

---

# Health Studies User Conference 2026

## Research paper abstracts

### Parallel session A, room G12

*Chair: Linda Ng Fat, UCL*

#### **A cross-national modelling approach for cognitive impairment identification using questionnaire response behaviours in ELSA and sister studies**

*Hongxin Gao, University of Surrey*

Timely identification of cognitive impairment remains a major public health challenge in the UK and globally, particularly in ageing populations. Existing screening approaches are often resource intensive and difficult to generalise across populations with diverse educational, cultural, and socioeconomic backgrounds. UK health data resources, especially the English Longitudinal Study of Ageing (ELSA) and its international sister studies, provide a unique opportunity to develop scalable approaches to cognitive impairment identification.

We developed and validated a machine learning pipeline that leverages easily obtained low-quality response (LQR) indicators (e.g., item non-response, extreme responding, and response inconsistency) derived from routine questionnaire data collected in ELSA and four international ageing cohorts from the United States, India, Mexico, and China. We employed a cross-national joint training strategy based on a deep learning-based tabular foundation model and conducted comprehensive evaluations, including sensitivity analyses, feature importance analyses, and decision curve analysis.

Results showed that models jointly trained on ELSA and international datasets consistently outperformed country-specific models across diverse subpopulations and in external validation using a culturally distinct Chinese cohort. Importantly, we observed that cohorts lacking certain predictors benefited from joint training with cohorts (e.g., ELSA) that measured these predictors. Decision curve analyses further suggest that this approach may support prioritisation for further cognitive assessment in community and primary care research settings.

This study demonstrates how ELSA, when analysed alongside international sister studies, can support low-burden and scalable identification of cognitive impairment. The findings highlight the value of UK Data Service resources for methodological innovation and population health research, demonstrating their potential for supporting population-level prediction of cognitive impairment in diverse UK and international populations.

#### **From survey to reference curves: Population-representative age–sex–treatment blood pressure distributions from Health Survey for England 2022**

*Amanda Shiach, Queen Mary University of London*

*Background:* High-quality, population-representative blood pressure (BP) data is essential for cardiovascular modelling and understanding treatment gaps. In England, most national estimates rely on the Health Survey for England (HSE), but detailed age- and sex-specific distributions of paired systolic and diastolic BP by treatment status are not routinely available.

*Methods:* Using HSE 2022, I analysed the nurse home-visit subsample in which BP was measured with an automated device. I restricted analyses to those aged  $\geq 5$  years, excluded missing or obviously miscoded readings, and calculated mean systolic and diastolic BP per person from up to three measurements. I then mapped survey age codes to 5-year mid-point ages for modelling, created sex-specific cohorts, and summarised, by age, the number of participants, mean systolic and diastolic BP, SDs, 95% CIs, and hypertensive-status distributions.

*Results:* Of the 4,392 nurse-visit participants, 4,091 aged  $\geq 5$  years had at least one paired systolic and diastolic reading and were included. Mean systolic BP rose linearly with age in both sexes. At the same time, diastolic BP followed an inverse-U trajectory, peaking in mid-life before declining in older age groups, producing widening pulse pressure. Across ages, treated hypertensives had lower mean BP than untreated hypertensives but generally higher values than normotensive groups. The resulting tables and curves provide stratified age–sex–treatment distributions of paired systolic and diastolic BP suitable for calibrating cardiovascular and policy models and informing clinical risk assessment, for example, estimating the impact of a 2–3 mmHg population-wide systolic BP reduction from salt reformulation or low-sodium salt substitutes.

*Conclusions:* This analysis demonstrates the value of the HSE 2022 nurse-visit survey as a contemporary population-representative source of BP data for clinicians and cardiovascular modelling. The derived age- and sex-specific systolic and diastolic distributions, stratified by treatment, bridge national survey data, cardiovascular risk modelling, and clinical decision-making on hypertension management.

### **Cigarette dependence is greatest in smokers who start young: a repeat cross-sectional study 1998-2022**

*Harry Tattan-Birch, UCL*

*Background:* Starting smoking young has been linked to greater cigarette dependence in adulthood, but most studies rely on relatively short time windows and self-reported measures, with few incorporating biological markers of nicotine intake.

*Methods:* We analysed data from the Health Survey for England 1998–2022, a nationally representative, cross-sectional survey that collects saliva samples for measurement of cotinine, a biomarker of nicotine intake. Participants were current cigarette smokers aged  $\geq 25$  years who reported the age they started smoking. Three cigarette dependence outcomes were examined: (A) saliva cotinine concentration; (B) cigarettes smoked per day; and (C) smoking within 15 minutes of waking (measured in  $N=13,630$ ,  $26,480$ , and  $21,380$  adults, respectively). Log-normal regression (for A and B) and log-binomial regression (for C) were used to estimate how cigarette dependence differs by age of starting smoking, before and after covariate adjustment for current age, sex, housing tenure, social grade, education, and survey year. We additionally tested whether associations differed by age group and birth cohort.

*Findings:* For every three-year delay in age of starting smoking, smokers' saliva cotinine levels were 11.8% lower (95%CI=10.2 to 13.3), cigarettes smoked per day were 11.8% lower (95%CI=11.0 to 12.7), and the likelihood of smoking within 15 minutes of waking was 20.6% lower (95%CI=19.0 to 22.2). Strong associations remained after covariate adjustment, with only modest attenuation (10.4%, 11.0%, and 18.2%, respectively; all  $p<.001$ ). The association of starting smoking earlier with greater cigarette dependence was present across age groups and birth cohorts but was strongest in the youngest adults (interaction  $p$ -values $<.01$  for all three outcomes).

*Conclusions:* Cigarette dependence is greatest in smokers who start young. If causal, policies (e.g., Tobacco-21, Smokefree Generation) that delay the age at which people start smoking may reduce population levels of cigarette dependence, making quitting easier.

---

## **Does the use of flexible working influence disabled people's work exit and wellbeing: Results from Understanding Society**

*Baowen Xue, UCL*

*Background:* Flexible working arrangements are becoming increasingly common across industrialised countries. Flexible working refers to when, where, and for how long individuals carry out work-related tasks. In the UK, the statutory 'right to request' flexible working has been progressively expanded over the past decade. At the same time, the UK government's 80% employment target is challenged by rising economic inactivity, with 2.83 million people aged 16–64 currently out of work due to long-term health conditions. This paper examines how flexible working influences the employment outcomes and well-being of disabled people and those living with long-term health conditions.

*Methods:* The study draws on data from Understanding Society, the UK Household Longitudinal Study, a nationally representative panel survey of approximately 40,000 households. People have been followed annually from wave 1 to 15 (2009/11 to 2023/25). Flexible working is measured biennially from wave 2. The analytic sample includes individuals who reported a disability or a diagnosed chronic condition at Wave 2. Fixed-effects models were used to assess how uptake of flexible working is associated with employment outcomes and well-being.

*Results:* Preliminary findings indicate that the use of flexible working among disabled people is associated with better mental health functioning, greater satisfaction with leisure time, and a reduced risk of exiting employment. The next stage of the analysis will explore how these associations vary by gender, type of flexible working arrangement and by severity of illness.

*Conclusion:* These findings suggest that flexible working may play an important role in supporting the labour market participation and well-being of people with disabilities and long-term health conditions. Further analysis will clarify which types of flexible working are most beneficial and for whom, providing evidence to inform policy and workplace practice.

## **Parallel session B, room G13**

*Chair: Alle Bloom, UK Data Service*

### **Adolescent mental health and young adulthood NEET status in the UK – the moderating role of area-level deprivation using Understanding Society**

*Katie Sarah Taylor, UCL*

Young people who are not in education, employment or training (NEET) are a major policy concern in the UK, given their elevated risks of poorer labour-market trajectories and worse physical and mental health across the life course. Adolescent mental health is an increasingly considered determinant of later NEET status, yet this relationship is likely shaped by social context. Young people growing up in more deprived neighbourhoods face additional structural barriers that may amplify the consequences of psychological distress. Despite evidence linking both adolescent mental health and area-level deprivation to NEET outcomes, their interaction has not been systematically examined.

This study examines the association between psychological distress at ages 16–17 and (i) ever being NEET between ages 18–24, (ii) age of first NEET episode, and (iii) duration of NEET during ages 18–24. We assess whether area-level deprivation moderates these associations, whether moderation effects vary across birth cohorts, and which domains of neighbourhood deprivation are most influential.

We use data from the UK Household Longitudinal Study with up to 15 years of follow-up, linked to area-level deprivation measures from the Index of Multiple Deprivation at Lower Layer Super Output Area level. Adolescent mental health is measured using the GHQ-12 at ages 16–17. NEET outcomes

are modelled using logistic regression (ever NEET), time-to-event models (age of onset), and multinomial regression (NEET duration). Moderation is tested via interaction terms between mental health and deprivation. Missing data are addressed using multiple imputation. Results will be reported using both conditional and marginal effect estimates to improve interpretability and comparability across models.

This study will clarify how neighbourhood deprivation shapes the long-term consequences of adolescent mental health for labour-market exclusion, informing more targeted and context-sensitive policy interventions.

### **Estimating adolescent suicide attempt likelihood and moderating pathways from depressive symptoms: Incorporating high-dimensional risk and protective factors using the UK Millennium Cohort Study**

*Sharon Neufeld, University of Cambridge*

*Objective:* To understand how adolescent depressive symptoms predict suicide attempts conditioned by a complex interplay of risk and protective factors.

*Methods:* Participants from Millennium Cohort Study ( $n=7,315$ ) reported depressive symptoms and suicide attempts at age 17, with 63 risk and protective factors obtained at ages 14 and 17. Double Machine Learning captured complex non-linear relationships between theoretically supported risk and protective factors when estimating the likelihood of suicide attempts based on depressive symptoms. SHapley Additive exPlanations (SHAP) values and tree-based methods revealed contributing factors and subgroup heterogeneity, respectively.

*Results:* Transitioning from not depressed to clinically depressed on the Kessler Psychological Distress Scale raised suicide attempt likelihood by 4% (Average Treatment Effect (ATE)=0.040, [0.011, 0.068]). This likelihood increased to 9% in the highest-risk group ( $N=232$ , Conditional Average Treatment Effect (CATE)=0.090 [0.051, 0.129]), comprising adolescents with lower self-esteem, lower mental well-being, and a longstanding physical or mental illness, all at age 17. Conversely, the lowest-risk group had a 2% increased likelihood of suicide attempt ( $N=4,008$ , CATE=0.024, [0.002, 0.047]), and comprised adolescents with higher self-esteem and no experience of cyber victimization at age 17, and less severe depressive symptoms at age 14. Sexual victimization and lower family wellbeing were also key contributors to strengthened associations between adolescent depressive symptoms and suicide attempts.

*Conclusion:* Adolescent depressive symptoms predicted suicide attempts to a varying degree based on interacting risk and protective factors. Self-esteem, well-being, prior depression, trauma, and cyber safety emerged as key factors which should be explored as potential suicide prevention targets for depressed adolescents.

### **The role of parent, adolescent, and teacher perceptions in shaping mental health helpseeking: How cross-informant agreement shapes adolescent mental health service contact**

*Tiara Schwarze-Taufiq, University of Cambridge*

*Background:* Two-thirds of young people aged 5–19 with diagnosable mental health conditions do not seek help, and fewer than one-quarter of those who do access specialist services. Young people typically depend on parents to recognise difficulties and facilitate care, which may create a bottleneck when parents, teachers, and adolescents differ in their perceptions of need. However, little is known about how cross-informant agreement and disagreement shape whether and from whom parents seek help.

*Methods:* We analysed data from the 2017 Mental Health of Children and Young People survey in England, a household probability sample of over 3,000 adolescents aged 11–16 years. Parents,

teachers, and adolescents completed the Strengths and Difficulties Questionnaire to assess adolescent mental health challenges. Parents also reported contacts made regarding their child's mental health. Outcomes included any contact, informal contact (e.g., friends/family), professional contact (e.g., school staff, GPs), and mental health specialist contact. Polynomial logistic regression was used to examine how patterns of (dis)agreement across informants related to service contact.

*Findings:* Overall, parent-reported symptoms were the strongest and most consistent predictors of service contact. After adjusting for parent reports, adolescents' self-reported difficulties were associated with any, informal, and professional contact, but not specialist contact. Notably, agreement between parents and adolescents or teachers on high emotional symptoms was linked to significantly higher odds of service contact compared with discordant reports. Teacher reports independently predicted professional and specialist contact but did not predict informal contact once parent reports were considered.

*Conclusion:* Parent recognition is central to adolescents' access to mental health support, particularly for initiating informal and professional help-seeking. Agreement between informants, especially regarding emotional symptoms, further increases the likelihood of service engagement. Interventions that foster a shared recognition of adolescent mental health difficulties across contexts may help reduce unmet need and strengthen pathways to care.

### **Sex and health across gendered contexts: A focus on generational differences**

*Verena Schneider, UCL*

*Background:* Sex differences in health arise from both biological and social causes, including gendered life courses and the embodiment of social disadvantage. Although gender norms have become more egalitarian over recent generations, it remains unclear whether this shift has reduced sex/gender differences in health.

*Aims:* This study examined sex differences in mental health, physical functioning, and self-rated health, and assessed whether these associations vary by generation as a proxy for changing gendered contexts.

*Methods:* Adults (16 to 65 years) in the British Household Panel Survey (1992-2009) and the UK Household Longitudinal Survey (2009-2023) were classified into three generation groups based on birth year: Baby Boomers (before 1965), Generation X (1965-1980) and Generation Y/Z (1981 onwards). Average sex differences in mental health (GHQ-12, SF-12 mental component summary), physical functioning (SF-12 physical component summary), and poor self-rated health were estimated from growth curve models, accounting for age and period effects.

*Results:* Across survey waves and age, women consistently reported poorer mental health and self-rated health than men, with the largest differences observed in younger generations. For example, between ages 26 and 42, Generation Y/Z women scored on average 1.31 points (SE = 0.15) higher on psychological distress (GHQ-12; range 0-36) than men, compared to 1.04 (SE = 0.06) for Generation X and 1.03 (SE = 0.12) in Baby Boomers. Similarly, in the age range 29 to 42, Generation Y women had a 3.0% (SE = 0.01) higher probability of reporting poor self-rated health, compared to 1.3% (SE = 0.01) in Generation X. Sex differences in physical functioning were small but showed similar generational trends.

*Discussion:* Despite more gender-equal norms, sex differences in health appear to widen in younger generations. However, differences are small, potentially reflecting multiple opposing gendered mechanisms. Limitations will be discussed, including age-period-cohort considerations.