

# **Telomere Length and Neighborhood Characteristics: Race and Regional Differences in US Midlife and Older Adults**

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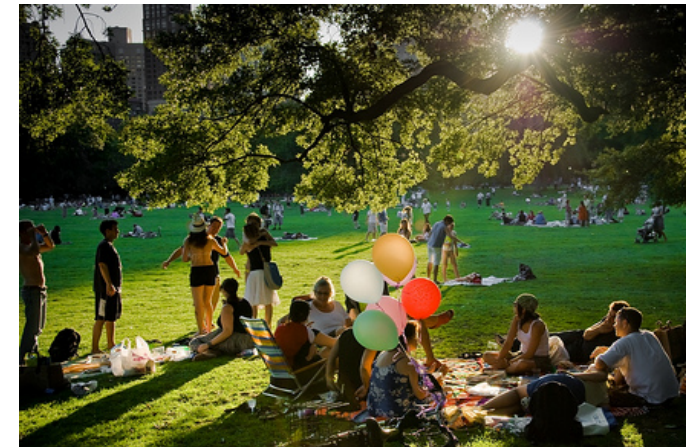
**Department of Sociology**

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# Neighborhoods and Social Stratification of Health

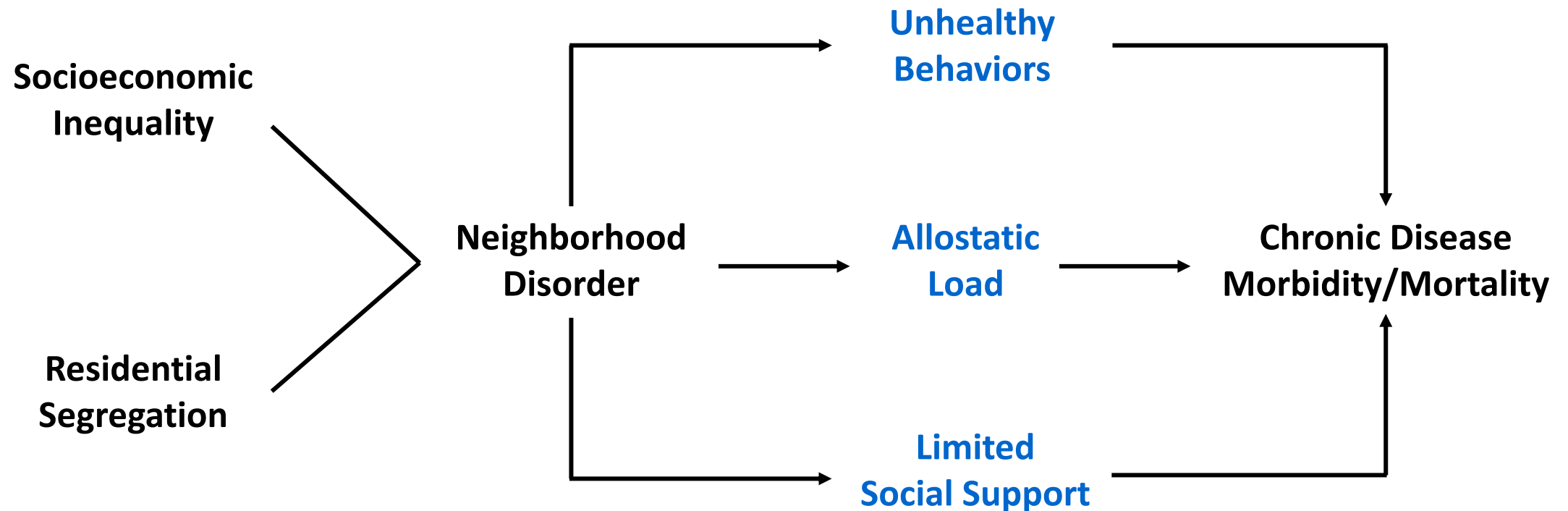
## Neighborhood characteristics associated with health

- Socioeconomic opportunities/resources
- Exposure to environmental stressors
- Social capital and embeddedness



# Neighborhoods and Health: Biosocial Pathways

## Neighborhood disadvantage as a chronic stressor impacting health



# Telomere Length (TL): A Biomarker of Aging



- Repetitive DNA-protein complexes serving as protective caps at ends of chromosomes
- Shorten during replication, with cells having finite number of times for replication
- Linked to aging-related health conditions and premature mortality
- Sensitive to exposure to chronic stress

# Telomere Length, Neighborhood Characteristics, and Aging

- Few studies assessed relationship between TL and neighborhood characteristics<sup>1</sup>
- Neighborhood characteristics contextualize aging and health<sup>2</sup>
- Gap in understanding regional differences in neighborhood impacts on TL across race in midlife and older adults

<sup>1</sup>Gebreab et al., 2016; Massey et al., 2018; Needham et al., 2014; Park et al., 2015; Theall et al., 2013

<sup>2</sup>Beard et al., 2009; Burdette & Needham, 2012; Diez-Roux et al., 1997; Echeverria et al., 2008; Mujahid et al., 2011

# Research Questions

- Is TL associated with neighborhood characteristics (safety, cleanliness, and social cohesion) in white and black midlife and older US adults?
- Does the relationship between TL and neighborhood characteristics vary by race?
- Does the relationship between TL and neighborhood characteristics vary by US region?
- Is the association between TL and neighborhood characteristics explained by individual-level SES, health, and behavioral factors?

# Data Set

## The Health and Retirement Study (HRS)

- Longitudinal survey of demographic, psychosocial, health, and biomarker data
  - Salivary TL in 2008 wave
  - Nationally representative of US adults >50 years old
  - Oversamples of racial/ethnic minorities

# Measures: Neighborhood Characteristics

## Disorder

- Safety
  - Problems with vandalism and graffiti
  - Feel unsafe walking alone at night
- Cleanliness
  - Area not kept clean
  - Vacant houses or storefronts





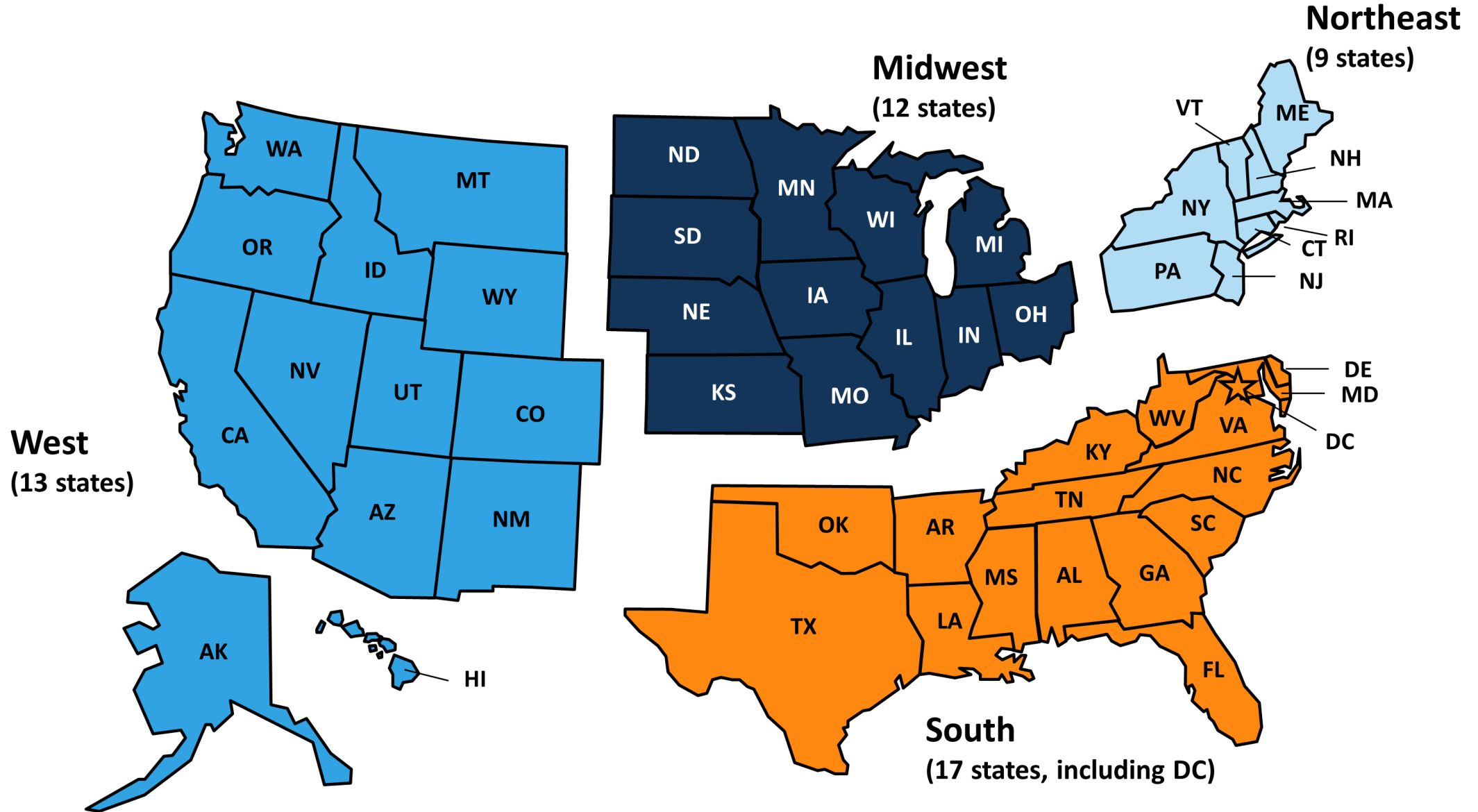
# Measures: Neighborhood Characteristics

## Social (Dis)Cohesion

- Feel not a part of the area
- People can't be trusted
- People are not friendly
- No one to help you



# US Census Regions



# Measures

## Dependent Variable

- Salivary TL (T/S ratio)

## Controls

- Age, gender
- Education, income, wealth, marital status
- Obesity, number of health conditions, CES-D
- Smoking, alcohol use, physical activity

# Methods

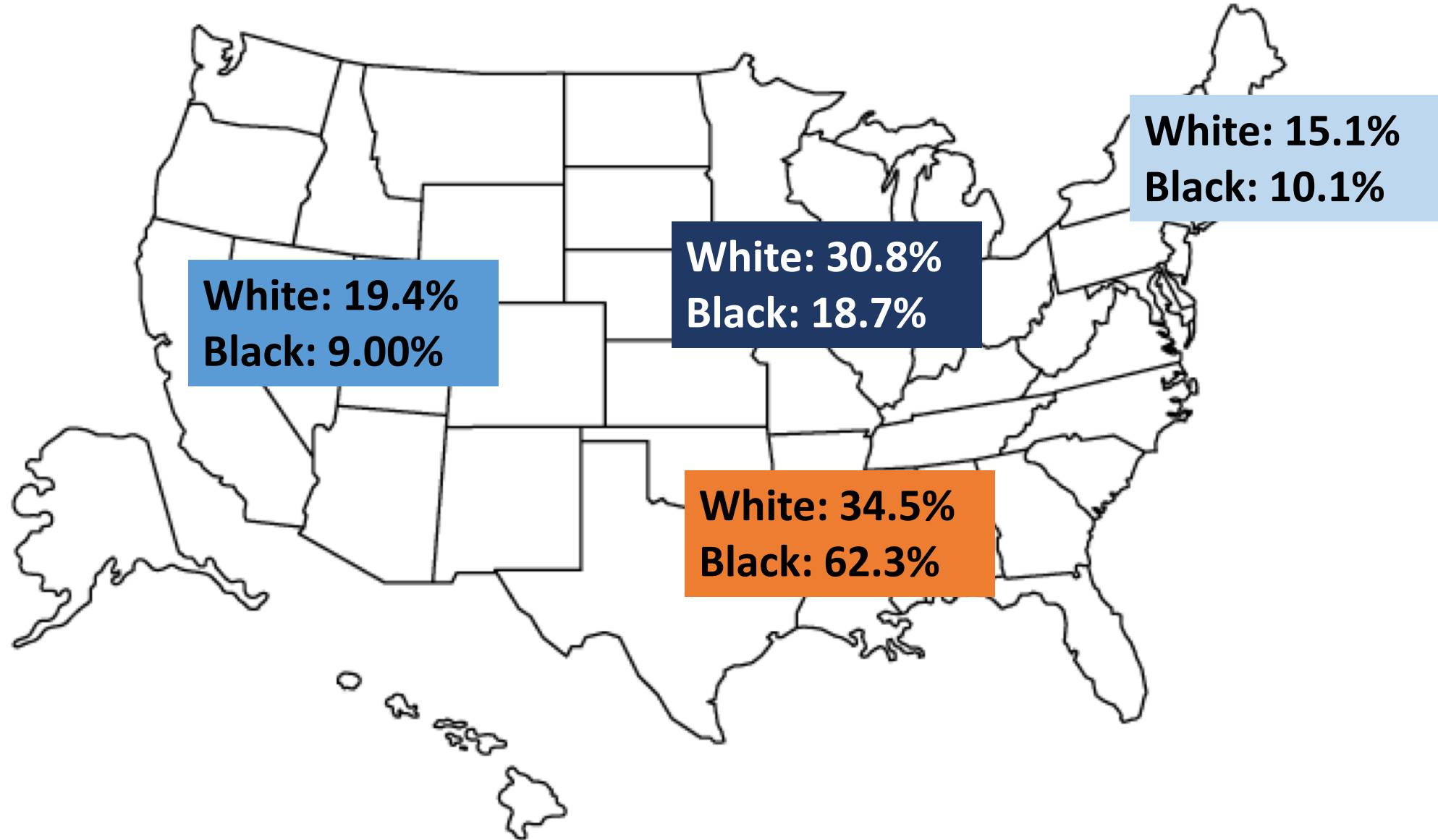
- Linear regression models of log TL with each neighborhood characteristic
  - HRS survey weights applied
  - Stratified by race
  - Interactions with US region and each neighborhood characteristic
  - SES, health status, and behaviors added sequentially

# Descriptive Statistics by Race

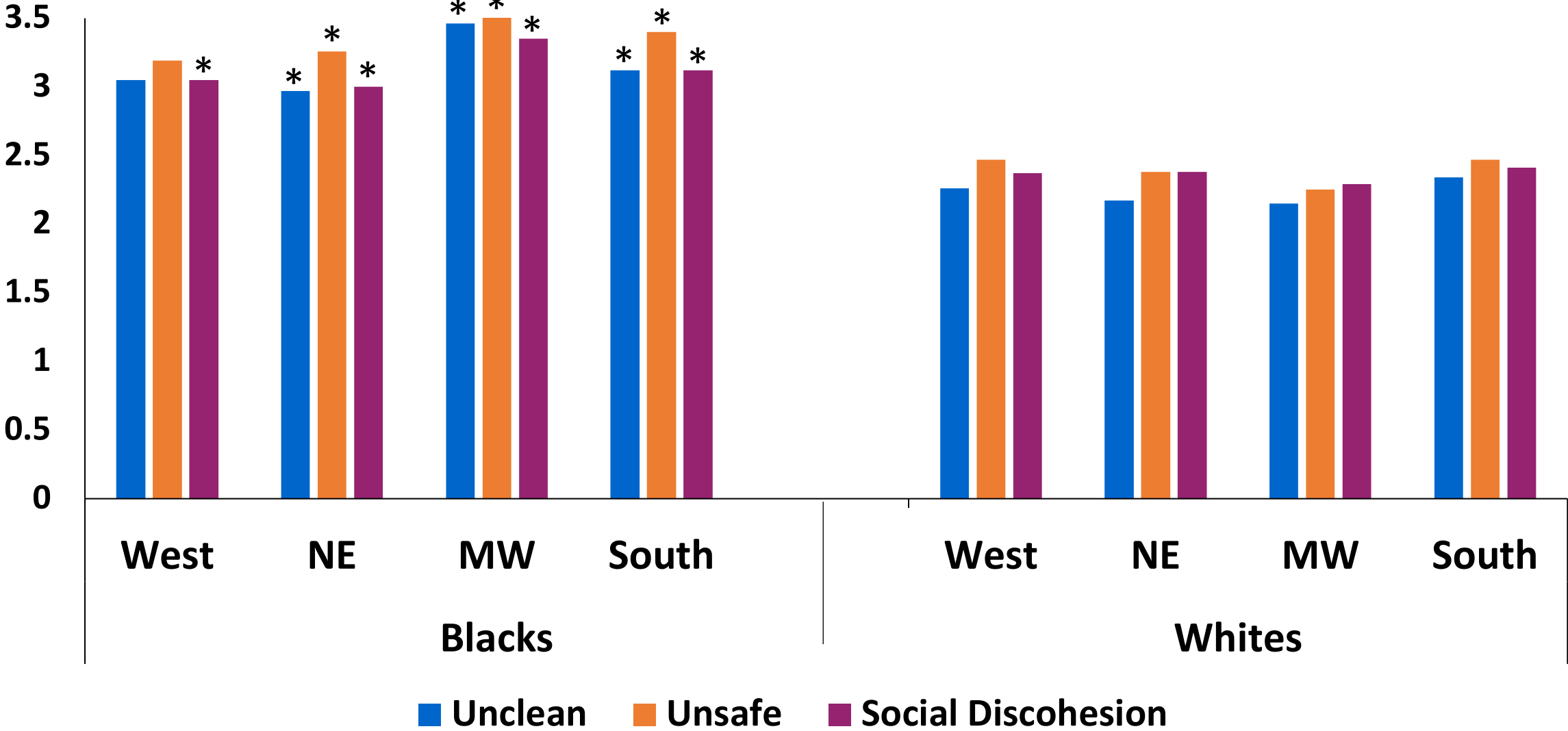
	Whites (n=3,489)	Blacks (n=541)
Telomere Length (logged)	0.11	<b>0.15*</b>
Age	<b>67.2</b>	64.6*
Woman	53.3%	55.4%
Married/Partnered	<b>67.9%</b>	42.6%*
Education (years)	<b>13.4</b>	12.2*
Income	<b>\$75,235</b>	\$40,971*
Wealth	<b>\$595,927</b>	\$138,045*
Obese	31.4%	<b>46.7%*</b>
Number of Conditions	1.9	<b>2.2*</b>
CES-D Score $\geq 3$	17.5%	<b>30.1%*</b>
Current Smoker	12.8%	<b>20.9%*</b>
Heavy Drinker	9.3%	12.2%
Never Moderate-Vigorous Activity	15.6%	<b>25.0%*</b>

\* $p < 0.05$

# Regional Distribution of Sample by Race

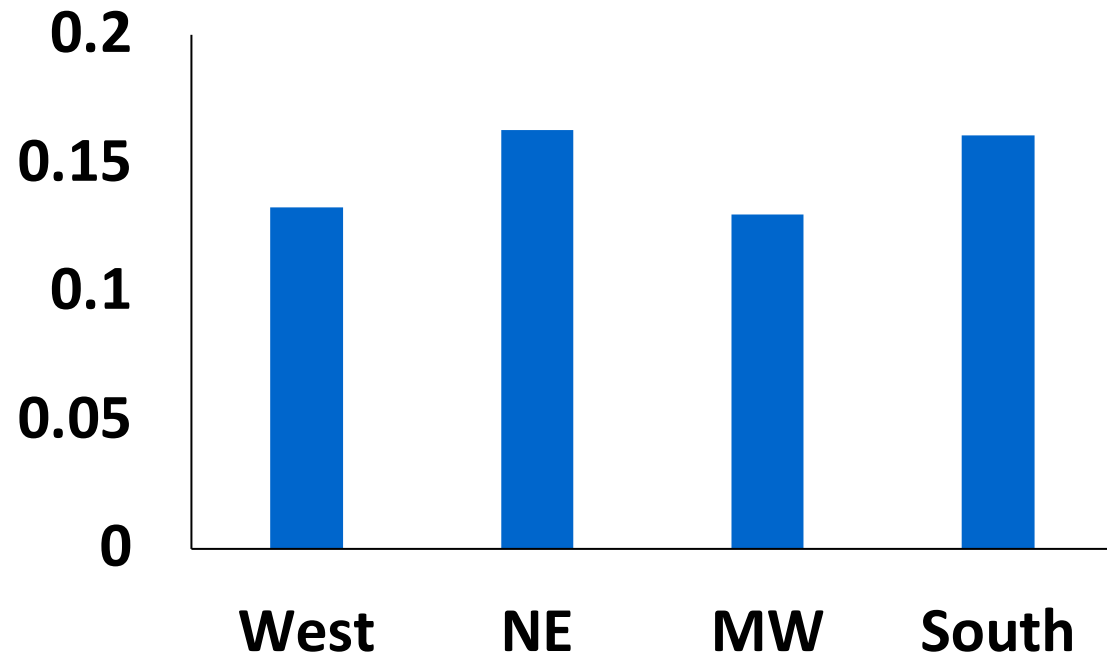


# Regional Distribution of Average Perceived Neighborhood Characteristics by Race

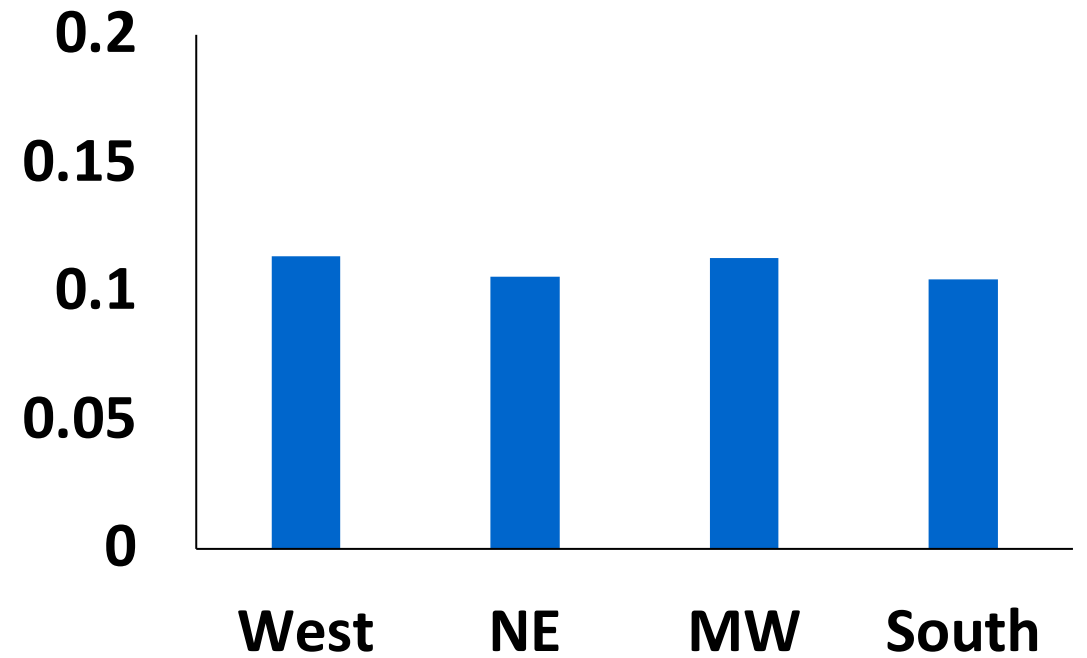


# Regional Distribution of Average TL by Race

## Blacks



## Whites





**Table 3: Linear regression model for log TL: White HRS participants**

	<b>Discohesion</b> b (SE)	<b>Unclean</b> b (SE)	<b>Unsafe</b> b (SE)
<b>Region</b>			
<b>Northeast</b>	0.006 (0.006)	0.004 (0.005)	0.006 (0.005)
<b>Midwest</b>	-0.0003 (0.005)	-0.0004 (0.004)	0.0003 (0.003)
<b>South</b>	0.001 (0.006)	-0.001 (0.004)	-0.001 (0.004)
<b>Constant</b>	0.101 (0.04)*	0.098 (0.04)*	0.099 (0.04)*
<b>R-squared</b>	0.032	0.032	0.032

+ $p < 0.1$  \* $p < 0.05$  \*\* $p < 0.01$  \*\*\* $p < 0.001$

**Table 3: Linear regression model for log TL: Black HRS participants**

	<b>Discohesion b (SE)</b>	<b>Unclean b (SE)</b>	<b>Unsafe b (SE)</b>
<b>Region</b>			
<b>Northeast</b>	-0.027 (0.01)+	<b>-0.030 (0.01)**</b>	-0.027 (0.01)+
<b>Midwest</b>	<b>-0.028 (0.01)*</b>	<b>-0.040 (0.01)**</b>	<b>-0.035 (0.01) *</b>
<b>South</b>	<b>-0.033 (0.01)*</b>	<b>-0.043 (0.01)***</b>	<b>-0.033 (0.01)*</b>
<b>Constant</b>	0.335 (0.10)**	0.306 (0.09)**	0.333 (0.10)**
<b>R-squared</b>	0.067	0.081	0.074

+ $p < 0.1$  \* $p < 0.05$  \*\* $p < 0.01$  \*\*\* $p < 0.001$

# Discussion

- Unique histories of segregation and socioeconomic hardship lived by blacks in MW and South may be captured in TL
  - Creation of geographically isolated neighborhoods
  - Declines in industry with lack of financial investment
- Increased exposure to discrimination
  - Everyday discrimination associated with shorter TL in blacks in the HRS<sup>1</sup>
- Regional patterns in health-related behaviors
  - Higher rates of smoking in blacks in Midwest<sup>2</sup>

<sup>1</sup>Liu & Kawachi, 2017; <sup>2</sup>King et al., 1999

# Future Directions

- Longitudinal measures of TL to assess change over time
- Duration lived in current neighborhood, assess neighborhood characteristics at different points of the life course
- Additional measures of social disadvantage
  - Neighborhood-level SES
  - Racial segregation
  - Availability of resources

# Acknowledgements

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**THANK YOU!**