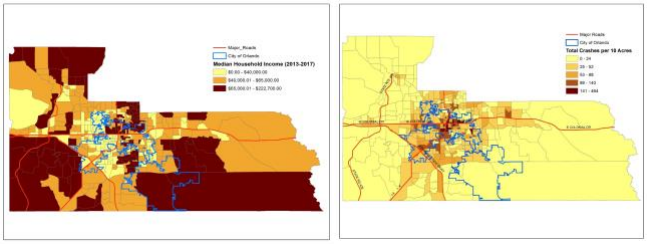
Collaborative Sciences Center for ROAD SAFETY

RESEARCH BRIEF

The Influence of the Built Environment on Crash Risk in Lower-Income and Higher-income Communities

This study seeks to understand the environmental factors that influence crash incidence in lower-income communities in Orange County, Florida, as well as whether the factors associated with crash risk in these communities differ from the factors affecting more affluent communities and the population as a whole.

This study uses three sets of negative binomial regression models: one for the Orange County region as a whole, a second for lower-income communities, defined as block groups with median household income of $40,000 or less, and a third for higher-income communities, defined as block groups with median household incomes of greater than $65,000.



Left: Median Household Income in Orange County, Florida (ACS, 2013-2017), right: Total Crashes by Land Area in Orange County, Florida (2014-2016)

The results of this study suggest that income has a far more complex relationship to crash incidence than previously supposed-- one that appears to be compounded by issues of race. First, urban arterials are far more problematic for lower-income communities than for more affluent ones. Each mile of urban arterial was associated with a 9% increase in total and KAB crashes in affluent communities, while they were associated with nearly a 30% increase in these same crash types in lower-income areas. Further, while the presence of arterials in affluent communities had little effect on pedestrian collisions, each additional mile of urban arterial was associated with a 20% increase in pedestrian collisions in less affluent areas.

Income Group	Min	Max	Mean	Std. Dev
Lower-income	0%	100%	45%	29%
Higher-income	48%	100%	83%	11.3%

Percentages of Whites in High-income and Low-income Communities

While race did not have a statistically-meaningful relationship to crash incidence in higher-income block groups, the percentage of whites in lower-income block groups was significantly associated with reductions in total, KAB, and pedestrian crashes. Stated another way, racial disparities exacerbate the crash risk already experienced by lower-income communities. This study thus attempts to begin to disentangle these issues and concludes with a call for greater consideration to the manner in which the design of the built environment may exacerbate, or prevent, inequalities associated with race and income.

PRINCIPAL INVESTIGATOR

Eric Dumbaugh, Ph.D.
FLORIDA ATLANTIC UNIVERSITY

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