University of Utah
UNDERGRADUATE RESEARCH JOURNAL

NEIGHBORHOOD DISPARITIES IN AIR POLLUTION EXPOSURE AT THE US-MEXICO BORDER: THE INTERSECTION OF RACE/ETHNICITY AND OLDER AGE

Colby Child (Timothy W. Collins, Sara E. Grineski)
Department of Geography

Environmental justice (EJ) research has documented greater air pollution risks based on Hispanic/Latinx vs. non-Hispanic White racial/ethnic status. However, EJ research has not focused on the intersection of racial/ethnic and older age statuses in shaping unequal exposures. This is important because minority and older age groups are particularly vulnerable to health effects of air pollution. Additionally, EJ research has focused on measures of chronic rather than acute air pollution. We address those limitations by examining intersectional effects of racial/ethnic and older age statuses on chronic and acute exposures to fine particular matter ($PM_{2.5}$) air pollution in US metropolitan area census tracts within 100km of the US-Mexico border. We use American Community Survey (2012-2016) data to construct sociodemographic variables and USEPA Dowscaler data (2012-2016) to construct chronic and acute measures of $PM_{2.5}$ exposure. Using multivariable generalized estimating equations, we test for differences in $PM_{2.5}$ exposures between census tracts with higher vs. lower proportions of older Hispanic residents and older non-Hispanic White residents. We find that as the proportion of the Hispanic population >64 years of age increases, chronic and acute measures of $PM_{2.5}$ significantly increase. In contrast, as the proportion of the White population >64 years of age increases, changes in chronic and acute measures of PM2.5 are statistically insignificant. Findings illuminate the intersection of racial/ethnic and older age statuses in shaping air pollution inequalities and may inform efforts to mitigate the impacts of air pollution exposures for older Hispanic/Latinx people along the US-Mexico border.