

Climatic Influences on Women's Health and Mobility in Sub-Saharan Africa

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Extended Abstract for the 2019 Annual Meeting of the Population Association of America

Motivated by the unfolding reality of global climate change, a growing literature has explored the consequences of climate change and variability for a variety of population-level outcomes including permanent migration (Bohra-Mishra et al. 2014; Gray & Wise 2016; Nawrotzki et al. 2016; Thiede et al. 2016), mortality (Barreca et al. 2016), educational attainment (Randell & Gray 2016), employment (Mueller et al. 2015), fertility (Sellers & Gray 2017), and child health (Davenport et al. 2017), with clear negative consequences from increasing temperatures for almost all outcomes. Notably lacking, however, is information on how climate change will affect adult morbidity as well as temporary migration. The potential exists for climate change to exacerbate the incidence of adult disability, undernutrition and self-reported ill health, for example, but to date few population-level studies have explored these possibilities beyond the investigation of specific diseases such as malaria (Caminade et al. 2014). Likewise, temporary migration is potentially a key response strategy for individuals and households affected by climate extremes, but to date only a few studies have examined this possibility (Call et al. 2017).

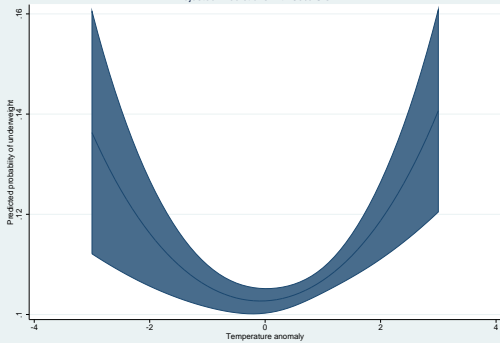
To address this lacuna, we examine the consequences of temperature and precipitation anomalies for women's health and mobility in Sub-Saharan Africa using data from the Demographic and Health Surveys and the Climate Research Unit's Time Series. Using time-stable geographies constructed by the IPUMS-DHS project, we link women to climate anomalies for the 12 months prior to their interview date and then estimate regressions of BMI, underweight, and temporary migration as a function of climate, socio-demographic controls, and area fixed effects, which account for the non-random distribution of anomalies across space. Data on BMI are available from 500 thousand women from 68 surveys in 18 countries, and linked to climate via 127 time-stable units. Preliminary results from the regression of BMI and underweight on climate and controls are presented in Figure 1, revealing that both hot and cold periods have negative consequences for women's health in Sub-Saharan Africa, while the effects of rainfall are pronounced only for BMI. We will extend this analysis to test whether these effects are mediated by urbanicity, educational attainment, and age, and we will also replicate this analysis for temporary migration using data from 154 thousand women measured in 29 surveys from 13 countries.

This project is also of pedagogical interest as it has been implemented across two semesters of a new undergraduate course as part of an initiative supporting course-based research at UNC. In the first semester, focused on climate and health, the students followed lab-style instructions to answer a joint research question for one African country among those available in the IPUMS-DHS data. The second semester is currently underway and focused on climate and migration. The participation of one graduate student per semester was also enabled by UNC support for Graduate Research Consultants. This presentation will describe the successes and challenges of this approach, which has been made much easier by the IPUMS-DHS interface.

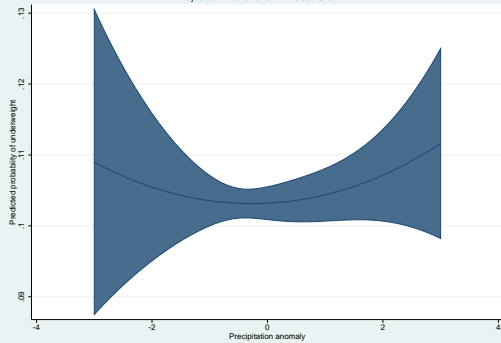
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Figure 1. Predicted values of women’s underweight and BMI as a function of temperature and precipitation anomalies.

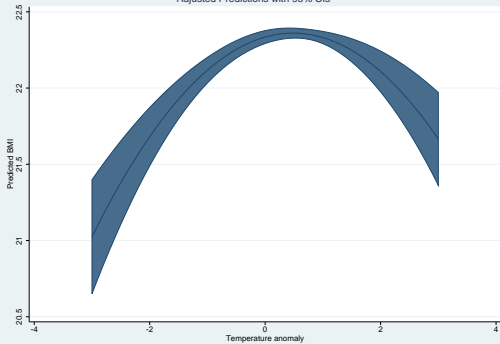
Adjusted Predictions with 95% CIs



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