Concentrated Disadvantage in South Carolina: Pregnancy Behaviors and Birth Outcomes, 2013-2015

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Introduction

Over the past decade, South Carolina has experienced improvements in teen pregnancy and infant mortality, and a moderate increase in breastfeeding initiation at birth. There are still some areas within the state that exhibit suboptimal health outcomes potentially attributable to the geographic clustering of social and economic factors. Concentrated disadvantage, a composite measure of these factors, has been linked to several poor health outcomes including teen pregnancy, risk-taking behaviors, and adverse birth outcomes.[1,2,3] Concentrated disadvantage is a life course indicator that can be applied to community settings to assess differential outcomes in health.[3,4]

The aims of this descriptive study is to:

- Identify the geographic distribution of concentrated disadvantage in South Carolina.
- Evaluate pregnancy behaviors and birth outcomes by disadvantage level.

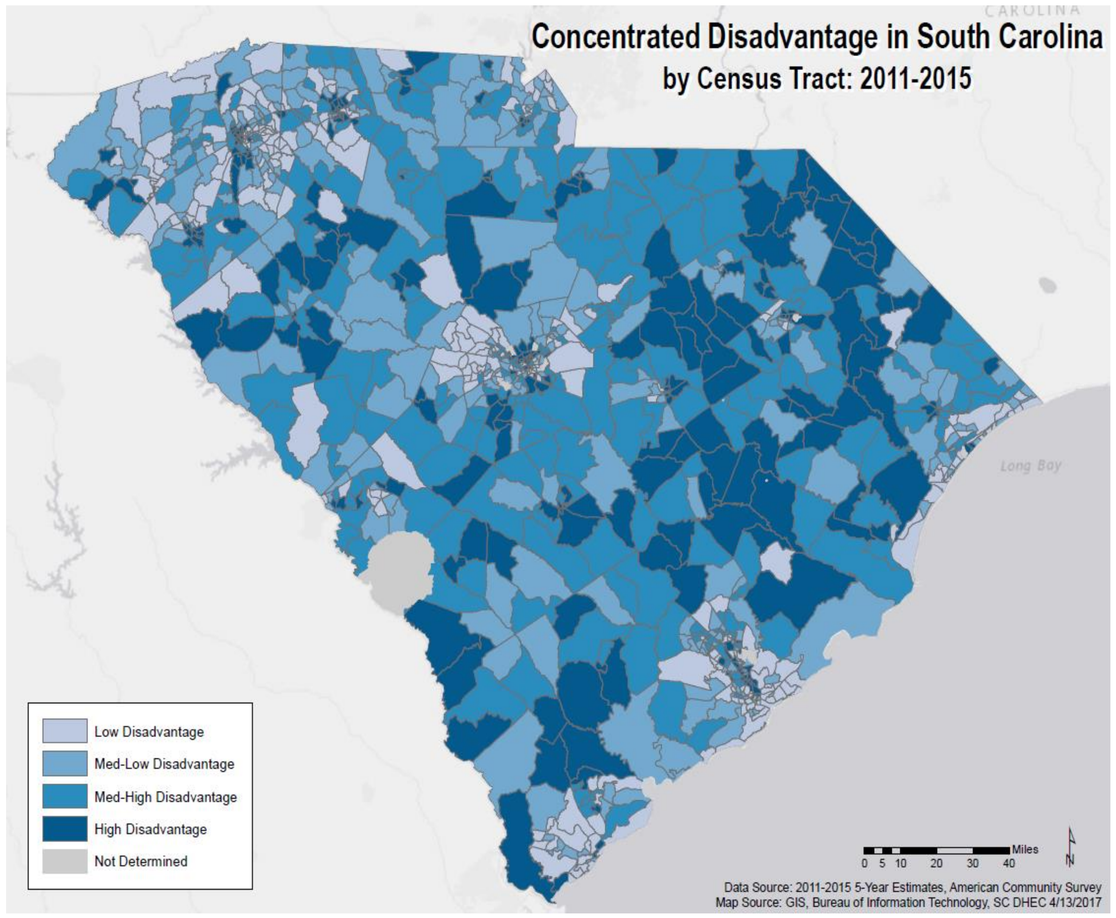
Methods

Concentrated disadvantage is comprised of five U.S. Census variables: Percent of families below the poverty line; percent of individuals on public assistance; percent of female-headed households; percent of individuals unemployed; and percent of households with individuals less than 18 years of age. [3,4]

To calculate concentrated disadvantage by census tract:

- Population estimates for each U.S. Census variable were derived from the American Community Survey (ACS) 5-Year Estimates (2011-2015);
- Z-scores were calculated for each U.S. Census variable and averaged across all indicators; and
- Average Z-scores were divided into quartiles: Low, Medium-Low; Medium-High; and High.[4]

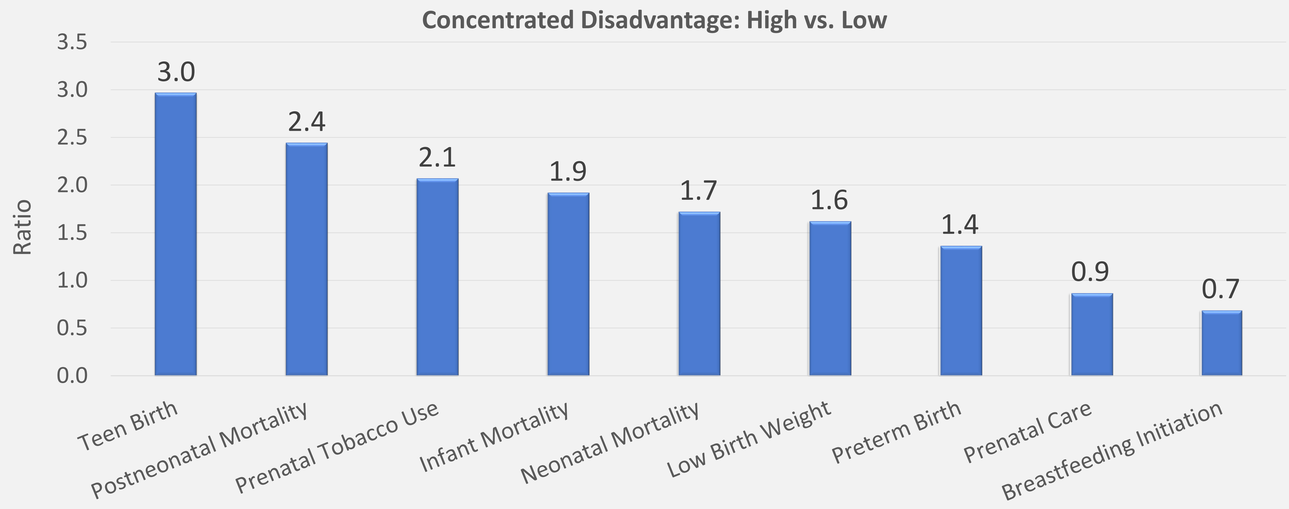
There were a total of 1,083 census tracts with complete data for all five U.S. Census variables. South Carolina linked birth and infant death records for birth cohorts 2013 through 2015 were geocoded to and outcomes were calculated by level of disadvantage.



Results

2013-2015					
	Low Disadvantage	Medium-Low Disadvantage	Medium-High Disadvantage	High Disadvantage	**South Carolina**
Maternal Behaviors					
Received Prenatal Care in First Trimester	76.3%	72.6%	70.4%	66.3%	**71.2%**
Prenatal Tobacco Use	6.3%	9.6%	13.3%	13.0%	**10.6%**
Breastfeeding Initiation	85.4%	77.9%	68.4%	58.8%	**72.4%**
Birth Outcomes					
Low Birth Weight (<2,500 grams)	7.3%	8.9%	9.9%	11.9%	**9.6%**
Preterm Birth (<37 weeks)	9.3%	10.7%	11.1%	12.7%	**11.0%**
Infant Mortality[a]	4.9	5.1	7.2	9.5	**6.8**
Neonatal Mortality (<28 days)[a]	3.6	3.6	4.5	6.1	**4.5**
Postneonatal Mortality (28 days-364 days)[a]	1.4	1.5	2.8	3.3	**2.3**
Teen Birth[b]	14.2	24.9	35.0	42.2	**28.7**

[a] Rate per 1,000 live births; [b] Rate per 1,000 female population (15-19 years old)



Discussion and Conclusions

- Across areas of High disadvantage, there was an excess rate of 28.0 teen births (15-19 years old) per 1,000 female population and an excess rate of 4.5 infant deaths (2.6 neonatal deaths; 2.0 postneonatal deaths) per 1,000 live births compared to areas of Low disadvantage.
- Areas of High Disadvantage had a lower prevalence of women who received prenatal care in the first trimester (66.3% *vs.* 76.3%) and breastfeeding initiation (58.8% *vs.* 85.4%).
- There was also a higher prevalence of tobacco use during pregnancy (13.0% *vs.* 6.3%), low birth weight (11.9% *vs.* 7.3%), and total preterm births (12.7% *vs*. 9.3%).
- There was a more than two-fold relative difference in the rate of teen birth, postneonatal mortality, and prevalence of tobacco use during pregnancy when comparing High disadvantage areas to Low disadvantage areas.
- Consistent with the literature, there are substantial differences in teen birth, infant mortality and other adverse birth outcomes across disadvantage classes in South Carolina.[1,2] Next steps involve conducting a multivariate analysis with adjustments for potential confounding factors such as maternal age, race and ethnicity, and urban/rural classification to assess the direct affect of concentrated disadvantage.
- To close the achievement gap toward optimal health in South Carolina, continued attention and efforts should be focused around addressing the needs of vulnerable populations such as single-family households and causes of social and economic strain such as poverty, unemployment, and low educational attainment.

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