

Health & mortality abstracts

Strand organiser: Dr. Stephen Jivraj (University College London)

9.15am Tuesday 14 September: Child & adolescent health

BMI over the life course among only children and siblings

Jenny Chanfreau¹, Alice Goisis¹, Kieron Barclay² and Katherine Keenan³; ¹University College London, ²Stockholm University, ³University of St. Andrews

Only children, here defined as individuals growing up without siblings, are a small but growing demographic subgroup. Existing research has consistently shown that, on average, only children have higher BMI than individuals who grow up with siblings. It is important to understand when these differences emerge and whether they persist over the life course, as different trajectories may relate to differential risk of developing adverse health outcomes. Yet existing research on only children's BMI have predominantly focused on childhood or early adulthood. We contribute by investigating BMI trajectories for only children and those with siblings up to late adolescence for four British birth cohorts and across adulthood for three cohorts. For these cohorts we have BMI from ages 2 to 63 years (born 1946); 7 to 55 years (born 1958); 10 to 46 (born 1970) and 3 to 17 years (born 2001). Using mixed effects regression separately for each cohort, fitting age as a piecewise linear growth trajectory, we estimate the change in BMI by age comparing only children and siblings. In each cohort, the results show higher average BMI among only children. However, the difference is substantively small and statistically significant only in childhood. Preliminary results from additional analyses indicate that the association between sibling status and BMI in childhood is not explained by differential health behaviours between only children and children with siblings. The paper discusses the implications of this small, yet persistent across cohorts, difference in BMI between only children that is limited to the childhood phase.

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The association between youth unemployment and allostatic load

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A sizeable literature suggests that youth unemployment has a long-term negative impact on mental health. One of the pathways through which this effect is thought to occur is through increasing the likelihood of encountering (chronic) stressors across life - for instance, further labour market disadvantages and employment instability. Chronic stress exacts a toll upon the body, referred to as "allostatic load". In this study, I used cross-sectional data from Understanding Society to examine the association between youth unemployment (6+ month unemployment between ages 16-24) and allostatic load at ages 25-64. Allostatic load was measured with an index of twelve biomarkers representing endocrine, cardiovascular, metabolic and immune systems that are implicated in the stress response. Youth unemployment was associated with higher allostatic load in females but not males, with the size of the association greatest in mid-adulthood. Including allostatic load in a regression of mental health (12-Item General Health Questionnaire Likert score) on youth unemployment yielded little evidence that allostatic load mediates the association between youth unemployment and mental health. Results were robust to using different combinations of the twelve biomarkers to measure allostatic load. The results suggest that the negative impact of youth unemployment on later mental health does not operate via chronic stress pathways. Nevertheless, as allostatic load is related to several health conditions and higher mortality, the results also suggest that youth unemployment may signal future physical health risk, at least among women.

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Worldwide historical child stunting since the nineteenth century

Eric Schneider, Juliana Jaramillo-Echeverri, et al. London School of Economics

Poor child health remains an important global problem with an estimated 149 million children in 2019 experiencing stunted growth, i.e. being too short for their age (Galasso and Wagstaff 2019). Stunted growth reflects poor nutrition and chronic illness in childhood and leads to poor health and human capital outcomes in later life (Hoddinott et al. 2013). Child stunting rates are a widely used indicator of population health, but to date, there is very limited evidence on stunting rates before the 1990s. While it is clear that stunting has been eradicated in most rich countries, we do not have a detailed understanding of how prevalent child stunting was in these countries in the nineteenth century and how quickly it was eradicated since then. This paper reports on the findings of a team of nearly 50 anthropometric historians seeking to reconstruct how child stunting has changed around the world since the nineteenth century. Covering c. 40 countries in detail, the team will use published growth studies and surveys which report the mean and distribution of height by age to reconstruct trends in historical child stunting rates. The team will also collect new stunting estimates for as many countries as possible back to the 1960s. This new database will provide insight into how the health transition occurred historically around the world. It will also extend the World Bank's stunting dataset providing two sets of useful stylised facts for economic history and current policy: 1) it will reveal countries that managed to eliminate stunting rapidly (or slowly) which could be used as case studies to understand which policies were most effective (least effective) in eradicating stunting and 2) a broader understanding of how long it took to eradicate stunting fully in a number of countries which would be informative for setting development goals today.

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Estimating the average age of infant deaths: a flexible model life table, based on newly collected data

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The average age of infant deaths is one of the fundamental components of a life table. Since this quantity is not always observed, different formulas have been proposed to estimate its value from other mortality indicators. However, some formulas are outdated, and some formulas are simply generic equations, overlooking the age patterns of mortality at early ages. This paper describes a method for estimating the average age of infant deaths, using the predicted mortality schedule of a flexible two-dimensional Model Life Table. The model was calibrated from the Under-5 Mortality Database, a newly collected source of national distributions of deaths by detailed ages. The two dimensions are related to the level and the age pattern of under-5 mortality. As a method of indirect estimation, optimal values of these two parameters were calculated matching the predictions of the model to the observed values of infant and child mortality rates.

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4.00pm Tuesday 14 September: Social inequalities & mortality

Social disadvantage, economic inequality, and life expectancy in nine Indian states

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An extensive demography literature studies the contributions of discrimination and social exclusion to health disparities. This study investigates life expectancy differences along lines of caste, religion, and indigenous identity in India, home to some of the largest populations of marginalized social groups. Using a large, high-quality survey that measured mortality, social group, and economic status, we estimate and decompose life expectancy differences between higher-caste Hindus and three of India's most disadvantaged social groups: Adivasis, Dalits, and Muslims. For Adivasis and Dalits, we are the first to document large within-state mortality disadvantages across the life course that are not fully explained by differences in economic status. These life expectancy gaps are comparable to the Black-White gap in the US in absolute magnitude, but are larger in

relative terms because overall life expectancy is four-fifths of US levels. We are also the first to document that the well-studied Muslim infant mortality advantage extends through working-age adulthood, a paradox unexplained by differences in economic status. Our findings extend the literature on fundamental causes of global health disparities. Methodologically, we contribute to the estimation of mortality rates and demographic decomposition using survey data from low- and middle-income contexts.

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Migrant advantage, descendant disadvantage? Contrasting all-cause and cause-specific mortality among migrants and the native- and foreign-born descendants of migrants in Sweden, 1990-2017
Matthew Wallace, Demography Unit, Sociology Department, Stockholm University

Although the descendants of migrants comprise and growing and diverse shares of rich country populations, we know little about their adult mortality compared to migrants. This is largely due to their smaller numbers, younger age profiles, and consequent lower number of deaths, which inhibit detailed examinations of how their mortality varies relative to ancestral populations. Previous studies have had to compromise their level of exposure detail (increasing sub-population sizes by aggregating many origins and/or generations) or outcome detail (by examining all-cause mortality or very broad cause groups). Here, I take advantage of the Swedish registers to study all-cause and cause-specific mortality of three generations: (i) migrants who arrived as adults (G1), (ii) migrants who arrived as children (G15), (iii) and individuals born in Sweden to at least one migrant parent (G2) from eight origin regions. I use survival models to study midlife mortality among people aged 18-44 from 1990 to 2017. I ask, how does all-cause mortality of the G1, G15, and G2 differ from ancestral Swedes and what causes of death drive any differences? For all-cause mortality, I find that, regardless of origin, the lower mortality of the G1 – relative to ancestral Swedes – contrasts with the higher mortality of the G15 and G2. For cause-specific mortality (seven categories), I find differences in leading causes of death within origins and variation in the risk of death from specific causes across origins (particularly external causes). I bring attention to the concerning – and preventable – mortality situation of descendants of migrants in Sweden.

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Mortality attributable to housing deprivation in Belgium between 1991 and 2015
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Background: Poor housing condition is associated with increased mortality. Our aim is to measure the inequality in mortality attributable to housing deprivation in Belgium. Methods: We utilized data on housing conditions from the 1991 population census, and data on mortality from the National Register in Belgium between Jan 1, 1991 and Dec 31, 2015. An area-level composite score was developed and computed for 18 267 statistical sectors in Belgium. The score was based on indicators encompassing multiple dimensions: occupancy status and its density, absence of central heating, bathroom, toilet, kitchen, double glazing. These indicators were combined, ranked and assigned to deciles. The mortality attributable to housing inequality was calculated as the difference between the observed and expected deaths. The expected deaths were calculated by applying mortality in the least deprived decile to other deciles, stratified by age, sex, and time. Results: Our results show that 19.54% of all deaths, equating to 2 442 469 deaths, occurring between 1991-2015 can be attributable to inequalities in housing. The proportion of deaths attributable to inequality in housing increased over time and was higher for men, 25.61%, than for women, 13.56%. The difference in age-standardized mortality rates between the most and the least deprived groups increased over time from 28.95 to 39.63% and from 9.68 to 27.35% for men and women, respectively. Conclusion: Housing conditions play an important role in mortality inequalities and ensuring good housing conditions is necessary for reducing inequalities.

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Age, sex, period, place and socio-economic differentials in co-morbidity at time of death in England & Wales: what can be learned from multiple cause of death data?

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Multimorbidity is common in older age groups and is associated with increased disability, frailty, poor quality of life and higher risks of death. Prior research using survey or clinical data to ascertain levels and risks of multimorbidity indicates associations with indicators of individual or area-based deprivation. Use of multi-cause coded death certificate data has been proposed as valuable additional source of information which may also provide insights into quality of cause of death coding. However, analyses of death certificate derived data generally only provide information on contemporaneous circumstances of decedents. In this study we use data from the ONS Longitudinal Study, a large nationally representative census-based record linkage study of England & Wales, to investigate how multimorbidity, as indicated by number of mentions of causes of death recorded, varies by characteristics recorded at death and at the population census prior to death among decedents aged 65 and over in the period 2001-17. Results show increases in the number of causes of death recorded over this period and variations by age, sex, place of death and prior health and socio-economic characteristics. These may reflect both differences in multimorbidity and variations in the quality of medical certification of death.

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10.30am Wednesday 15 September: Place & health

Association between neighbourhood health behaviours and body-mass index in Northern Norway: Evidence from the Tromsø Study

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Overweight and obesity have risen rapidly worldwide and become one of the most severe public health concerns in modern society. As is known, the average body mass index (BMI) of people living in Northern Norway has also steadily increased since the late 1970s. This study aims to understand how people's health behavior is associated with the general health behaviour of the people in their neighbourhood. Using the population-based Tromsø Study, we examined the life course association between average leisure physical activity at the neighbourhood level and the BMI of individuals living in the same neighbourhood. We used a longitudinal dataset following 25,871 individuals living in 33 neighbourhoods. We performed a linear mixed-effects analysis of the association between individual BMI and neighborhood health behaviour. Our preliminary results show a strong association between general health behaviour of the neighbourhood residents and higher BMI levels of residents of the same neighbourhood. The results show that participants living in neighbourhoods whose residents were physically more active in their spare times, were likely to have a significantly lower BMI (-0.9 kg/m², 95% CI -1.5 to -0.4). On the contrary, participants who were living in the neighbourhoods whose residents were doing mostly manual works at higher rates, had a significantly higher BMI association (0.7 kg/m², 95% CI 0.4 – 1.0)

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Measuring the health of people in places: a scoping review of OECD member countries

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Background: Defining and measuring population health in places is fundamental for local and national planning and conducting cross-geographic health comparisons. Yet availability and comparability of place-level health data is unknown. Methods: A scoping review was performed to identify how Organisation for Economic Co-operation and Development (OECD) countries measure overall health for sub-national geographies within each country. The search was conducted across MEDLINE, Scopus and Google Scholar, supplemented by searching

all 38 OECD countries statistical agency and public health institute websites. Results: Out of 1,157 titles and abstracts screened, sixty publications were selected; plus information from 37 of 38 OECD countries websites. Twelve health indicators were identified: mortality indicators from national statistical agencies (all-cause, cause-specific, life expectancy at birth, life expectancy at 65 years, preventable, excess or amenable) or morbidity indicators (self-rated health, long-standing illness, disability, activity limitations or healthy life expectancy) from mostly population-level surveys. In all cases, geographic boundaries used administrative definitions. Region, or equivalent, was the predominant geographic level for all indicators. Similar but slightly fewer indicators were available for urban areas (max countries per most frequent indicator = 24), followed by municipality (1-14 countries per indicator). Other geographies, particularly those at smaller granularity, were infrequently available across health indicators and countries. Conclusions: Health indicator data at sub-national geographies are generally only available for a limited number of indicators at large administrative boundaries. Wider availability of health indicators at smaller, and non-administrative, geographies is needed to explore the best way to measure population health in local areas.

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The effect of air pollution on health in the UK by ethnic groups: A multi-level analysis

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Although the association between air pollution and health has been studied, no study has examined the spatial-temporal dimension of this association and its variation by ethnic groups. This study investigates the effect of air pollution on self-reported individuals' health in the UK by ethnic groups using data from the "UK Household Longitudinal: Understanding the Society" dataset. Individual-level health data were linked to air pollution data (NO₂, SO₂, PM₁₀, PM_{2.5}) at the local authority level. Multilevel mixed effects linear models are used to investigate the relationship between air pollution and individuals' health. A high concentration of NO₂, SO₂, PM₁₀, and PM_{2.5} pollution is associated with poor health. Decomposing air pollution into between and within effects (spatial and temporal) shows a strong between effect for SO₂ and strong between and within effects for NO₂ pollutant, whereas for particulate matter both between and within effects are not present. Analysis by ethnic origin reveals poorer self-reported health among Indian, Pakistani/Bangladeshi, and Black/African/Caribbean population in comparison to British-white individuals and among non-UK born individuals with increasing levels of air pollution. Using longitudinal individual and contextual-level linked data this study shows the deteriorating effect of air pollution on individuals' health, which is more pronounced for ethnic minorities the UK.

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Understanding the influence of rural and urban environments on arsenic consumption in Bangladesh drinking water

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Safe drinking water is a human right and long-established goal of various national and international policies. Bangladesh has traditionally relied on surface water as their main source of drinking water, however bacterial and parasitic contamination resulted in a majority switch to the use of tube-wells. At the time of installation, tube-wells were determined to be the safest access to clean water. By the 1990's it became clear that tube-wells were contaminated with arsenic. Arsenic is a naturally occurring element which causes detrimental health effects when consumed in high amounts (>10 parts per billion). Policy measures have been introduced over time to decrease arsenic consumption. This study seeks to understand how drinking water sources have fluctuated between 1999 – 2019 in rural and urban areas of Bangladesh. Available data from the Demographic Health Survey (1999 -2017) will be used to establish drinking water source patterns in rural and urban areas. Data from three waves of MICS data sets (2006, 2012, 2019) will be used to determine changes in consumption of arsenic based on region and districts. The results will show the distribution of tubewell water consumption in rural vs urban areas, and the prominence of alternative drinking water sources over time using DHS data. The MICS data will be used to determine the changes in arsenic consumptions regionally and by

district. Targeted policy measures are needed to effectively reduce arsenic consumption in Bangladesh. This study will establish any pertinent trends and aid in determining the best regions to focus interventions on.

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3.15pm Wednesday 15 September: Global health & mortality

Quantifying impacts of the COVID-19 pandemic through life expectancy losses: a population-level study of 29 countries

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Background: Variations in the age patterns and magnitudes of excess deaths, as well as differences in population sizes and age structures make cross-national comparisons of the cumulative mortality impacts of the COVID-19 pandemic challenging. Life expectancy is a widely-used indicator that provides a clear and cross-nationally comparable picture of the population-level impacts of the pandemic on mortality. Methods & Data: Life tables by sex were calculated for 29 countries, including most European countries, Chile and the USA for 2015-2020. Life expectancy at birth and at age 60 for 2020 were contextualised against recent trends between 2015-19. Using decomposition techniques, we examined which specific age groups contributed to reductions in life expectancy in 2020 and to what extent reductions were attributable to official COVID-19 deaths. Preliminary Results: Life expectancy at birth declined from 2019 to 2020 in 27 out of 29 countries. Males in the USA and Bulgaria experienced the largest losses in life expectancy at birth during 2020 (2.1 and 1.6 years respectively), but reductions of more than an entire year were documented in eleven countries for males, and eight among females. Reductions were mostly attributable to increased mortality above age 60 and to official COVID-19 deaths. Conclusions: The COVID-19 pandemic triggered significant mortality increases in 2020 of a magnitude not witnessed since WW-II in Western Europe or the breakup of the Soviet Union in Eastern Europe. Females from 15 countries and males from 10 ended up with lower life expectancy at birth in 2020 than in 2015.

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Assessment of the association between depression and all-cause mortality in the Chilean population Eliazar Luna, Anne Peasey, Hynek Pikhart; Department of Epidemiology and Public Health, University College London

Depression is a prevalent mental health disorder with effects on quality of life, chronic diseases and disability. An association with mortality has been suggested, however, evidence is mixed and mostly carried in high-income countries. This study aims to assess the association between depression and all-cause mortality in the Chilean population. Data from the Chilean National Health Survey (ENS) 2003 and 2010 were used. Information on mortality was obtained and linked with the surveys. There were 3,151 and 3,749 participants from the 2003 and 2010 ENS in the analyses. Cox survival models were built with these data. The main exposure was probable depression, measured with CIDI-SF, and the outcome was all-cause mortality. To account for differences in follow-up by survey, a period restricted to up to 8.5-years was analysed. 9.2% of participants died during this follow-up. Adjusting for age and sex, probable cases of depression were 1.50 (95% CI 1.11-2.02) and 1.51 (95% CI 1.11-2.04) times more likely to die during the follow-up than those not considered probable cases of depression in the 2003 and 2010 survey. Further adjustments by demographic, socioeconomic, behavioural variables and comorbidities attenuated the estimated effect. Probable cases of depression were 1.38 (95% CI 1.02-1.86) and 1.38 (1.02-1.88) times more likely to die during their follow-up compared to those participants who were not considered probable cases of depression in the 2003 and 2010 survey, respectively. Addressing mental health in the Chilean population could contribute not only to live healthier lives but longer lives as well

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Large and persistent life expectancy disparities among India's social groups

Aashish Gupta¹, Nikkil Sudharsanan²; ¹University of Pennsylvania, ²Heidelberg University

India has one of the most rigid systems of social stratification in the world, yet little is known about how this system has shaped life expectancy in the country. We provide the first direct estimates of caste and tribe differences in life expectancy in India using survey data spanning two decades. We find that individuals from the Scheduled Castes and Scheduled Tribes have drastically lower life expectancies than high-caste individuals (between 4.2-4.4 years for women and 6.1-7.0 years for men in 2013-2016.). These disparities have persisted over a 20-year period. Importantly, mortality disparities are present across the entire life-course and increasingly driven by older age mortality. Our findings reveal a pressing need for far greater examination of the health of marginalized populations in India.

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Non-specific effects of the Bacillus Calmette–Guérin (BCG) and vaccinia vaccines on long-term survival in Sweden: A causal analysis

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The Bacillus Calmette–Guérin (BCG) and vaccinia vaccines prevent tuberculosis (TB) and smallpox and were instrumental for improving survival across all ages. As the incidence of TB and smallpox has reduced in high-income countries, many have discontinued these vaccinations. However, there is growing interest in their "non-specific" effects and whether they increase survival beyond their effects on TB and smallpox. To date, there is no causal evidence on the non-specific effects of these vaccines on long-term survival. Our paper establishes the causal effect of discontinuing these vaccines on survival to age 29 for the Swedish population born from 1940-1988. Taking advantage of the sudden discontinuation of both vaccines in 1975-76, we estimate the causal effect using a Regression Discontinuity Design (RDD) and an Interrupted Time Series (ITS) model. Our preliminary RDD analyses show no reduction in the probability of survival to age 29 among those born just after the discontinuation of the vaccines compared to those born just before (-0.15% [95%CI:-1.12 to 0.68]). Our preliminary ITS results yield similar results. There was no immediate effect (0.02% [95%CI:-0.03 to 0.07]) on the probability of survival but a minor reduction in the pace of survival progress among cohorts born after the discontinuation (-0.06% [95%CI:-0.07 to -0.06]). Our preliminary results provide some of the first population-wide causal evidence that the discontinuation of the BCG and vaccinia vaccines did not lead to substantial changes in long-term survival. Our next steps are to assess the robustness of this result through sensitivity and placebo tests.

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4.30pm Wednesday 15 September: Cross-country comparisons in health

Slowdown in mortality improvement in the past decade: A US/UK comparison

Michael Murphy; London School of Economics & University of Helsinki

The past decade (2010-2019) saw a major reduction in the level of mortality improvement in the UK, US and most other industrialised countries prompting intense policy and scientific interest. The reduction in annual percentage SDR in 2001-11 in England & Wales was the largest ever recorded (since 1841) but the 2011-19 value was the lowest for 70 years. The observation that disadvantaged groups appeared to have been most adversely affected fuelled debate about widening socio-economic and geographic inequalities: in the UK, due to the impact of government austerity policies, but in the US to "deaths of despair" especially linked to synthetic/prescription opioid abuse. We present analyses to elucidate these major debated issues: 1. Were women more badly affected than men as often asserted? 2. Were causes of death that have been suggested

as major contributors to these changes, seasonal influenza in Britain and opioid abuse in USA, sufficient to account for observed trends? 3. Has the pre-existing trend of increasing health inequalities been exacerbated or diminished in the period of slowdown of mortality improvement? We draw on national data sources, but predominantly use the standardised databases of the Human Mortality Database and the Global Burden of Disease. We conclude that the UK experience was closer to that of the US than was the case for many other high-income European countries and that more attention needs to be given to explanations that hold across countries rather than ones that are specific to a single country.

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Trends in disability among middle-aged and older adults in the United States and England from 2002 to 2016
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Research Questions: What were the trends in disability among middle-aged and older adults in the United States and England from 2002 to 2016? Did disparities in disability between low- and high-income adults widen during this time period? Data and Methods: Using the Health and Retirement Study (HRS) and the English Longitudinal Study of Ageing (ELSA), we estimated the annual percent change from 2002 to 2016 in disability prevalence among adults aged 55-64, 65-74, and 75 and older, by income quintile. The sample includes 197,021 person-years of observations. Disability was defined based on self-report of limitations with five instrumental activities of daily living (IADL) and six activities of daily living (ADL). Results: In the US, the prevalence of disability for those ages 55-64 and 65-74 did not decrease, but it did for those ages 75 and older. In England, the prevalence of disability decreased for all age groups: the adjusted annual percent change (AAPC) ranges from -2.88 (p-value <0.05) for ages 55-64 to -1.63 (p-value <0.05) for ages 75 and older. Both countries experienced a widening gap in disability between low- and high-income adults among the younger age groups. For example, for those ages 55-64 in each country, there was no significant improvement in disability for the low-income group but a significant improvement for the high-income group (AAPC=-3.60 (p-value <0.05) for the US; AAPC=-6.06 (p-value <0.05) for England). Conclusion: Policies targeted at preventing disability among low-income adults should be a priority in both countries.

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Collective bargaining institutions and health inequalities: Are there insiders & outsiders?
Laura Sochas, Aaron Reeves; Department of Social Policy & Intervention, University of Oxford

Collective bargaining institutions can affect employment levels, remuneration and working conditions, all of which are important social determinants of health. The insider-outsider hypothesis posits that some collective bargaining institutions may have unequal effects on individuals who are more vs. less integrated in the labour market. There is very limited evidence linking collective bargaining institutions and population health, and none that explores the link between collective bargaining and health inequalities. In this study, we investigate the effect of multiple & interacting collective bargaining institutions on individuals' subjective health, and whether these vary according to labour market status. We use four waves of the European Values Survey (1981-2017), the ICTWSS database on collective bargaining, and three-level nested random intercept models across 34 OECD and European countries (N=81,920). We find that the level at which collective bargaining is conducted is particularly protective for individuals' health, and that conducting bargaining at higher levels appears to disproportionately benefit labour market outsiders' health. This study has implications for how we address health inequalities, arguing that it is not only important to target the direct social determinants of health, but also the political institutions that shape the distribution of power and resources.

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Dynamics of life expectancy change during the transition from communism in the Balkan Region
D. Spasenoska; London School of Economics

Following the collapse of communism in the 1990s, the countries of Western Balkan have experienced major political and socio-economic changes, accompanied with wars and civil unrests. Health as a social phenomenon can be directly and indirectly affected by these changes. The literature shows that other Eastern European countries during the transition experienced decrease in life expectancy (LE). This is not the case for the Western Balkan countries; the LE continuously increased in all 8 countries, but at different rates. Yet, the dynamics of change of LE following the transition in the Balkan countries are understudied due to inconsistent estimates and lack of electronically available data. For the first time, this study uses an original data set of life-tables for a period of 40 years for each of the 8 countries, computed based on mortality data from civil registers, assessed for accuracy and completeness. The dynamics of change of LE trends at national and sub-national levels are examined across time. The findings highlight the points of convergence and divergence, and the analysis focuses on explanations of potential causes of the observed trends. Moreover, decomposition analysis is used to quantify the contributions of different age-groups and causes of death to the changes in LE. This study's results are particularly important, not only because they give a detailed description of the mortality differential emerging during the transition in the Balkan countries, but also because they are set within the greater context of understanding the effect of large socio-political changes on population health.

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