# Climate change, the environment and demographic issues session

**Convenor: Dr. Dermot Grenham**

**4.00pm Tuesday 14 September**

**Seasonal patterns in newborns' health**
**Mary-Alice Doyle; London School of Economics**

Children's life prospects can be predicted by their health at birth. This paper analyses one important determinant of newborns' health: the time of year that the baby is born, and hence the seasonal risks they are exposed to in utero. There are multiple explanations for seasonality in newborns' health, including variations in weather, fertility patterns, economic conditions and disease prevalence. Most previous research has examined each of these in isolation. This means that we do not know which of these explanations is most important – and hence which policy interventions would most effectively reduce early-life inequalities. In this paper, I compare the magnitude of each of these seasonal risks, seeking to identify the most important drivers of seasonality. I use a rich administrative dataset from the Northern Territory of Australia, a large territory spanning tropical and arid climates and where newborn health varies dramatically with the seasons. I find that the most important explanations for seasonality in birth outcomes in the Northern Territory are variations in extreme heat and seasonal prevalence of sexually transmitted infections. Seasonality in influenza prevalence, food prices, employment conditions, and road accessibility have smaller effects. These findings highlight the importance of climactic factors – and especially very hot weather and heat waves – over and above other seasonal risk factors. For instance, I estimate that a 1 SD increase in average minimum temperature during pregnancy is associated with a 38-gram reduction in birthweight. In light of the changing climate, my research suggests that improving access to adaptations to extreme heat (such as air conditioning) will be of increasing importance in reducing inequalities at birth.

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**Adapting to the heat? Extreme temperature and birth outcomes over time in Spain, 1985-2016**
**Risto Conte Keivab; European University Institute**

Extreme temperatures affect women's birth outcomes increasing the likelihood of low birth weight. Moreover, the relationship appears particularly pronounced when looking at extreme heat, raising concerns in light of future global warming. Nevertheless, humans actively adapt to the local weather and to changes in the climate through technological and behavioural responses. Until now, research on pregnant women's adaptation to temperature is lacking. Here, we aim to understand how the risks of Low Birth Weight (LBW) related to extreme temperature changed over time in Spain. We collected administrative data on 5 million urban singleton births between 1985 and 2016 and we combined them with precise meteorological information provided by local meteorological stations. We measure exposure to temperature by trimester of pregnancy and run two main analysis using linear probability models. With the first model we assess the risk of LBW for the whole period of analysis. In the second model, we stratify the effect of temperature per three time periods 1985-1995, 1996-2005 and 2006-2016. The pooled results do not show any substantive increase in the risks of LBW with extreme temperatures. However, when looking at the association between temperature and LBW by time period we observe an increase in the risk of LBW with exposure to days with mean temperature >32°C in the years 1985-1995 but not subsequently. Moreover, the increase in LBW is mostly concentrated in the second trimester of pregnancy. Finally, the results suggest adaptation to extreme temperature over time in the Spanish population of pregnant women.

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**The multidimensional impacts of mining on poverty alleviation in central Indonesia**

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The global demand for mining commodities has drastically grown due to population growth and higher standards of living, where extractive activities from mining has mostly taken place in developing countries. The expansion of mining extraction has vastly transformed rural landscapes, leading to serious social and environmental implications. While studies have documented the localised social outcomes of mining, little research has assessed these impacts at broader scales using a robust evaluation to detect generalisable findings, particularly in the global South. This study assesses the multidimensional outcomes of mining on local communities between 2011 and 2018 across villages in central Indonesia, a region that has seen a drastic rise in mineral mining concessions over the past decade. We implement statistical matching methods to measure the varying impacts of mining on local communities. Indicators are grouped into five dimensions: basic living conditions, health and education, social cohesion, financial support, and socio-ecological conditions. Preliminary results show that mining has had mixed impacts on local communities. While the number of slum areas has decreased, mining has neither improved, nor worsened the living standards of villages. We find that mining has led to negative socio-ecological outcomes, with a higher frequency of flooding and landslides. To disentangle these heterogenous outcomes, our next step will be including the type of mining activity, mineral commodity, and governance structure to our analysis. This study highlights that the land-use decisions and planning of mining development requires multi-sectoral action to achieve greater prosperity of local communities.

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