Fertility: trends and determinants

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Fertility Impacts of 3G Mobile Expansion: Evidence from Nigeria
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Diffusion theories of fertility transition have long emphasized the importance of mass media technologies in the spread of new ideas and norms, which in turn influence gender and demographic outcomes. The spread of the internet and mobile technologies opens up new paths for the diffusion of new ideas and provides channels for access to health and labor market resources, with the potential to shape fertility behaviors. Despite this theoretical potential, estimating the causal impacts of digital technology on fertility, especially in high-fertility contexts, has proven to be challenging due to the difficulty of disentangling selection into digital technology usage from the impact of digital technology itself. Here, we construct a longitudinal panel by linking individual-level birth histories from the Demographic and Health Surveys (DHS) in Nigeria to annual mobile phone coverage maps to estimate the causal effect of 3G expansion on fertility. For identification, we use a two-way fixed effects model, exploiting plausibly exogenous variation in the timing of third-generation (3G) mobile technology rollout over time and space. We find that the introduction of 3G coverage during the study period led to a decline in fertility, which we estimate corresponds to a 9% reduction in the annual probability of a woman having a birth.

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A completed fertility lower than expected and new fertility expectations in France and in Europe
Alberto Taviani - Université de Strasbourg

My research aims to follow the expected completed fertility (ECF) using international surveys (FFS, GGS-I and GGS-II) to highlight fertility gap and excess of childlessness in France and others European countries (Netherlands, Germany, Austria, Czech Republic, Estonia, Sweden and Norway) and underline a potential turning point in family size distribution. In lower and later fertility regimes, the general assumption is that ECF is also decreasing in all countries, and at the same time the fertility gap is supposed chronic over the generations in Europe. Firstly, I will focus on the fertility of the generations that have finished their reproductive life, focusing on differences in ECF by education and gender compared with respective completed fertility in the CFE database, Human Fertility Database (HFD) and Human Fertility Collection (HFC) to obtain fertility gap for each subcohort. Secondly, I will analyse the generations presently close to the end of reproductive life, their ECF by education as well as their imminent fertility gap for both sexes, together with the ECF's revision between GGS-I and GGS-II supposed generally downwards due to a better anticipation of the ultimate childlessness rate. Finally, I will focus on the ECF for the most recent generations, what would be their completed fertility rate if the fertility gap remains chronic, and I will check if some reversal of trend in family size distribution is possible.

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Changes to fertility patterns and composition during the COVID-19 pandemic
Lucy Stone - Swansea University

Measures put in place during the COVID-19 pandemic caused substantial social and economic disruptions, influencing fertility intentions and fertility patterns. This population-based study used 220,025 live births born between April 2015 and March 2023 aggregated into 4-week periods from the Secure Anonymised Information Linkage (SAIL) databank with population estimates to calculate the General Fertility Rates (GFRs) for Wales. Interrupted time-series (ITS) analyses were conducted using Autoregressive Integrated Moving Average (ARIMA) models to test the impact of the COVID-19 pandemic on fertility trends. Analysis was also stratified by Welsh Index of Multiple Deprivation (WIMD) and age to assess if trends differed by socio-economic background. GFRs drifted from their original time series with a significant abrupt but temporary decline of -0.14 (95% CI -0.28 - -0.01) per 4-week period between December 2020 and August 2021. The ITS analysis shows significant time series changes for several WIMD quintiles and age categories. Notably, those living in the most deprived areas had an abrupt, temporary decline in GFRs between December 2020 and

September 2021, and those aged 15-19-years-old had an abrupt, permanent level change in the time series of -0.14 (95% CI -0.29 - -0.03) per 4-week period up to March 2023. The counterfactual analysis also suggests significant increases in GFRs from Autumn 2021 for the most deprived. Fertility changes during the pandemic were not distributed equally across the population. This changes parental composition of live births that were conceived during the pandemic and is likely to influence maternal and neonatal health outcomes during and potentially after the pandemic.

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Predicting fertility by age, ethnicity and parity and its use in a microsimulation model for Great Britain
Hugh P. Rice - University of Leeds, Andreas Hoehn - University of Glasgow, Ricardo Colasanti - University of Leeds, Petra Meier - University of Glasgow, Alison Heppenstall, University of Glasgow, Nik Lomax, University of Leeds

Fertility rates are complex functions of age, ethnicity, time and parity (i.e. birth order, the number of children a woman already has) - decreasing in some groups and increasing in others. Accounting for parity in demographic models is crucial, in order to avoid under- or over-prediction of birth rates in projections and microsimulation models. However, parity is often not accounted for as, for example within the UK context, good-quality data at sufficient detail are sparse. A review of fertility rate data from the UK and other countries with similarly rich and diverse ethnic compositions show that both populations by parity groups, and the number of births within them, are very well modelled by geometric series at higher parity values. Building on this insight, and to address the issue of data sparsity, we present a model that combines two UK fertility rate datasets, one based on routinely collected data disaggregated by age of mother, year and parity, and another dataset from a recent demographic model disaggregated by age of mother, year and ethnicity of mother. We then integrate our fertility rate model into a microsimulation model, using an all-UK population derived from survey data as the starting population, to simulate the life course of individuals and a replenishing population (i.e. 16-year-olds) to points in the future (15 years). Lastly, we investigate the effect of ethnicity-specific parity effects on birth rates by comparing real and simulated fertility to comment on the issue of representativeness of predictions of fertility for different ethnic groups.

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