

# **Economic Opportunity and Race-Sex Specific Mortality: Evidence from U.S. Localities**

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## **Introduction**

Recent studies have identified economic opportunity as a key determinant of population health. This work exploits newly available measures of intergenerational economic mobility to examine how spatial variation in the upward mobility prospects of children born to low-income families maps on to variation in health behaviors and health outcomes (Palloni et al. 2016; Venkataramani et al. 2016a; Heraclides and Brunner 2010; Campos-Matos and Kawachi 2015; Venkataramani et al. 2016b; Gugushvili et al. 2018). For example, one recent study--motivated by the work of Case and Deaton (2015) and others--finds that over the past two decades, white middle-aged mortality increased more in areas characterized by low economic opportunity, even after accounting for changes in economic characteristics of the local area including poverty, unemployment and income inequality (O'Brien et al 2016). This suggests that variation in economic opportunity across U.S. localities may play an important role in explaining variation in population health outcomes.

Yet studies using local area economic mobility estimates to measure their impact on health have thus far relied on measures of economic mobility that average across all individuals in the focal birth cohort. These aggregate measures no doubt obscure important underlying heterogeneity in the economic mobility outcomes of males and females and blacks and whites even within the same locality. Our project seeks to extend this literature by examining whether and to what extent variation in the economic mobility outcomes of low-income children by race and sex predicts variation in the health outcomes of these groups. We do so by pairing new estimates of race- and sex-specific intergenerational economic mobility rates by Chetty et al. (2018) with race- and sex-specific mortality rates at the level of the commuting zone.

## **Data & Analytic Strategy**

We rely on several sources of data for our analyses. Estimates of race- and sex-specific intergenerational economic mobility at the commuting zone-level were generated by Chetty et al. (2018) using matched parent-child income data from the IRS for all Americans born between 1978 and 1983. The authors measure the mobility outcomes of this cohort using the expected mean income rank in adulthood of children born to low-income (25th income percentile) parents. These race and sex specific mobility estimates are available at the commuting zone level. Our race- and sex-specific mortality rates were gathered from the CDC. These age-adjusted mortality rates reflect all deaths between 2008 and 2012, and are aggregated from the county-level to commuting zone level. Models include several covariates estimated at the commuting zone level from the the five-year sample of American Community Survey (2008-2012), including: unemployment rate, median household income, Gini coefficient, and racial/ethnic composition.

Our initial strategy is to regress race-sex specific age-adjusted all cause mortality on the race-sex specific economic mobility measure across U.S. commuting zones, adjusting for a vector of local area economic characteristics including poverty, unemployment, median household income, education composition, and income inequality. We then examine how change in the race-sex specific mortality rates in the decade between 2000 and 2010 varies as a function of the local area level of economic opportunity. We detail future directions below.

## **Preliminary Results**

Table 1 presents estimates from OLS regression models estimating the relationship between our measure of economic opportunity and mortality separately for black males, black females, white males and white females. As expected, across all four groups we see a negative relationship between opportunity and mortality: where economic mobility is higher, mortality is lower. And this relationship holds even after accounting for local area economic characteristics including income inequality. Yet even these preliminary models reveal potential important differences in the strength of the opportunity-mortality relationship across race-sex groups: it appears mobility is less predictive of mortality for black males relative to black females or whites. This difference is evidenced in the flatter slope for black males relative to other race-sex groups in Figure 1.

Although interesting and suggestive, the estimates presented in Table 1 and Figure 1 are from cross-sectional models which means the observed relationship may be driven by unobserved characteristics of the commuting zone that jointly impact both mortality and economic mobility. To help reduce this bias, Table 2 presents the estimated relationship between race-sex specific economic mobility and the observed change in mortality rates within-commuting zones between approximately the year 2000 and the year 2010. Here we see a relatively large, negative and statistically significant coefficient on the measure of economic mobility in the model for black males--this suggests that black mortality fell more in areas characterized by greater economic mobility for black males. The corresponding coefficient for white males is considerably smaller in magnitude although it is statistically significant. Notably, within-commuting zone change in the mortality rates of black and white women appears to be unrelated to the level of economic opportunity. This suggests that analyzing the relationship between race-sex specific mobility and mortality over time may yield important insights in to the social drivers of population health and health disparities by race and sex.

## **Next Steps**

We intend to extend this analysis in several directions, including:

1. Analyzing the extent to which race (and sex) gaps in economic mobility outcomes map on to variation in race (and sex) mortality gaps across U.S. localities. We posit that within-locality differences in the mobility outcomes of blacks and whites, men and women, may shed new light on the causes of race and sex mortality gaps.
2. Exploring whether specific causes of mortality--including so-called "deaths of despair" due to suicide or drug and alcohol use--are more or less correlated with local mobility outcomes across different racial groups
3. Examining how race and sex-specific mortality rates--and the associated gaps by race and sex--have evolved over time as a function of local area economic opportunity structures.
4. Decompose the commuting-zone level predictors of age-adjusted all cause mortality by race and sex to consider the role of opportunity alongside inequality, demographic structure, poverty and other predictors of mortality.
5. Examine the interplay between local area income inequality and economic mobility in explaining variation in mortality outcomes.

Table 1. Economic Opportunity and Race-Sex Specific Age-Adjusted Mortality

	(1) Black Men	(2) Black Women	(3) White Men	(4) White Women
Upward Mobility (p25)	-6.587+ (3.361)	-11.784*** (2.745)	-11.548*** (1.018)	-13.039*** (0.614)
Poverty rate	-6.390** (1.984)	-0.020 (1.248)	6.026*** (1.463)	4.845*** (0.932)
Median income (logged)	-247.832*** (50.343)	-98.301** (35.657)	164.550*** (35.959)	144.466*** (21.511)
Unemployment rate	-3.831 (2.423)	-3.370* (1.321)	-17.426*** (1.719)	-9.571*** (0.981)
Less than HS rate	-4.796** (1.837)	-6.654*** (1.282)	8.550*** (1.194)	10.080*** (0.761)
Bachelors or higher	-6.587+ (3.361)	-11.784*** (2.745)	-11.548*** (1.018)	-13.039*** (0.614)
Gini	26.423*** (3.406)	14.118*** (1.997)	10.323*** (1.517)	4.223*** (0.919)
Constant	3,337.10*** (586.127)	1,888.02*** (357.510)	-590.98 (377.395)	-599.26* (233.806)
Observations	464	434	738	733
Adjusted R <sup>2</sup>	0.359	0.310	0.630	0.707

Standard errors in parentheses; \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

Figure 1. Predicted Relationship Between Economic Mobility and Mortality

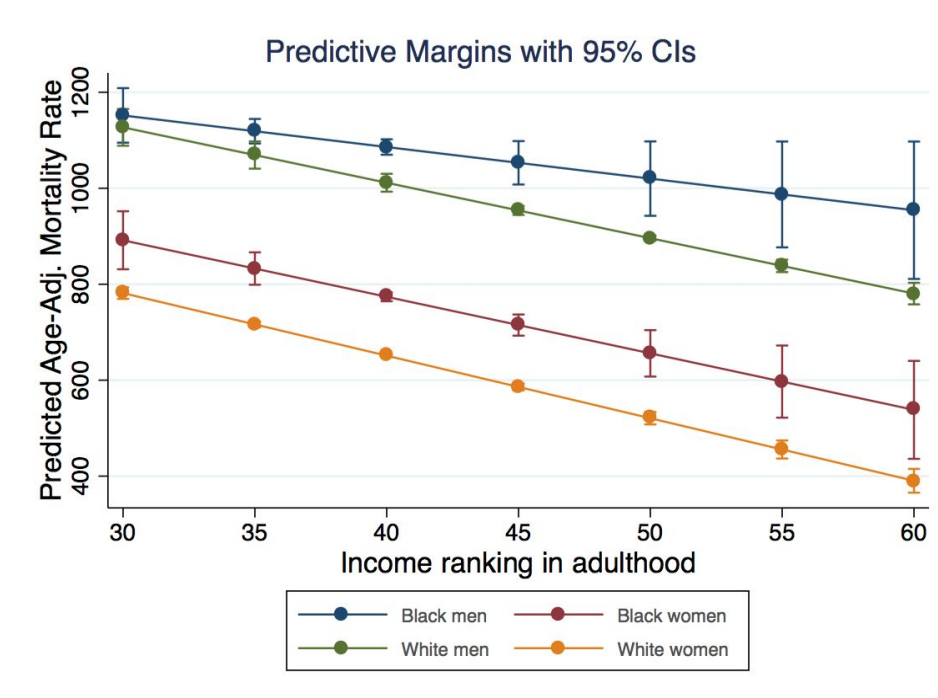


Table 2. Opportunity Predicting Within-Commuting Zone Change in Race-Sex Specific Mortality

	(1) Black men	(2) Black women	(3) White men	(4) White women
Upward Mobility (p25)	-16.592** (5.316)	1.001 (4.169)	-2.334*** (0.594)	0.888 (0.580)
Constant	699.805*** (208.809)	-19.895 (165.441)	223.404*** (30.080)	7.136 (23.059)
Observations	441	418	738	731
Adjusted R-squared	0.019	-0.002	0.019	0.002

Standard errors in parentheses; \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

Outcome variable = age\_adjusted\_rate (1999-2003) minus age\_adjusted\_rate (2008-2012)

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