Disparities in Streetscape Environments in Communities across the United States

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bridging the gap — Research Informing Policies & Practices for Healthy Youth

Background/Methods

- Various environmental factors known to be correlated with active transport
- Environmental disparities identified in previous research of local or regional scope

- Pooled cross-sectional study, data collected annually from 2010 to 2012 in 471 communities around the US
- Community defined as enrollment zone of traditional neighborhood middle or high school
- Stratified probability-proportional-to-population-size sample of street segments
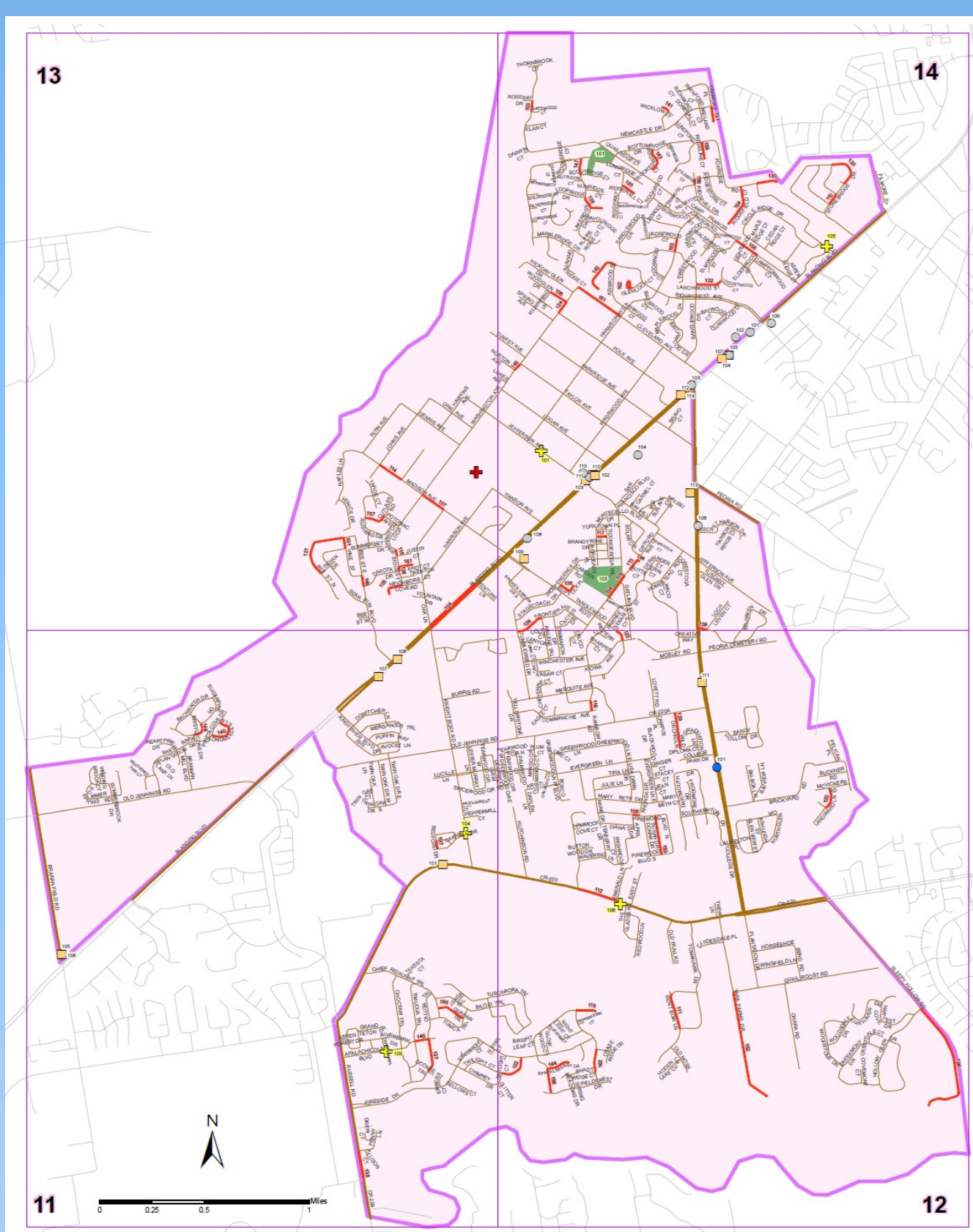
- Direct field observation of sampled segments using 74-item *BTG-COMP Street Segment Observation Form*
- Measures include land use mix, physical activity (PA) venues, traffic and pedestrian characteristics (e.g. sidewalk, traffic calming, crossing features), signage, disorder, transit, and other characteristics
- 30,458 eligible segments observed and included in the analyses

- Descriptive statistics and logistic and negative binomial regression for survey data

Community Sample Characteristics (n=471)

Variable	Freq/ Mean	Percent/ SD
Locale		
Urban	90	19.1
Suburban	226	48.0
Rural	155	32.9
Race/Ethnicity		
≥66% White	327	69.4
≥50% Black	17	03.6
≥50% Hispanic/Latino	26	05.5
Other composition	101	21.4
Census Region		
West	90	19.1
Midwest	118	25.1
Northeast	98	20.8
South	165	35.0
Median Household Income	$58,339	22,814
Area (square miles)	113.9	208.9
Population Density (per square mile)	2,417.8	5,489.8

Overall Prevalence of Built Environment Features (n=30,458)

| Variable	% of Segments	95% CI
Sidewalk	40.1%	37.5, 42.8
Mixed Land Use	09.7%	09.0, 10.5
Bike Lane	01.4%	01.1, 01.8
Bicycle Parking	00.4%	00.3, 00.5
Marked Crosswalk	09.4%	08.4, 10.4
Off-road Trail	00.8%	00.6, 01.0
Physical Disorder	48.6%	46.2, 51.0
Active Transport scale (mean/SE)	02.25	00.07

Mixed land use refers to the presence of both residential and commercial uses. Physical disorder includes litter, graffiti, vacancy, bars on windows, broken windows. Active transport scale is the sum of indicator variables for presence of a sidewalk (SW), SW buffer, continuous SW within/between segments, SW shade, lighting, marked crosswalk, bike lane, bike parking, off-road trail, and mixed land use (range 0-11).
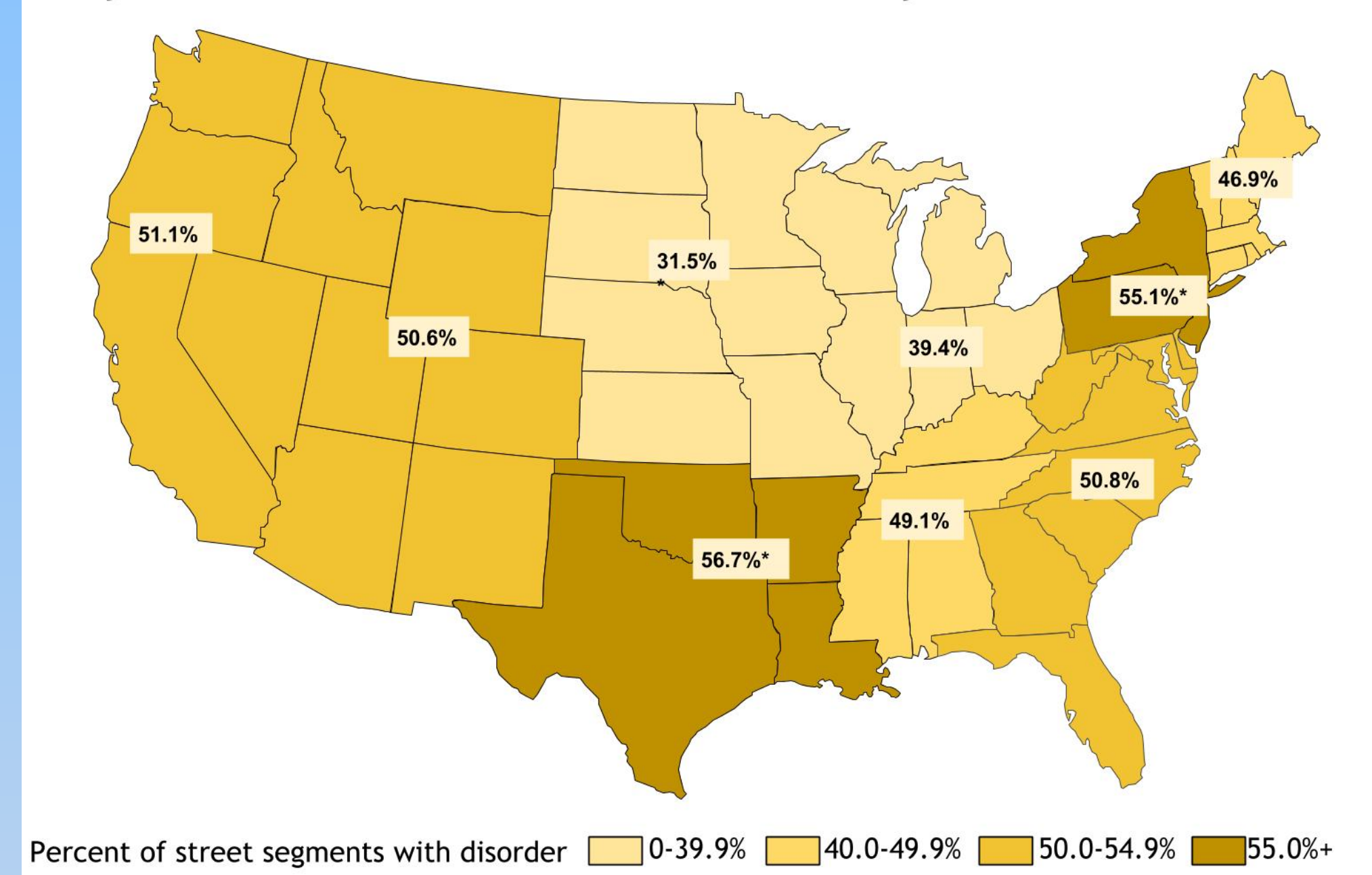
Preliminary Results

Prevalence of Built Environment Features on Street Segments by Urbanization, Racial/Ethnic Composition, and Median Household Income
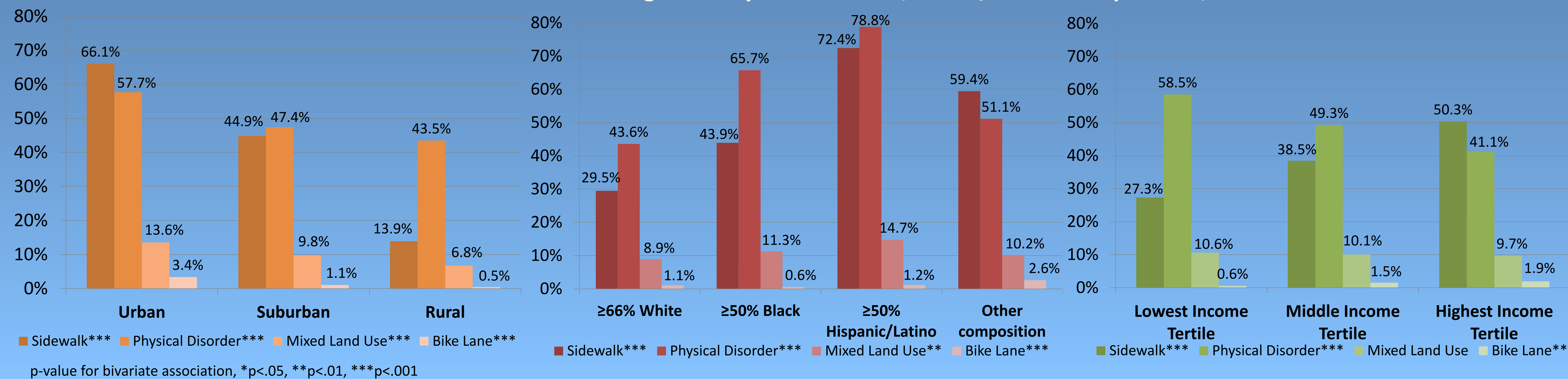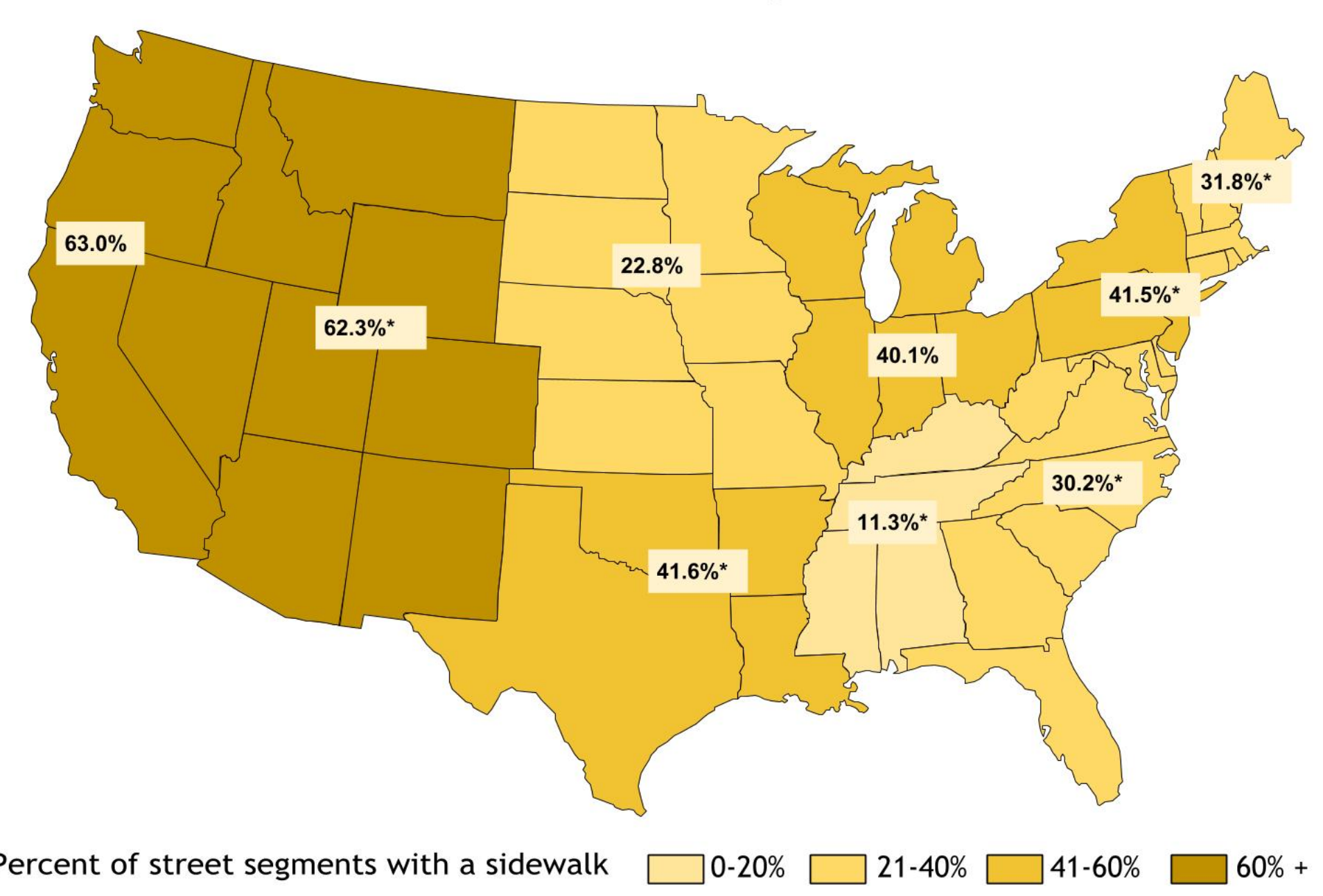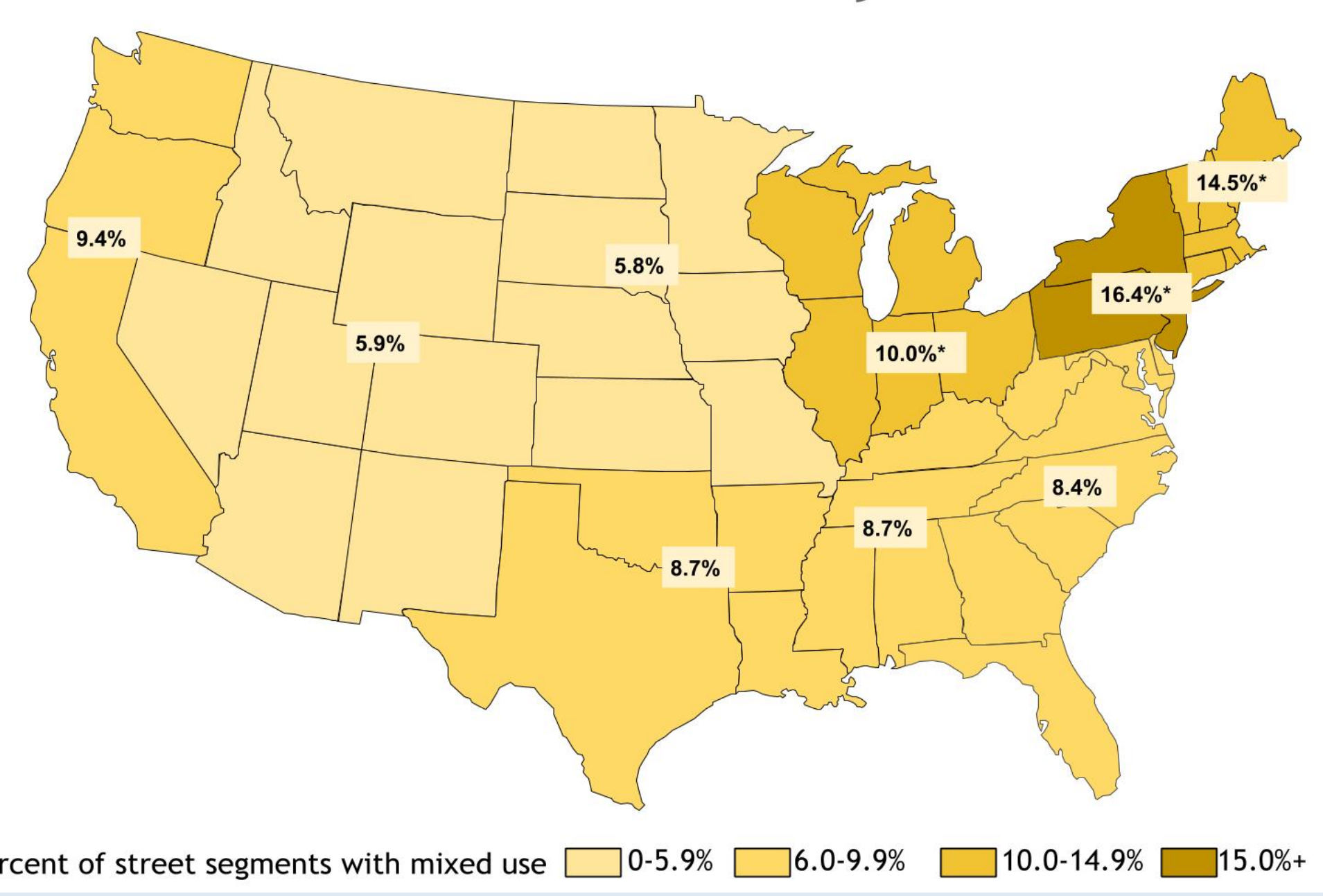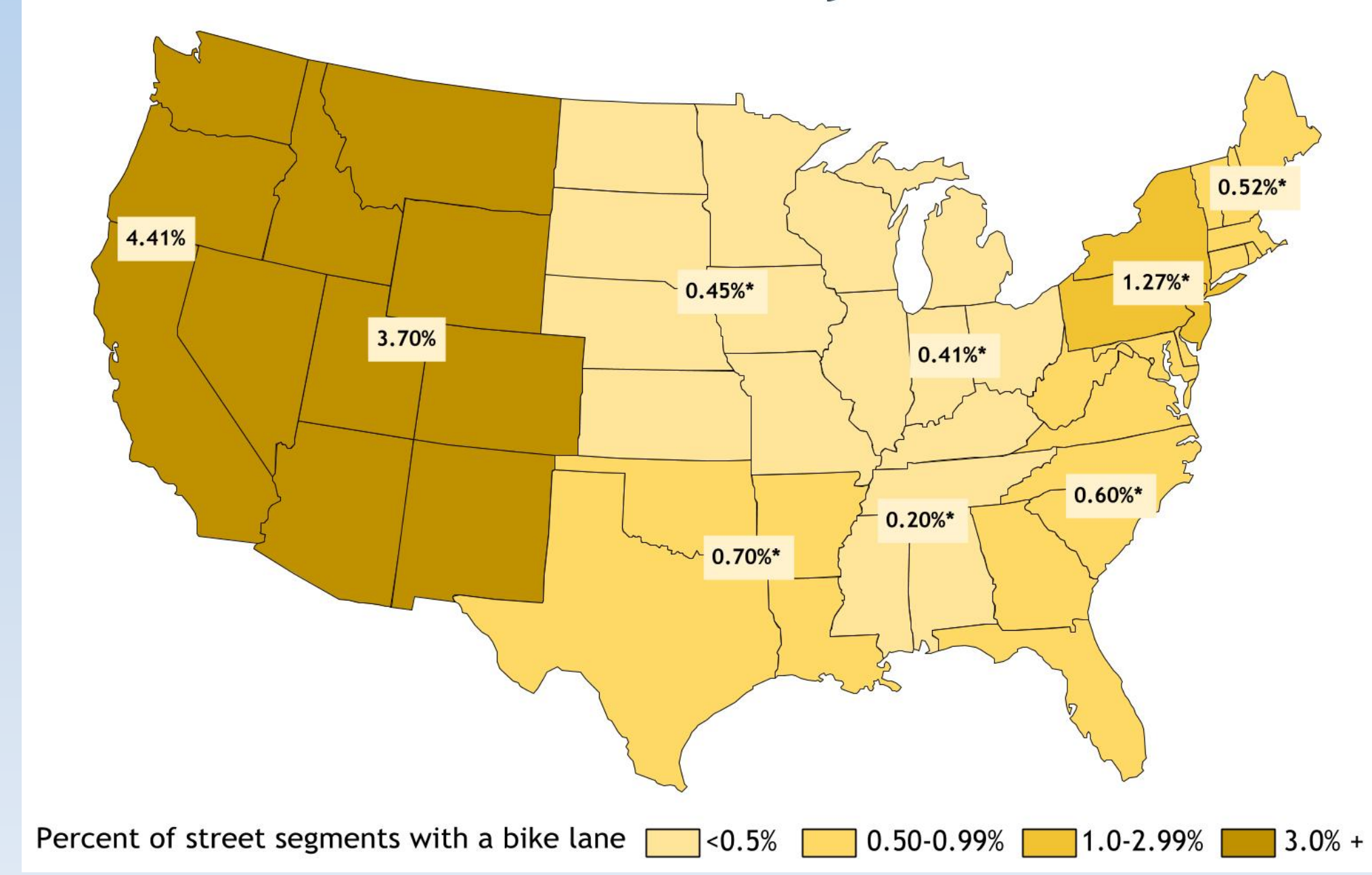

p-value for bivariate association, *p<.05, **p<.01, ***p<.001

*Significantly different from Pacific division reference group in multivariable model at p<.05

Results from Negative Binomial Regression of Active Transport Scale

Variable	IRR	95% CI		p-value
Urbanization				
Urban (ref)	1.00			
Suburban	0.92	0.81	1.04	0.169
Rural	0.43	0.34	0.54	0.000
Race/Ethnicity				
≥66% White (ref)	1.00			
≥50% Black	1.53	1.33	1.76	0.000
≥50% Hispanic/Latino	1.32	1.10	1.58	0.003
Other composition	1.54	1.32	1.80	0.000
Median Household Income				
Highest tertile (ref)	1.00			
Middle tertile	0.76	0.67	0.87	0.000
Lowest tertile	0.81	0.69	0.96	0.014
Census Region				
West region (reference)	1.00			
Midwest region	1.35	1.09	1.67	0.005
Northeast region	0.85	0.71	1.01	0.066
South region	0.75	0.66	0.86	0.000
Community density index	1.24	1.17	1.33	0.000
Arterial segment	2.30	1.90	2.79	0.000
Number of traffic lanes	1.61	1.48	1.75	0.000
Transit stop present	2.26	1.90	2.69	0.000
Year 2011	1.03	0.91	1.16	0.667
Year 2012	1.05	0.92	1.19	0.475
Interaction effects				
≥50% Black*Low income	0.57	0.44	0.73	0.000
Other composition * Low income	0.75	0.57	0.98	0.035
≥50% Black*South	1.31	1.10	1.56	0.013
Suburban*Midwest	0.74	0.57	0.96	0.023
Rural*Midwest	0.62	0.44	0.89	0.010
Arterial segment * Num. lanes	0.71	0.65	0.77	0.000
Transit stop * Num. lanes	0.84	0.80	0.88	0.000

IRR: Incidence Rate Ratio, CI: Confidence Interval

Conclusions

- Broad socio-demographic and geographic variation in streetscape environment in the US
- Increased urbanization, median household income level, and racial/ethnic diversity were generally associated with increased walkability/bikeability of streets
- Relationship between street environment and race/ethnicity moderated by income and geographic location
- Communities in the South census region had lower mean active transport scale scores than communities in the West region whereas urban Midwestern communities had higher scores (urban areas only)
- Very low prevalence of bicycling facilitators (i.e., lanes, parking) was found in this study

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Find out more at bridgingthegapresearch.org.
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