

Examining Birth Outcomes Hotspots in Maryland

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Presenter Disclosures

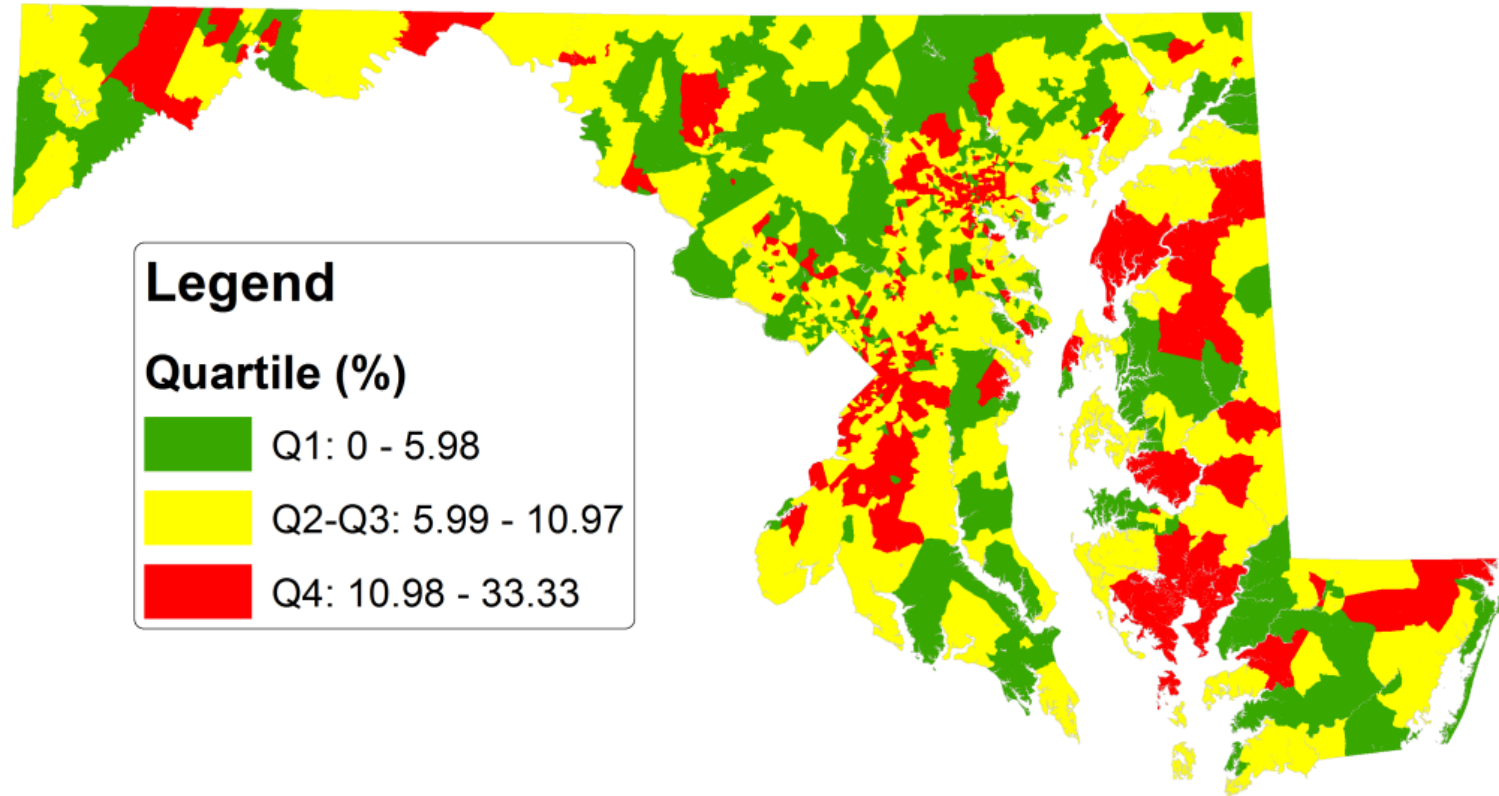
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The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

No Relationships to Disclose

Purpose of the Study

Geographic Variation of LBW Rates in Maryland



To identify hotspots of poor birth outcomes in Maryland.

Examine population characteristics of identified hotspots.

Discuss how programs and policies can be both geographically targeted and culturally appropriate.



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Research Questions

1. Do birth outcomes hotspots exist at the Census tract level in Maryland?
2. How do population characteristics differ between high and low birth outcomes hotspots?

Definitions

- **LBW Rate:** Births <2500 grams as percent of all live births.
- **Hotspot:** Tract in which LBW Rate of the focal tract is statistically similar to the surrounding tracts; clustering of LBW Rates (Queen Specification)



Methods

Linked Dataset

2010 Census Tract Shapefiles

2010 Census Tract Identifiers

2010-2012
aggregate
Maryland Vital
Statistics

2008-2012
American
Community
Survey

Data Analysis

- Global Moran's I (GMI) and Local Moran's I (LMI)
- T-tests compared hotspots with High Rates of LBW to hotspots with Low Rates of LBW
- Tracts with <100 total population excluded

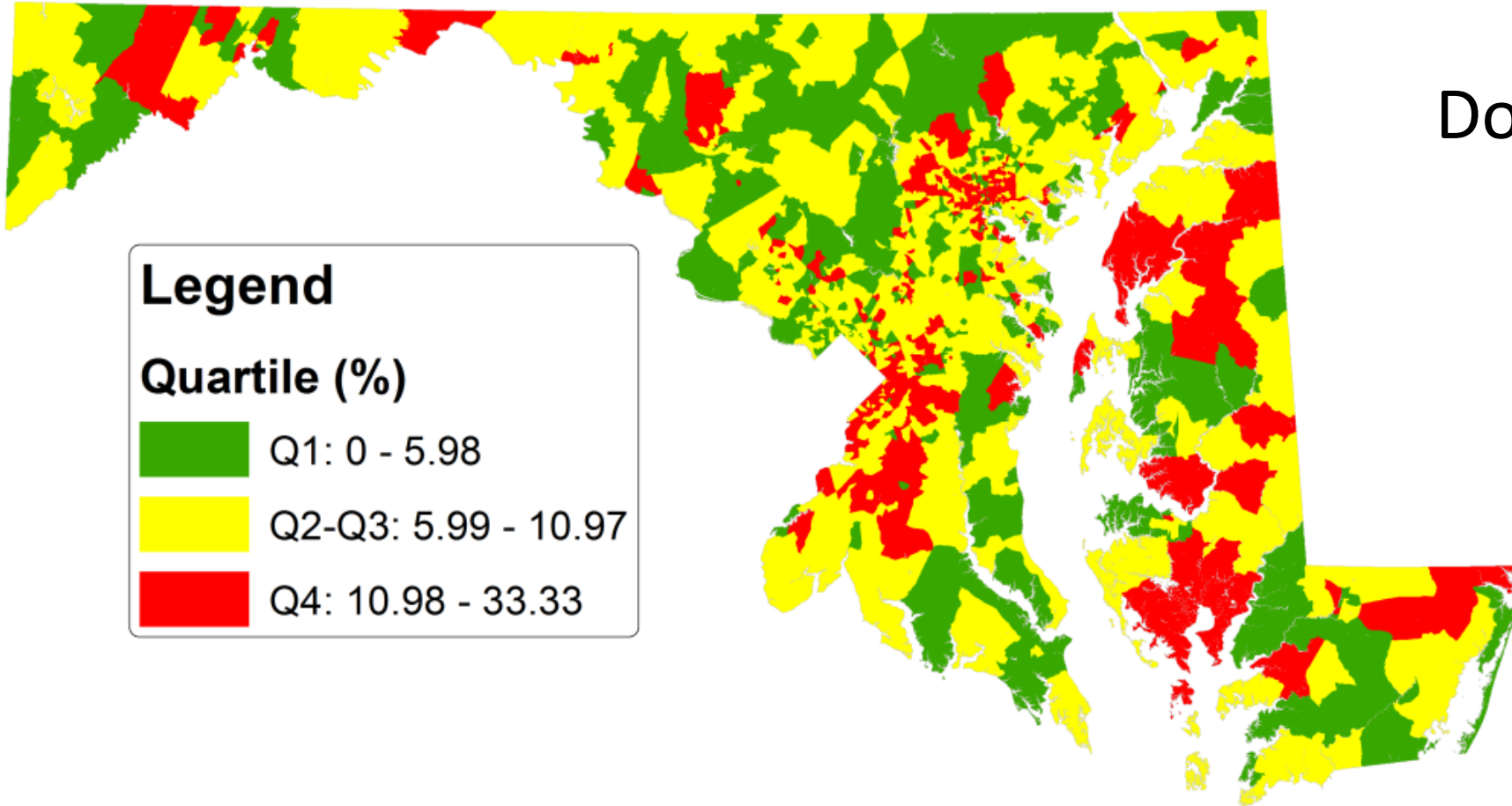


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Global Moran's I Results

LBW Quartiles by Tracts in Maryland
(n= 1388)



Does clustering occur?

Yes!

GMI: .291 $p < .001$



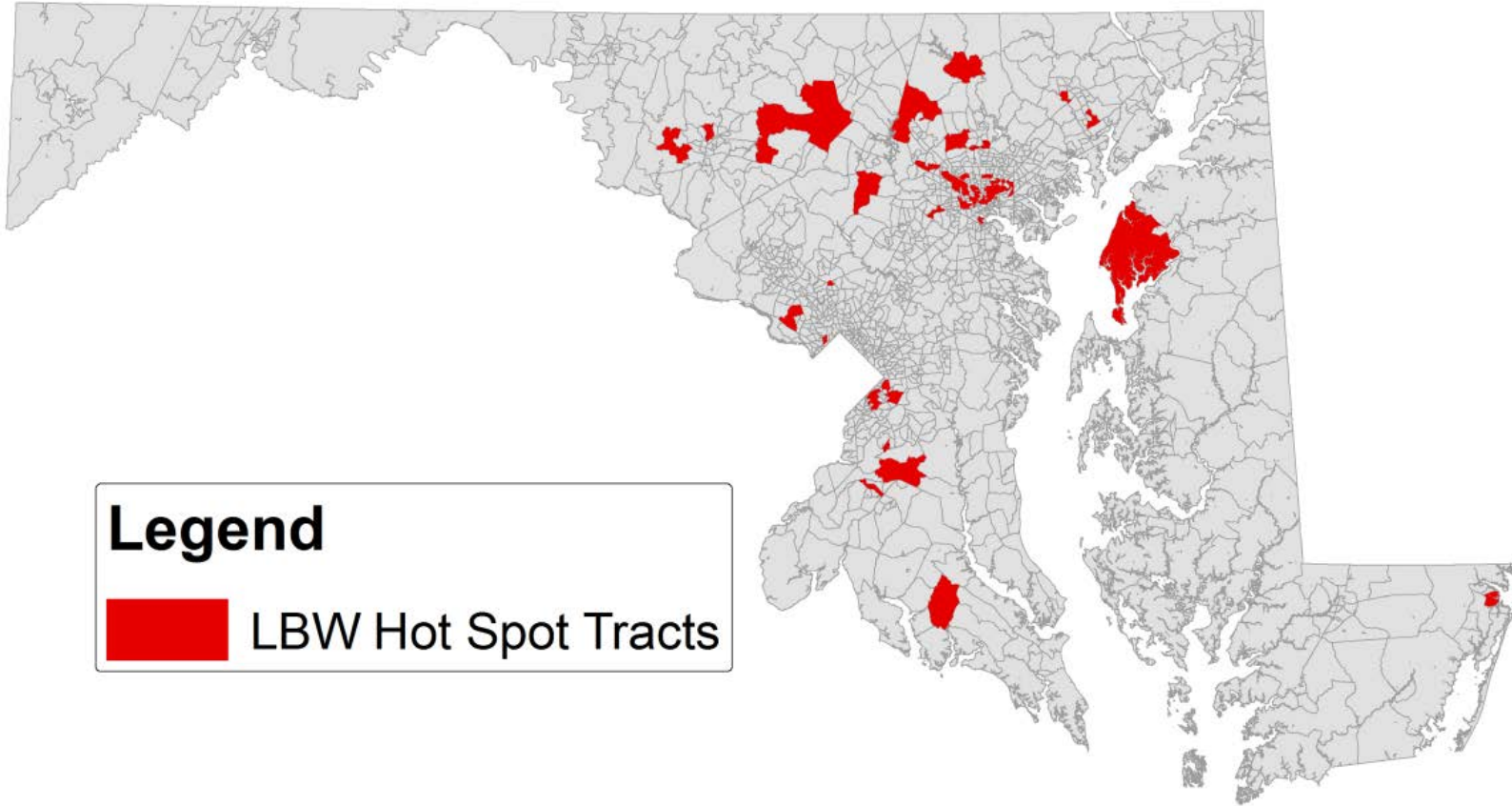
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Local Moran's I Results

LBW Hotspots (n= 127)

LMI > 0; p<.05



Legend

 LBW Hot Spot Tracts

Can we identify LBW Hotspots?

Yes!

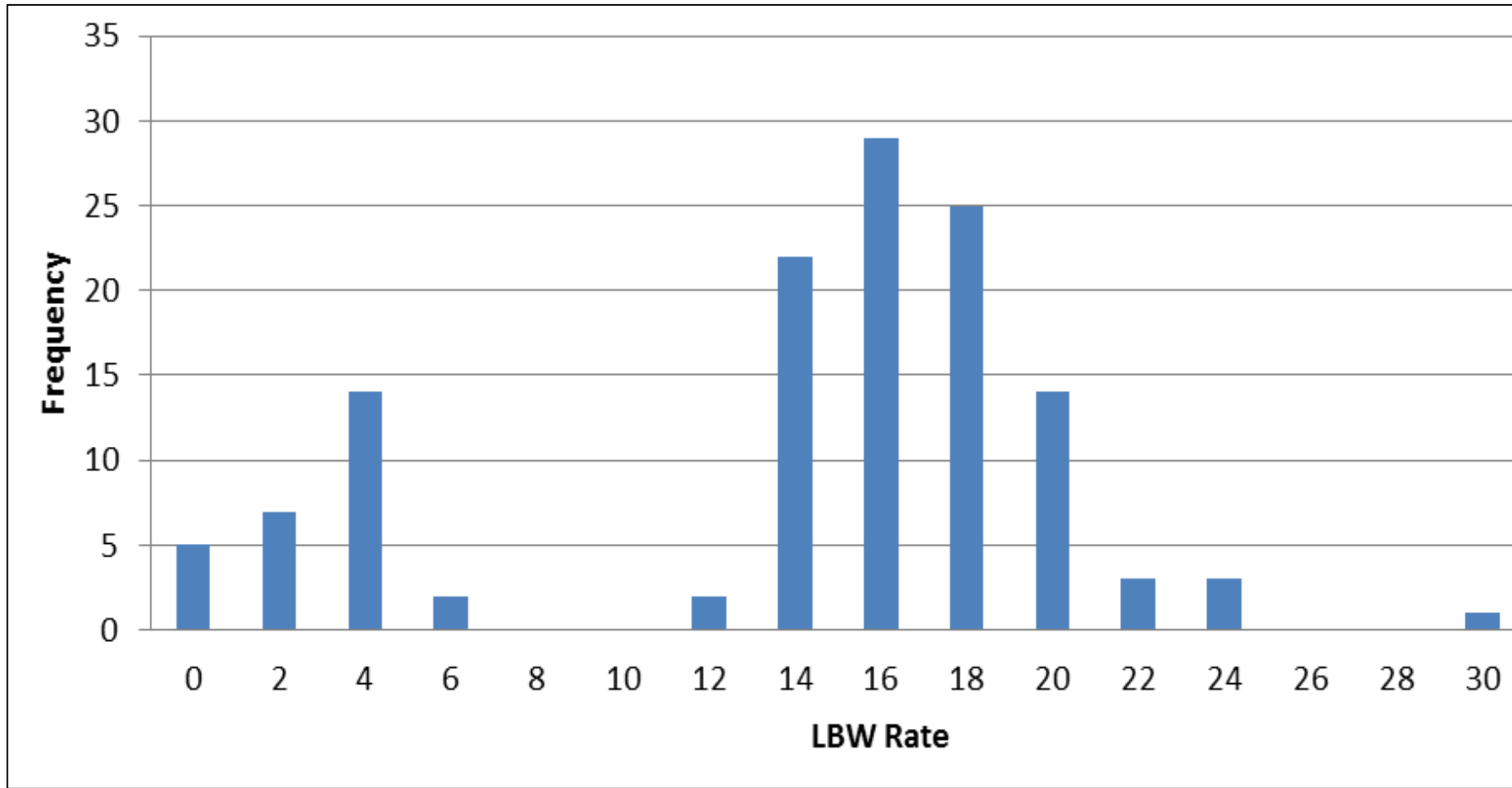


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Results

Frequency of LBW Rates among Hotspots



Do Hotspots with High Rates of LBW Exist?

Yes!

LBW Rate > 11%

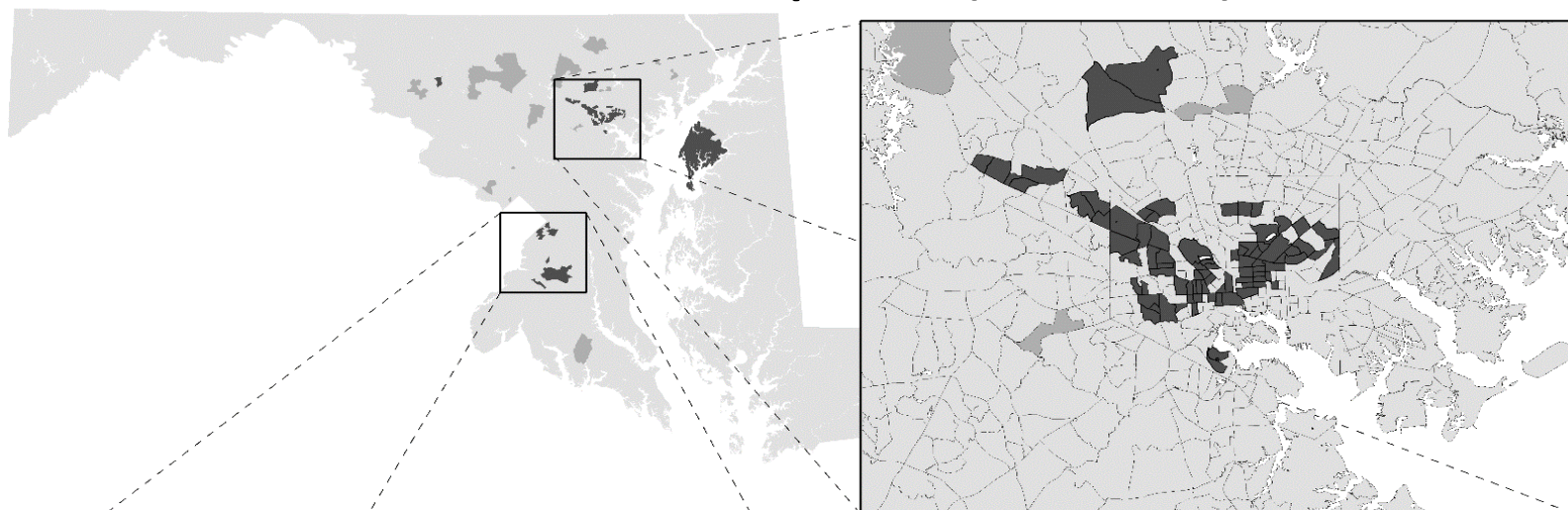


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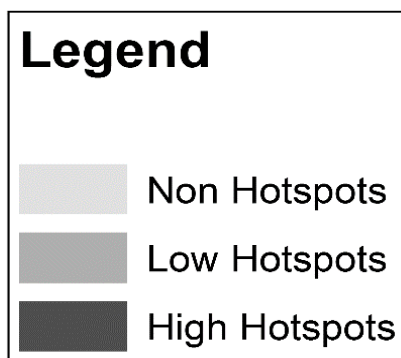
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Results

LBW Hotspots (n= 127)



Baltimore Area Hotspots



District of Columbia Area Hotspots

High LBW Hotspots

77.95%

(n= 99)

Low LBW Hotspots

22.04%

(n = 28)



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T-Test Results

	High Rate of LBW Mean (sd) (n= 99)	Low Rate of LBW Mean (sd) (n=28)	t-value	F value
Race/Ethnicity				
Percent White	12.66 (21.09)	85.09 (10.63)	24.79***	3.93**
Percent Black	81.75 (24.07)	6.06 (7.14)	-27.32***	11.37***
Percent Hispanic	1.99 (2.29)	3.78 (4.28)	2.12*	3.47***
Percent Asian	1.39 (3.13)	3.64 (5.03)	2.25*	2.57**



T-Test Results

	High Rate of LBW Mean (sd) (n= 99)	Low Rate of LBW Mean (sd) (n=28)	t-value	F value
Socioeconomic Status				
Poverty Rate (%)	23.39 (16.27)	3.85 (3.27)	-11.17***	24.66***
Female Headed Household (%)	14.97 (8.75)	3.28 (1.77)	-7.01***	24.30***
≥ High School Education (%)	79.38 (10.47)	94.50 (3.61)	7.49***	8.41***
Receiving Public Assistance (%)	6.49 (5.91)	.53 (.69)	-5.31***	72.46***
≥ 16 Years Old Employed (%)	29.27 (14.97)	53.67 (13.96)	7.72***	1.14



Discussion

1. Do birth outcomes hotspots exist at the Census tract level in Maryland?
 - GMI suggested global spatial autocorrelation
 - LMI identified hotspot tracts with both High and Low Rates of LBW

2. How do population characteristics differ between high and low birth outcomes hotspots?
 - Hotspots with High Rate of LBW
 - Higher concentration of Black NH residents
 - Low SES across multiple indicators

Aligns with previous work in Maryland and across the United States



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Implications

- Geographically targeted programs and policies
 - E.g. Maryland Health Enterprise Zones
- Racial/Ethnic concentration of area matters
 - Community based, culturally appropriate actions
- Low SES may indicate lack of access to resources
 - Data and community input to target resources
- Potential to improve birth outcomes and overall health of populations

