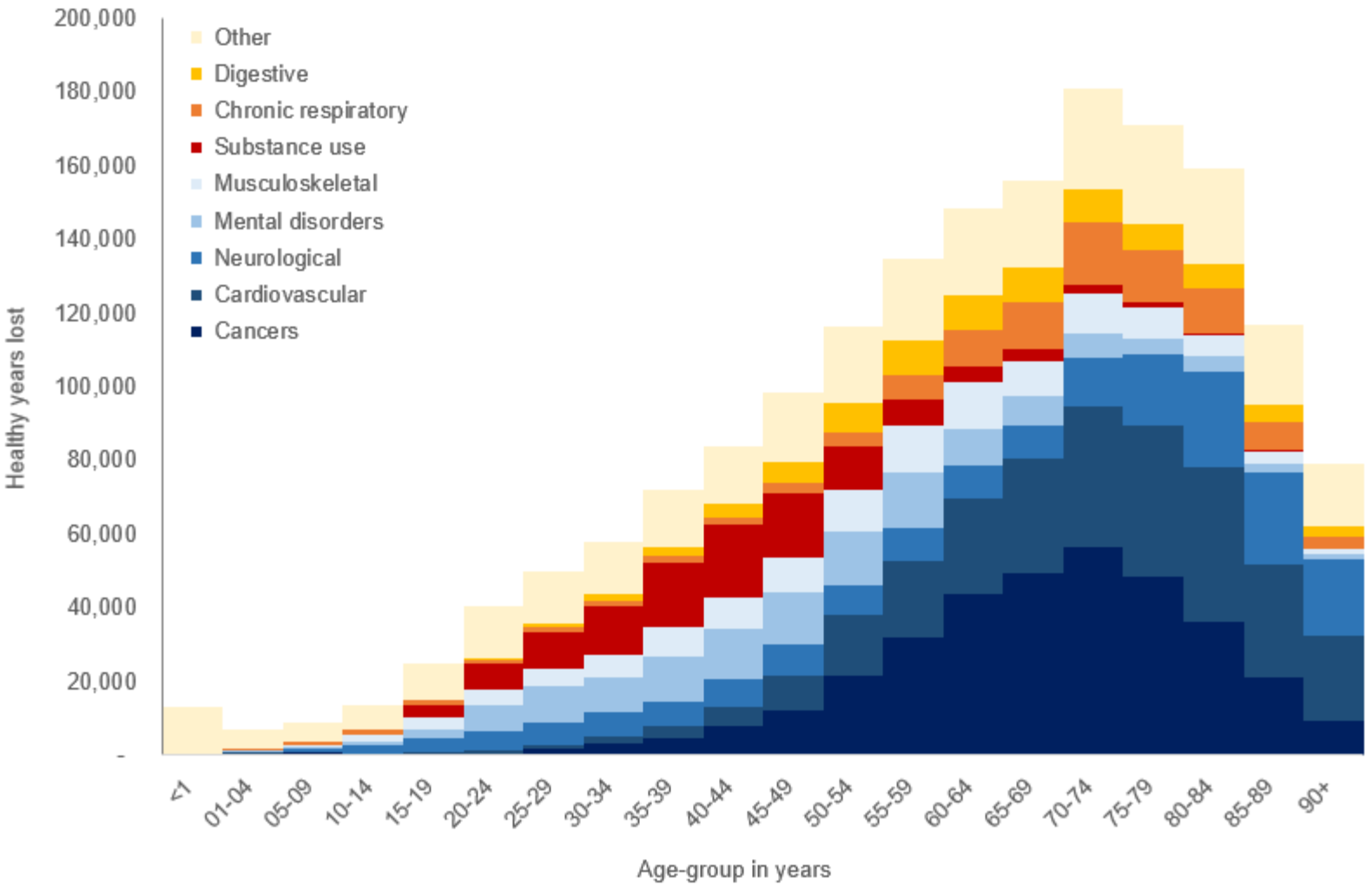
Where population health losses are occurring



- Where are the overall population-level health losses occurring, considering the recent population composition?
- Early impacts of infant mortality
- Relatively linear increases from young ages to retirement ages
- Excess following retirement, then reducing losses
  - Reflecting there are fewer people at these ages

Chief Medical Officer - annual report: 2022 – 'The health of our nation'. Available from: https://www.gov.scot/publications/cmo-annual-report-2022-realistic-medicine-fair-sustainable-future/pages/6/

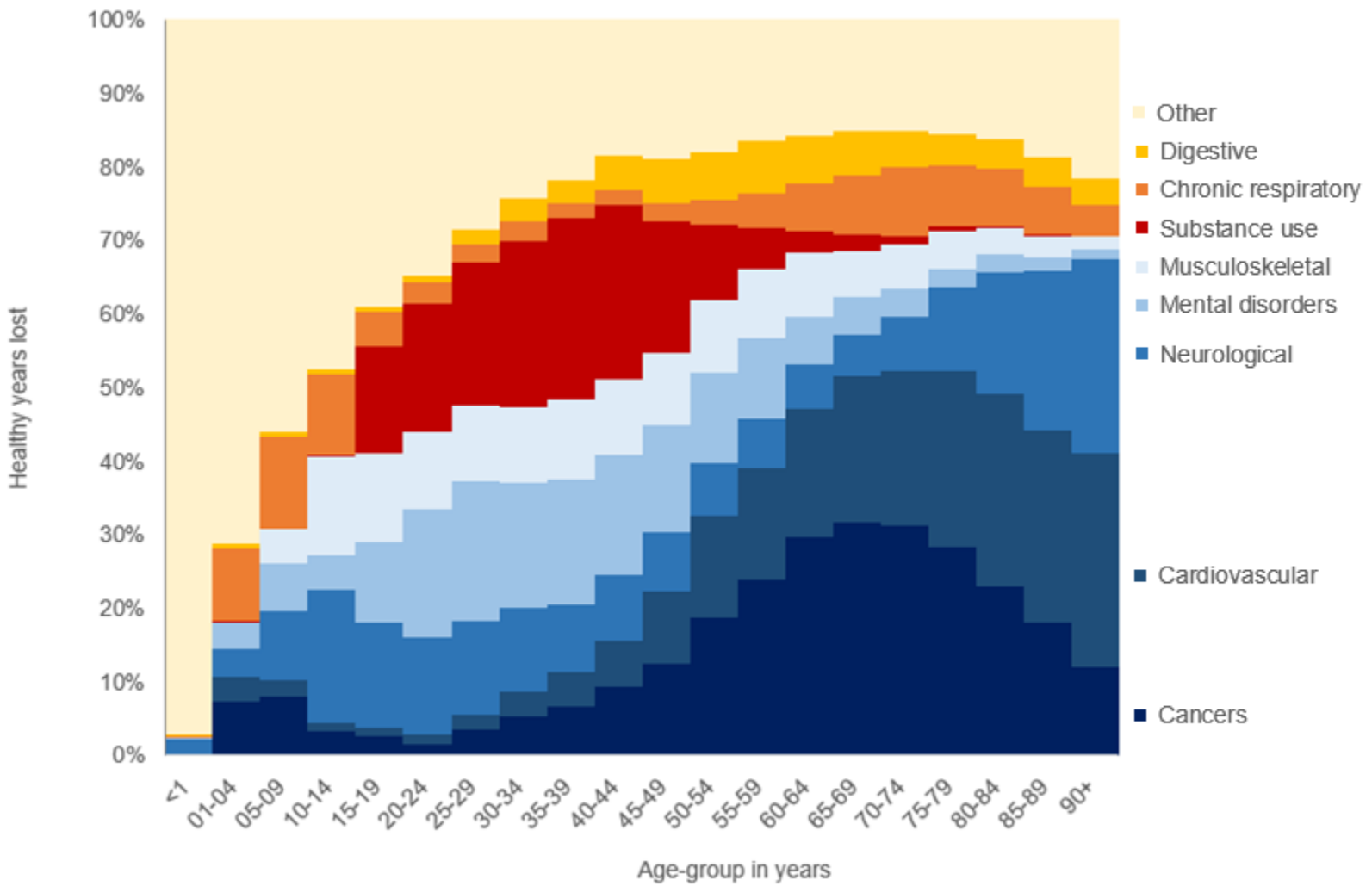
A snapshot of the nation's health, by outcome



- Breaking down the initial snapshot of the nation's health, incorporating age-based outcomes
- Substantial impacts of substance use, mental health and pain (MSK and headaches) persisting from young to late working ages
- The rising impacts of CVD and cancers from late working ages
- The impact of Alzheimer's and dementia in the elderly

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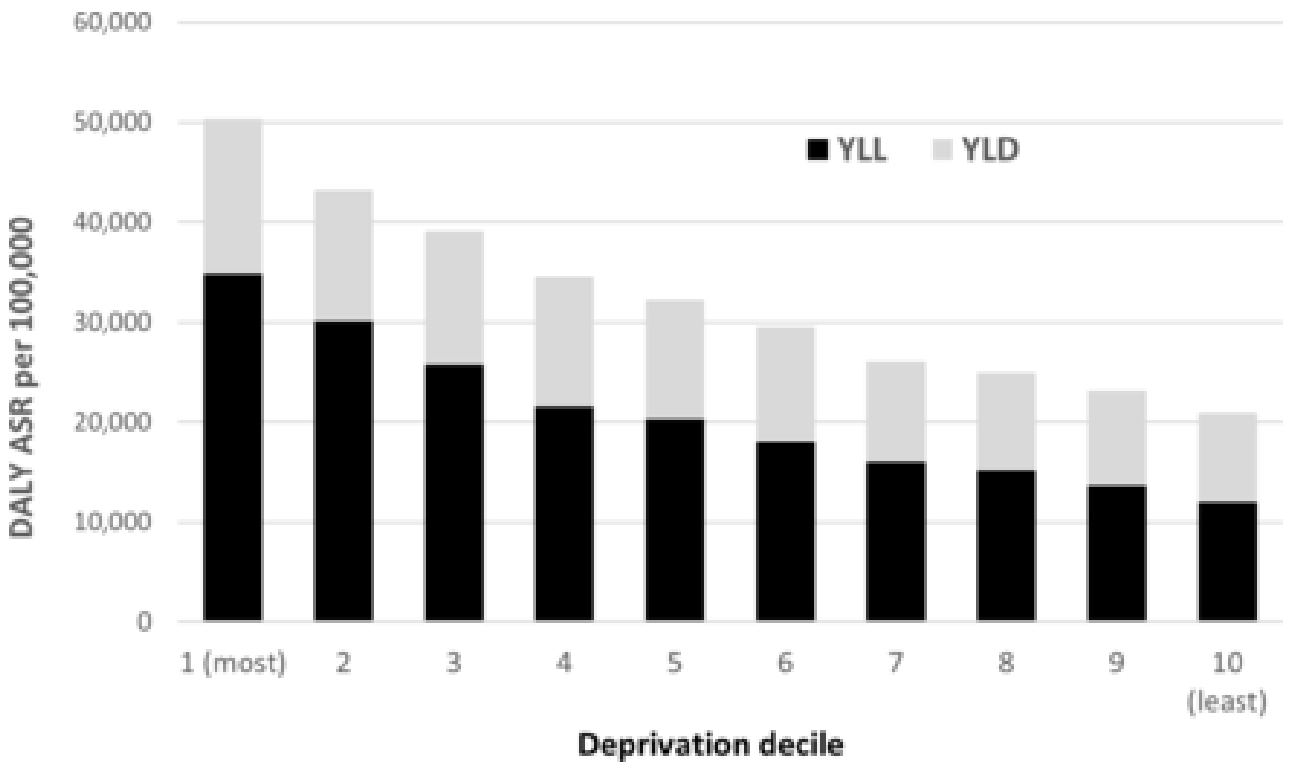
Health loss at different ages, by outcome



- Children and young people
  - **Neonatal and congenital birth defects**
  - Asthma
  - Headaches
- Early-to-mid working age
  - *Substance use and mental health*
  - Pain (back and neck, headaches)
  - **Self-harm and suicide**
- Mid-to-late working age
  - **CVD**
  - **Cancers**
  - Pain (back and neck, headaches)
  - Mental health
  - *Respiratory (chronic)*
- Elderly
  - Alzheimer's and dementia
  - **CVD**
  - **Cancers**
  - **Respiratory (chronic, infectious)**

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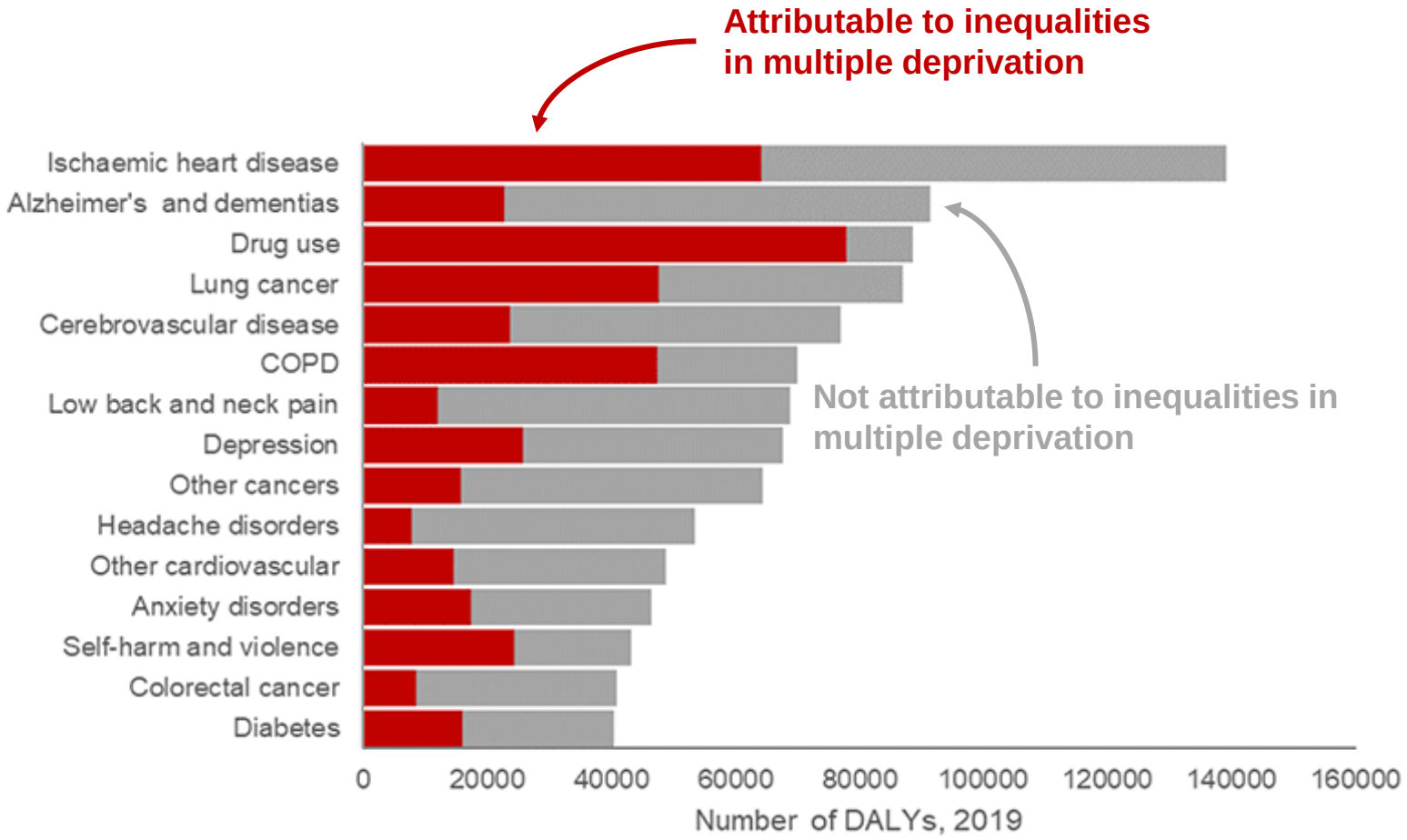
Population health losses increase with increasing levels of deprivation



- DALYs in Scotland's most deprived areas are double that of our least deprived areas
- Health loss from premature mortality in Scotland's most deprived areas is higher than health loss from morbidity **and** mortality in our least deprived areas

The impact of deprivation-based inequality on causes of health loss

- Around a third of the burden of disease is **attributable to inequalities** in multiple deprivation, and therefore preventable
- For 15 of the 20 leading causes, at least a quarter of the disease burden was **inequality-attributable**



The leading causes of losses are driven by large areas of inequities

Causes in red contribute the most to **overall, and inequalities in, population health loss**

Causes will contribute the most to **absolute and relative inequalities in population health loss**

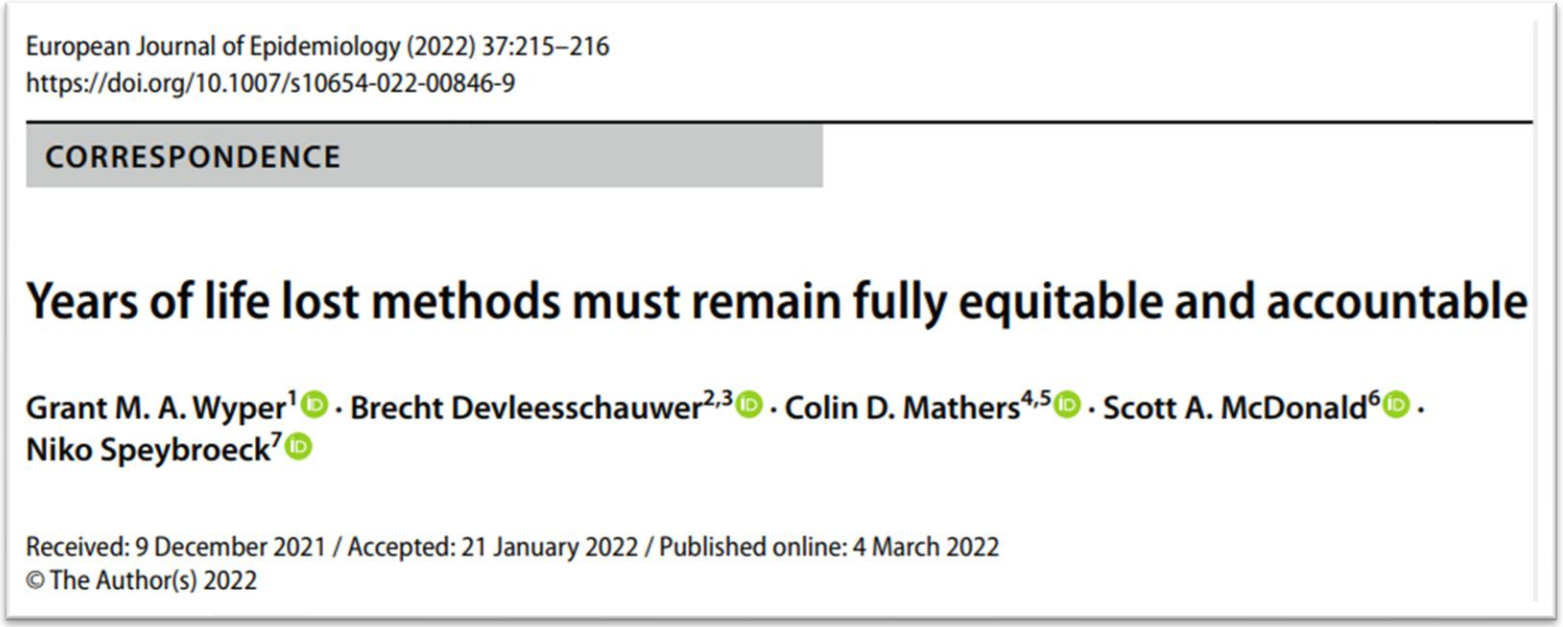


Leading causes overall	Absolute inequalities	Relative inequalities
Heart disease	Drug use disorders	Drug use disorders
Dementia	Heart disease	Alcohol use disorders
Drug use disorders	Lung cancer	COPD
Lung cancer	COPD	Chronic liver diseases
Stroke	Alcohol use disorders	Suicide and self-harm
COPD	Depression	Lung cancer
Low back and neck pain	Suicide and self-harm	Heart disease
Depression	Chronic liver diseases	Other digestive diseases
Other cancers	Stroke	Depression
Headache disorders	Other cancers	Lower respiratory infections

Can BOD methodological choices be inequitable?

- During the COVID-19 pandemic, some early BOD assessments implemented adjustments for co-morbidity on YLL estimates

- COVID-19 YLL was generally disproportionately highest in areas of deprivation and disadvantage



European Journal of Epidemiology (2022) 37:215–216
https://doi.org/10.1007/s10654-022-00846-9

CORRESPONDENCE

Years of life lost methods must remain fully equitable and accountable

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Received: 9 December 2021 / Accepted: 21 January 2022 / Published online: 4 March 2022
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- These adjustment lost complete focus of the role in environments and prior risk exposures in shaping adverse COVID outcomes, resulting in the largest downwards adjustments for those who were the most vulnerable

- We should consider, and avoid, such approaches when aiming to characterise

Technical challenges: current GBD risk factors

	INTERVENTIONS AND SUPPORT	GBD RISKS
PREVENTING ISSUES	Policy, legislation, and infrastructure	Air pollution; occupational risks; lead; unsafe water, sanitation, and hygiene
	Environment and behaviour change	Dietary risks; high body-mass-index; tobacco; alcohol consumption; physical inactivity
MANAGING AND MINIMISING ISSUES	Healthcare services	High blood pressure; high blood sugar; high body-mass index; high cholesterol

Challenges and opportunities

- Current approaches to health risks mainly focus on harmful commodities and clinical risks, invertedly leading to lifestyle drift
  - A substantial proportion of DALYs are not attributable to any GBD risks, indicating we are limited by the current framework
  - Current approaches overlook key determinants of health

- Understanding how upstream risks shape downstream risks
  - Smoking rates are over three-times higher in Scotland's most compared to least deprived areas, therefore improving poverty and disadvantage would be a highly sustainable route to improving health outcomes associated with smoking
  - Using methodological advances to exploit causal pathways

Acknowledgements

Original research

BMJ Public Health

Prepandemic inequalities in the burden of disease in Scotland due to multiple deprivation: a retrospective study

Ian Grant [1], Neil Chalmers,[1] Eilidh Fletcher,[1] Fatim Lakha,[1,2] Gerry McCartney [3,4] Diane Stockton,[1] Grant M A Wyper [4,5]



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