

Economic Impacts of Variability under Climate Change on Mortality Projections

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Projections of the economic impacts of climate change are routinely calculated under the assumption of fixed climate variability into the future. However, recent literature within economics have demonstrated strongly non-linear effects of temperature on socioeconomic impacts, so that changes in the distribution of future temperatures could amplify or mitigate climate damages. Large ensembles of climate model runs now allow us to better characterize future changes in temperature distributions and to understand the extent to which ignoring them can bias climate impacts projections. We conduct a sensitivity analysis on an econometrically estimated temperature-mortality relationship, comparing a 'no variability change' future climate projection of the continental U.S. to one incorporating distributional changes in day-of-year temperatures calculated using a new methodology by Haugen et al. 2018 using quantile regressions across ensemble members. We find that incorporating variability changes leads to large differences in estimated regional U.S. mortality impacts, amplifying or mitigating mortality changes. Ensemble-based information on distributional changes appears consequential for both overall estimates of climate change damages and for regional adaptation policies.