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Title: An Ill Wind that Blows No Girl Any Good': The Impacts of Climate-Induced Disease on Gender Inequality



"In this study we ask how climate-induced disease contributes to persistent gender gaps in educational attainment. We focus on the influence of early school-age disease burdens induced by climate conditions/the dry, Harmattan season because of the robust evidence that experiences early in life have large, lasting impacts on human capital and a separate, growing body of research on how climatic conditions influence health and society. This allows us to uniquely connect education, health, climate and gender to examine the drivers of gender gaps in educational attainment. We do this using representative surveys and high-resolution NASA data from Niger.

We exploit variation in exposure to the 1986 Meningitis epidemic and the Harmattan season for school-aged children. First, we show that meningitis epidemics are robustly driven by climate conditions signaling the onset of the dry, Harmattan season in Africa. We then estimate a difference-in-differences model that interacts an indicator for gender with a continuous cohort-based measure of meningitis exposure during the 1986 epidemic, and find that higher meningitis exposure reduced years of education for school-aged girls. There is no significant difference in the education of boys exposed to higher or lower meningitis incidence during the epidemic. We find evidence in support of indirect economic impacts driving the increased gender gap results, where the high economic costs of disease burdens during epidemic years induce households to marry off their daughters at earlier ages. This finding is consistent with recent studies suggesting that in bride price societies (as in our study area), early marriage of girls can increase in response to negative income shocks where income and wealth transfers are made from the groom's family to the bride's family upon marriage.

Our findings highlight the need for policies targeting health, education and climate concurrently to close the gap in educational attainment and maximize economic returns from the associated gains in human capital investment, particularly for developing countries in Africa and Asia where the combination of notable gender gaps in educational attainment and higher disease burdens in the tropics can impose a double cost for economic development."