Health Studies User Conference 2025

Keynote presentation

Chair: Vanessa Higgins, UK Data Service

The use of the Health Survey for England in policy-making and monitoring
Oyinlola Oyebode, Professor of Public Health and Centre Lead Public Healthand Policy,
Queen Mary University of London

Reliable health data and statistics are the foundation of health policies. National health examination surveys gather important information that cannot be obtained from other sources. In these surveys, trained field staff take objective measurements, such as height and weight, or blood pressure, and collect biological samples such as blood or urine for laboratory analysis. These data complement data collected from participants in an interview survey. These surveys have external validity because they are designed to be representative of the national population. The Health Survey for England has been running since 1991, set up to inform policy-making and monitoring by the Department for Health and Social Care. This talk examines where the Health Survey for England has informed identification of health issues amenable to policy intervention; initiation, development and implementation of policies; choice and monitoring of targets; or assessment and evaluation of policies. It will also discuss some future considerations including whether any of the data from the Health Survey for England could be replaced by routine health service data.

Research paper abstracts

Parallel session 1a

Chair: Linda Ng Fat, University College London

Health consequences of psychological distress in mid-life: A longitudinal outcome-wide analysis of the 1970 British Cohort Study
Martin N. Danka, UCL

Psychological distress is a major contributor to global disease burden. Yet, the specific impact of psychological distress on diverse physical health conditions remains poorly understood, largely due to methodological variations and the traditional focus on single exposure-outcome relationships in existing studies. Additionally, reporting of health outcomes is an underexplored source of variation. Self-reported health data are prone to recall and reporting bias. Meanwhile, medical records may also be biased when conditions are missed due to limited access to healthcare or underreporting and undertreatment by medical professionals.

To address these challenges, the present study employs the outcome-wide longitudinal design to examine the effect of psychological distress at age 34 on a range of physical health conditions at age 42. The data come from the 1970 British Cohort Study, linked with Hospital Episode Statistics (HES), enabling comparisons between self-reported and administratively recorded health conditions. The same eligibility criteria were applied in both analyses, with multiple imputation used to address attrition, resulting in an analytical sample of 14,974 participants. We estimated risk ratios for each condition using modified Poisson regression with inverse probability of treatment weighting to adjust for a common set of confounders.

Our analyses of self-reports found the most prominent effects of psychological distress to be on chronic back issues, gastrointestinal conditions, migraines, and hypertension, potentially reflecting stress-responsive physiological pathways. However, the effects were generally smaller than those reported in existing studies, and even weaker or null effects were found for other health conditions such as diabetes or cancer. The presentation will discuss the implications of these findings and outline plans for ongoing analyses using HES-derived outcomes, offering both substantive and methodological insights into the connections between mental and physical health.

A typology of mental health difficulties in young people in England: Latent class analysis of data from the 2017 Mental Health of Children and Young People Survey
Sally McManus, City St George's, University of London

Background
Childhood is key to mental health across the life course, most mental health problems start before age 18. Research has tended to focus either on emotional or behavioural difficulties, rather than their overlaps. There has been a tendency to focus on using diagnostic categories, rather than looking at the wider patterning of mental health needs among young people.

Methods
We used data from England's 2017 Mental Health of Children and Young People survey, a household probability sample of around 3,500 11 to 19 year olds. The questionnaire covered many aspects of their mental health, circumstances and experiences. Latent class analysis (LCA) was used, a technique which grouped together young people with related profiles of mental health symptoms and needs.

Findings
Three in four 11-19 year olds showed little sign of mental distress. Among the 'one in four' who did, three distinct clusters emerged; those with 'attention difficulties', 'emotional difficulties', and 'multiple difficulties'. 10% of young people showed mostly attention difficulties. They were likely to live in deprived neighbourhoods and with parents who experienced stressful events and poor mental health themselves. Young people in this group were more likely than the rest of the population to be excluded from school and less likely to seek informal or professional help. 8% of young people showed mostly emotional difficulties. They were more likely to be female and over 16. They were active at and outside of school, and more likely to drink, smoke or have experience with drugs. Young people in the emotional difficulties group were twice as likely as the mentally well group to have experienced a traumatic event and were likely to seek both informal and professional support. Young people with the worst outcomes were the 4% with multiple difficulties, spanning both conduct and emotional problems. They were likely to be female, over 16, and living in the most deprived areas and in struggling families where parents were also dealing with stressful life events. They were likely to have special educational needs, a health condition or impairment, and describe their health as poor. Substance misuse was pronounced. Most reported a major traumatic event and two-thirds were still affected by it. They were less likely to engage in school activities and tended to spend longer using social media.

Conclusion
This typology provides a different, non-diagnostic, way of thinking about mental health needs which draws on how these are patterned in the community.

Revisiting the mental health impact of COVID19 on young adults in the UK: Long-term trends, temporary setbacks, and recovery
Golo Henseke, UCL

This study assesses the impact of the COVID-19 pandemic on the mental health of 16- to 29-year-olds in the United Kingdom, using longitudinal data from the UK Household Longitudinal Study (UKHLS) and its predecessor, covering the period from 2001 to 2023. The study identifies the causal effects of the lockdown (April 2020–March 2021) and the post-lockdown period (April 2021–March 2022) by estimating counterfactual mental health trajectories based on long-term trends.

Unlike prior research, it accounts for potential reporting bias introduced by the UKHLS COVID-19 study. Mental ill-health among young adults had been rising for nearly two decades before the pandemic. During the lockdown period, the average General Health Questionnaire (GHQ-12) psychological distress score increased by 9% of its standard deviation, while the prevalence of clinically relevant psychological distress rose by 4.5 percentage points. This impact was temporary, with mental health levels returning to predicted trends by April 2021, suggesting no lasting 'scaring' of average mental health. The recovery coincided with declining feelings of loneliness and increased life satisfaction.

The study also identifies variations in the pandemic's mental health effects by gender, household income, age, and ethnicity. Women and young adults in the top third of the household income distribution experienced a more pronounced increase in psychological distress during lockdown. However, there is no evidence that the under-30 age group suffered, on average, more severe mental health effects than the rest of the adult population under 60 during the lockdown period. The findings challenge prevalent narratives by demonstrating the relative resilience of young adults in the face of the pandemic.

Risk of diagnosed and undiagnosed mental distress in coastal and inland UK adult residents
Claire Wicks, University of Essex

Recent research in the United Kingdom (UK) has highlighted a potential 'coastal effect' whereby people who live in coastal areas may be more likely to experience poorer health outcomes, including mental health. This study sought to further investigate the coastal effect by comparing the risk of experiencing diagnosed and undiagnosed mental distress in coastal and inland English adult residents.

Data was extracted from waves 10-13 (2018-2023) of Understanding Society: The UK Household Longitudinal Study (UKHLS), a nationally representative population study. Respondents were categorised by residential area (coastal or inland) defined by the 2011 census Lower Layer Super Output Areas, and by age group; young adult (16-24 years) working age adult (25-65 years) or older adult (66+ years). In addition, a mental health status variable was created using two variables: i) mental distress measured via the General Health Questionnaire 12 using the "caseness" scoring method (range 0-12) with a score of four or above indicative of potential mental distress, and ii) self-report history of a mental health diagnosis. This resulted in three mental health categories: no mental distress, diagnosed mental distress, and undiagnosed mental distress.

The results revealed that when controlling for sex, ethnicity, tenure and household income, young adults residing in the most deprived coastal areas had three times (342%) the risk of experiencing undiagnosed mental distress compared to young adults from equally deprived inland areas. In contrast, older adults in the most deprived coastal areas had approximately one-third (35%) of the risk of experiencing undiagnosed mental distress compared with their inland peers. This research highlights the striking mental health inequality in coastal young adults and calls for investment in both short-term interventions to support mental health and long-term investment in coastal infrastructure and youth mental health services to prevent future generations experiencing similar mental health disparities.

Parallel session 1b

Chair: Vanessa Higgins, UK Data Service

Elevated obesity rates in UK HGV drivers: Insights from a socioeconomically matched population analysis
Ellie Gunner, Loughborough University

Introduction
Heavy goods vehicle (HGV) drivers face unique barriers that prevent them from living healthy lifestyles, contributing to an elevated risk of obesity. Yet no studies have directly compared obesity prevalence in this group to the general UK population. This study addressed this gap by comparing obesity rates between HGV drivers and the general population, adjusting for socio-demographic factors, to inform targeted interventions and policies.

Methods
The present study used male HGV driver data (n= 627) from existing research, including baseline data from the SHIFT UK randomised controlled trial, and survey data. Obesity prevalence in HGV drivers across four age groups (25-34, 35-44, 45-54 and 55-64 years) were compared to that of male respondents from the 2019 Health Survey for England (HSfE), but only those from the same socio-economic group as HGV drivers (categorised by occupational group) were included (n=486).

Results
After adjusting self-reported BMIs within the driver dataset for consistency with HSE methods, HGV drivers were significantly more likely to have obesity in comparison to males within the general population (51.7% vs 34.0%, p<0.001), with a particularly large difference present in the 25-34 age group (45% vs 21.7%, p<0.001).
Discussion
These results demonstrate that obesity prevalence is greater in UK HGV drivers than members of the general population, independent of socioeconomic status, highlighting the urgent need for more robust approaches to tackle obesity in this occupational group. The high obesity prevalence in younger drivers is a particular concern, due to the obesogenic environments that drivers work within and the risk for this to be exacerbated over time. In addition, there are well-established links between obesity, chronic disease and accident risk so this could have catastrophic implications on the health and safety of HGV drivers, along with other road users.

Long-term trends in central obesity in England: An Age-Period-Cohort approach
Laura Gray, University of Sheffield

Background
Central obesity measures, such as waist circumference (WC), waist-to-hip ratio (WHR), and waist-to-height ratio (WHtR) have been found to outperform, body mass index (BMI) in predicting health risks. In particular, BMI has been shown to underdiagnose obesity in older adults due to muscle loss.

Methods
We used data from the Health Survey for England (2005-2021) to analyse WC, WHR, WHtR, and BMI in individuals aged 11-89 years (birth cohorts 1919-2008). High-risk classifications were defined using established thresholds. Age, period, and cohort effects were assessed using logistic regression with grouped variables to address the identification problem inherent in age-period-cohort (APC) models.

Results
The prevalence of high-risk increased over time for all obesity measures. Central obesity measures showed a consistent linear increase with age until around 70 years of age. BMI exhibited an inverted U-shaped age trend. Period effects showed a modest increase in high-risk prevalence across

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measures, while there was little evidence for a cohort effect. WHtR trends closely mirrored BMI at the population level but identified different high-risk individuals. The odds of high-risk WHtR increased with age, with odds ratios (OR) reaching 4.91 (95% CI: 1.95 to 12.39) for females and 6.15 (95% CI: 2.24 to 16.89) for males in the 85-89 age group. Period effects for WHtR showed ORs of 1.41 (95% CI: 1.16 to 1.72) for females and 1.25 (95% CI: 1.01 to 1.55) for males in 2019-2021 compared to 2005-2006.

Conclusions
Central obesity measures, particularly WHtR, could provide a more consistent reflection of age-related increases in obesity risk compared to BMI. The linear increase in high-risk prevalence with age for central obesity measures aligns better with known age-related increases in obesity-related comorbidities. Age plays a significant role in driving obesity trends meaning an aging population could leading to a further increase in the prevalence of obesity.

Physical and cognitive health in coastal areas: A US-England comparison
Stephen Jivraj, UCL

There is uncertainty on the association between coastal living and health. This paper compares the physical and cognitive health of older adults aged 50 to 64 in England and the US based on whether they live in a coastal community using the English Longitudinal Study of Ageing (ELSA) and the Health and Retirement Study (HRS).

Living in a coastal community is defined in ELSA as residing in a local authority with a coastal boundary, and in HRS as residing in a county with a coastal boundary. Physical disability is measured using the presence of challenges with basic (ADL) and complex (IDAL) activities of daily living; cognition is measured using a recall memory test where respondents repeat a list of words immediately after hearing them, and again after a delay. Cross-sectional regression analyses using data from 2002 and 2016, stratified by country, compare coastal differences by region.
Bivariate results provide no evidence of a general coastal community association in either England or the US, however there are differences by region. In England, cognition is worse in coastal communities in the South East, and disability is less common in coastal communities in parts of the North in 2002 and 2016. In the US, cognition is better, and complex disability is less common in coastal communities in the South in 2002, but not 2016. These differences are attenuated by adjustment for demographic and socioeconomic characteristics. The results suggest composition of coastal communities explains their difference in cognition and disability in later working-age adults.

Investigating socioeconomic inequality in the impact of Multiple Long Term Condition (MLTC) clusters on emergency and elective hospital admissions among older adults in England
Jessica Kurland, UCL

Background
The co-occurrence of multiple long-term conditions (MLTCs) is highly prevalent and many NHS hospital admissions involve patients with MLTCs. MLTCs are associated with increased hospital admissions, but it is unclear whether this relationship is modified by socioeconomic position (SEP).

Methods
Data from the English Longitudinal Study of Ageing (ELSA) alongside linked Hospital Episode Statistics (HES) data were analysed using multivariate negative binomial regression models (N=7908). The main exposure was MLTC cluster – age-related, cardiometabolic, psychiatric or relatively healthy – identified through latent class analysis. The outcomes were number of emergency and elective hospital admissions over follow-up. Wealth was used as a measure of SEP. Effect modification was investigated using interactions between MLTC cluster and wealth, and wealth stratified models. A relatively healthy group was used as the reference and models were adjusted for sociodemographic characteristics and health behaviours.

Results
11,433 emergency, and 26,659 elective, hospital admissions were recorded over an average 9.4 years follow-up. MLTC clusters had increased emergency admission rate compared to the relatively healthy group, and there were no observable differences between MLTC clusters when adjusting for covariates. This association did not vary by wealth, although an inverse association with wealth was present when controlling for cluster. Associations between MLTC cluster and elective admissions were modified by wealth, the impact of MLTC clusters on elective admission rate was greater among lower wealth groups, and this effect differed between MLTC clusters.

Conclusions
Hospital admissions were associated with MLTC cluster and SEP, which appear to have independent effects on emergency admissions and an interaction effect on elective admissions. MLTC clusters had a greater effect on elective admissions among lower SEP groups, indicating inequality in the impact of MLTCs on elective care need.

Parallel session 2a

Chair: *Sally McManus, City St George's, University of London*

Rates of common mental health disorders (CMDs) in Northern Ireland, England, Scotland and Wales (1991-2022): Evidence from General Health Questionnaire -12 survey data
Suzanne Barrett, Northern HSC Trust

Background
In June 2021, the Department of Health for Northern Ireland published a new Mental Health Strategy (2021-2031), setting the strategic direction of mental health services in NI for the next decade. The measurable outcomes associated with the investment included: "Better mental health among the wider population, evidenced by a reduction of % of population with GHQ-12 scores ≥4 (signifying possible mental health problem)."

Aim and Hypothesis
To describe the available GHQ-12 population [household] data from BHPS/UKHLS Understanding Society to determine if this evidence supports the assertion that Northern Ireland (NI) has higher rates of mental illness compared to other UK nations. It was hypothesised that data would evidence comparatively poorer mental health in NI compared to other UK nations since it joined the survey in 2001, as measured by the GHQ-12.

Method
We identified surveys in December 2022/January 2023 containing the GHQ-12 through searches of the UK Data Service, Government (and agency) websites and by searching the UK's Catalogue of Mental Health Measures. We sourced available microdata for BHPS/UKHLS Understanding Society from the UK Data Service archive. Following individual cross-sectional weighting of datasets from each Wave, GHQ-12 "Caseness" data from adult participants (>15 years) and likert scored data were extracted by UK nation and year of data collection and charted longitudinally (within country). In-year differences between nations were examined using comparative inferential tests of significance (Kruskal-Wallis and $\chi2$ tests, with multiple comparisons), with effect sizes calculated (to control for sample size variation and to improve the interpretability of findings).

Results
The hypothesis was not fully supported using GHQ-12 data from BHPS/UKHLS Understanding Society: estimates from this source indicate that participants from NI had better mental health overall compared to neighbouring UK countries England (V=0.01) and Wales (V=0.06-0.07), and showed no significant difference from Scotland (p>0.05). This can be contrasted with an affirmation of the hypothesis in a different analyses of data from National Health Surveys, albeit there was (i) no data for

Wales to compare NI data to in these comparisons and (ii) interpretation of these findings was limited due to an incomplete microdata set.

Discussion
Results are discussed in light of the sociodemographic characteristics of the BHPS/UKHLS Understanding Society sample relative to underlying Censuses (i.e. for GHQ-12 completers and non-completers i.e. "missingness"; representativeness of samples) and temporally with reference to the aftermath and legacy of the Troubles (or Troubles-related Events & Legacy Issues), millennium/post-millennium events, the World economic crisis and recession, UK welfare reform, Brexit, COVID-19 pandemic and the subsequent onset of a Cost of Living Crisis. To gain a perspective from Northern Ireland regarding mental health in the population, further exploration and consideration is warranted regarding: (i) the impact of research design (i.e. longitudinal versus cross-sectional data collection; panel versus individual) on mental health end survey data; (ii) the impact of sample size selection/variation for health survey data collection, and the a priori powering of planned analyses, for UK countries; (iii) the impact of sociodemographic variables (e.g. the sex [self-defined] of participants) in BHPS/UKHLS participant data on findings and (iv) the need for predictive modelling of Mental Health indices in BHPS/UKHLS samples by UK devolved nation and at a Nomenclature of Territorial Units for Statistics (NUTS)/International Territorial Level [I] [ITLs 1 & 2].

Mental health support gap among intimate partner violence survivors: findings from a nationally representative survey
Christina Palantza, Bristol Medical School

Background
Intimate Partner Violence (IPV) survivors are at increased risk of common mental disorders and severe mental illness. Recent evidence on access to mental healthcare is lacking. We aim to quantify the mental health support gap for IPV survivors and compare it to that for people who have not experienced IPV.

Method
Secondary analysis of data from the 2007 and 2014 Adult Psychiatric Morbidity Surveys (APMS), which are cross-sectional surveys representative of the English population. We defined need for mental healthcare as a score of 18 or higher on the CIS-R, 20 or higher on the AUDIT-C, or meeting criteria for posttraumatic stress disorder both based on the threshold of the PTSD checklist and meeting DSM-IV criteria. We defined healthcare as access to medication, talking therapy, outpatient or inpatient care for psychological reasons, and healthcare gap as the lack thereof. We performed chi-squared tests, weighted by distress severity, and logistic regression controlling for demographics and distress severity.

Results
In the non-exposed to IPV, 6.19% had a mental healthcare need. Among IPV survivors, 21.3% (n=756) reported need. The mental healthcare gap for IPV survivors declined from 32.5% in 2007 to 23.5% in 2014 and was significantly lower than for those not exposed to IPV in both years (p<0.001). The gap was significantly lower among IPV survivors at 27.4% (p<.001). IPV survivors were more likely to use all types of services concomitantly: interaction tests suggested this was driven by a higher psychological distress. Distress severity also explained the inverse association of care gap with the lowest income quintile.

Conclusion
Higher service use among SV survivors was driven by greater distress severity, highlighting the importance of tailoring responses to clinical need. In future work results from the 2023-24 APMS and more detailed analyses will be incorporated.

Gender asymmetry in the health impact of intimate partner violence: Population-level evidence
Ladan Hashemi, City St George's, University of London

Background
Gender differences in the health impacts of different forms of intimate partner violence (IPV) are understudied. The long-term effects of IPV on specific physical health conditions are also under-researched in comparison to the effects on general health and mental health.

Objectives
To examine gender differences in the association between IPV and specific physical health conditions, accounting for differences in the types and number of types of IPV experienced.
Design: We used data from the 2014 Adult Psychiatric Morbidity Survey, a cross-sectional survey using a stratified, multistage random sampling design to cover the household population of England aged 16 years and older.

Methods
Descriptive and multivariable regression analyses of 4,120 women and 2,764 men who had ever had a partner. Lifetime IPV by types (physical, sexual, psychological, and economic), any lifetime and recent IPV, number of IPV types experienced and multiple chronic health conditions experienced over the past 12-months were included in the analyses.

Results
Gender differences were observed in both the prevalence of IPV and associated health conditions. Women were more likely to experience any type and a higher number of IPV types than men. Women's exposure to any lifetime and 12-month IPV were significantly associated with an increased likelihood of reporting 12 and 11 conditions respectively, while men's exposure to any lifetime and 12-month IPV were significantly associated with 4 and 1 conditions respectively. Specific IPV types had varied health impacts, particularly among women. A cumulative association was evident for women but not for men.

Conclusion
Healthcare systems need to be mobilised to address IPV as a priority health issue for the female population. Our findings highlight the need for gender-informed approaches in IPV intervention strategies and healthcare provision, emphasising the development of IPV-responsive healthcare systems and comprehensive IPV curricula in medical and health training.

Understanding associations between sexual identity change and the mental health of lesbian, gay, and bisexual adults in the United Kingdom through longitudinal survey
Veena Muraleetharan, London School of Hygiene and Tropical Medicine

While the existence of poorer mental health among lesbian, gay and bisexual (LGB) populations is well-established, most research does not acknowledge sexual identity shifts when quantifying disparities. This study begins to fill this gap by examining associations between sexual identity change from 2011 to 2023 and current psychological wellbeing and mental health diagnoses self-reported between 2021-2023 in the United Kingdom.

We utilized a nationally-representative sample of 25,141 respondents aged 16 and older who completed Understanding Society, a longitudinal household survey, in the 2021-2023 wave and responded to the sexual identity question in at least one wave. Using weighted linear and logistic regression, we examined associations between changes in reporting of sexual identity between heterosexual, LGB, and other identities and psychological distress and mental health diagnoses in Wave 13.

Sexual identity change was associated (p <.05) with psychological distress and odds of reporting any mental health condition, depression, panic attacks, and anxiety, but not post-traumatic stress disorder. Changes towards LGB identities and consistently identifying as bisexual were significant predictors of poorer mental health across outcomes (increased distress range across groups:1.61-2.58, OR range across items/groups:1.91-4.27). Those who changed from LGB to Straight also had higher distress (1.65(95% CI:0.40-2.91)) and odds of reporting any mental health diagnosis (OR:1.99(1.34-2.96)) and depression (OR:2.25(1.48-3.42)) than consistently-heterosexual respondents. Currently LGB-identifying groups, excluding those who consistently reported "other", also had higher odds of reporting any mental health condition (OR range:1.90-3.71) and depression (OR range:2.15-3.76). These insights can improve services to reduce mental health disparities among LGB populations.

Parallel session 2b

Chair: Alison Moody, University College London

Injuries and use of healthcare services following violence: Differences by violence-related and individual characteristics
Anastasia Fadeeva, City St George's, University of London

Background
Violence can have significant impacts on the health of affected individuals, and healthcare services often are the first point of support for victims-survivors. However, some individuals do not receive medical help despite the experiences of violence and associated injuries. Population-based surveys that capture medical help following experiences of violence are very rare. Using the Crime Survey for England and Wales (CSEW), we analysed how sociodemographic characteristics of victim-survivors and factors related to violent victimisation were associated with severity of injuries and receiving medical attention. We also examined whether the severity of injuries moderated relationships between violence-related and individual factors and receiving medical support.

Methods
We used combined data from the 11 waves of the annual CSEW (between 2010 and 2023), generating a sample of 8,987 adults (aged 16 or over) with experience of physical violence in England and Wales in the year before interview. Sociodemographic, violence (severity of injury, relationship to assailant), and healthcare support indicators were self-reported. The analyses were conducted using multinomial and logit models in Stata.

Results
Physical violence from a domestic partner was more likely to result in injury (both major (adjusted RRR 1.975, 95% CI 1.609–2.424) and minor (2.147, 95% CI 1.806–2.552)) than from a stranger. Among victim-survivors experiencing major injuries, medical help was less likely to be accessed where: the perpetrator of the violence was a domestic relation (compared with an acquaintance or stranger), there was a single perpetrator (compared to multiple), or the victim-survivor was younger.

Conclusions
Despite injury severity predicting healthcare support, the characteristics of victims-survivors and circumstances surrounding the act of violence can be a barrier to receiving healthcare. The results suggest greater health risks but less receipt of medical help among victims-survivors of domestic violence.

Building a synthetic population to assess the health impacts of local climate change policies in England
Andrea Serna-Castano, University of Bath

Understanding the health impacts of climate change requires high-resolution data that captures population heterogeneity. This study constructs a synthetic population at the Lower Layer Super Output Area (LSOA) level for England, which can be integrated into microsimulation models to estimate health outcomes under different climate scenarios.

The synthetic population is generated using data from the 2021 Census, Understanding Society, and the Labour Force Survey. We employ a reweighting approach to align individual and household-level characteristics with aggregate constraints from these datasets, ensuring demographic and socioeconomic consistency at the LSOA level. Key variables include sex, age, marital status, education, house tenure, ethnicity and economic activity status.

To evaluate the quality of the synthetic population, we assess its fit against known population constraints and explore how the size and representativeness of the base survey influence the accuracy of the generated dataset. We describe how the size of health and environmental inequalities at the LSOA level affect the quality of the synthetic population and we highlight methods to combine data sources to tackle it. This comparison informs best practices for constructing synthetic populations that serve as reliable inputs for health impact assessments.

This work-in-progress lays the foundation for microsimulation models that can estimate the effects of climate change on health, providing policymakers with a tool to design targeted interventions. Future work will incorporate additional health-related variables and validate the model against observed health outcomes.

Examining the use of ethnicity at different levels of aggregation using Intersectional Multilevel Analysis of Individual Heterogeneity and Discriminatory Accuracy (I-MAIHDA)
Joseph Lam, UCL

Traditionally, research has relied on broad ethnic categories such as "Asian," "Black," "White," "Mixed," and "Other." These categories often mask significant variations in experiences and outcomes among subgroups. The Intersectional Multilevel Analysis of Individual Heterogeneity and Discriminatory Accuracy (I-MAIHDA) approach has become an increasingly recognised quantitative method to study intersectional health inequities. There is a need for better understanding of how the granularity with which ethnicity is measured impacts the interpretation of I-MAIHDA.

We used the Evidence from Equality National Survey: A Survey of Ethnic Minorities During the COVID-19 Pandemic, 2021 (EVENS) study, a cross-sectional survey conducted between February and November 2021, including 14,221 individuals with 21 ethnic categories. We constructed intersectional social strata using sex, age, ethnicity and UK nationality. We compared models using 21-category and 5-category ethnicity, on describing predicted lifetime experience of racism.

Overall, 65% of participants reported experiencing racism in their lifetime. The 21-cateogory models revealed significant variations within coarse ethnic groups, showing that individuals from Black Caribbean, African and mixed backgrounds had a higher likelihood of experiencing racism, regardless of UK nationality. Intersectional interaction effects are necessary to accurately characterise observed inequities in the 5-category ethnicity model. The 5-category model failed to attribute the protective effect of not being UK nationality to lower predicted experience of racism in White other backgrounds.

Our study demonstrates that the use of more granular ethnicity can lead to more accurate and specific insights in characterising inequalities by using quantitative intersectional approaches, over and above those using coarse ethnicity groupings in I-MAIHDA or traditional non-interactive models.

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Demographic and socioeconomic risk factors for pain progression and recurrence in middle-aged and older adults: A multistate analysis
Mikaela Bloomberg, UCL

Introduction
Many pain conditions are also intermittent or progressive, with repeated episodes of pain worsening, subsiding, or recurrence. Identifying the demographic and socioeconomic factors that put individuals at risk of pain worsening or recurrence is therefore crucial for designing targeted early interventions and addressing disparities in pain management. Current evidence base is mixed and mostly uses methods that do not allow for nonlinear trajectories of pain. In the present study, we used multistate models to examine demographic and socioeconomic risk factors for pain worsening and recurrence.

Methods
We used multistate models to examine demographic and socioeconomic risk factors for transitioning between pain states (moderate-severe, mild, or no pain) in 9,369 adults aged 50-98 years from the English Longitudinal Study of Ageing followed-up over more than 20 years (2002/03-2021/23). This approach allowed us to capture the dynamic and recurrent nature of long-term pain.

Results
Findings highlighted the influence of gender and socioeconomic position: for women compared with men, pain was less likely to improve in severity (hazard ratio [HR]=0.84, 95% confidence interval=0.74-0.96) and more likely to recur (HR=1.45, 1.25-1.68). Higher education level was associated with pain improvement (HR=1.43, 1.16-1.76), and lower risk of pain worsening (HR=0.52, 0.42-0.64) and recurrence (HR=0.67, 0.52-0.85); similar patterns were observed for wealth.

Interpretation
These results emphasise the variability of long-term pain over time and support policies aimed at improving access to pain management for women and individuals with fewer socioeconomic resources.