

# Spatial Disparities in the burden of COVID-19 by Social Determinants of Health Among Veterans in Veterans Administration\*+

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## Abstract

The purpose of this study is to examine spatial disparities in COVID-19 testing and test positivity among Veterans enrolled in Veterans Affairs Healthcare (VA). We calculate and map age-adjusted and race-stratified age-adjusted testing rates for each county in the contiguous US separately for White Veterans and Black Veterans after adjusting for community-level social determinants of health. Rates were standardized to the nationwide population of Veterans in active care at VA.

## Study Population



6,292,799 Veterans who are active in VA care



Assessed demographic characteristics, facility characteristics, socioeconomic measures and comorbidities (Charlson Comorbidity index)



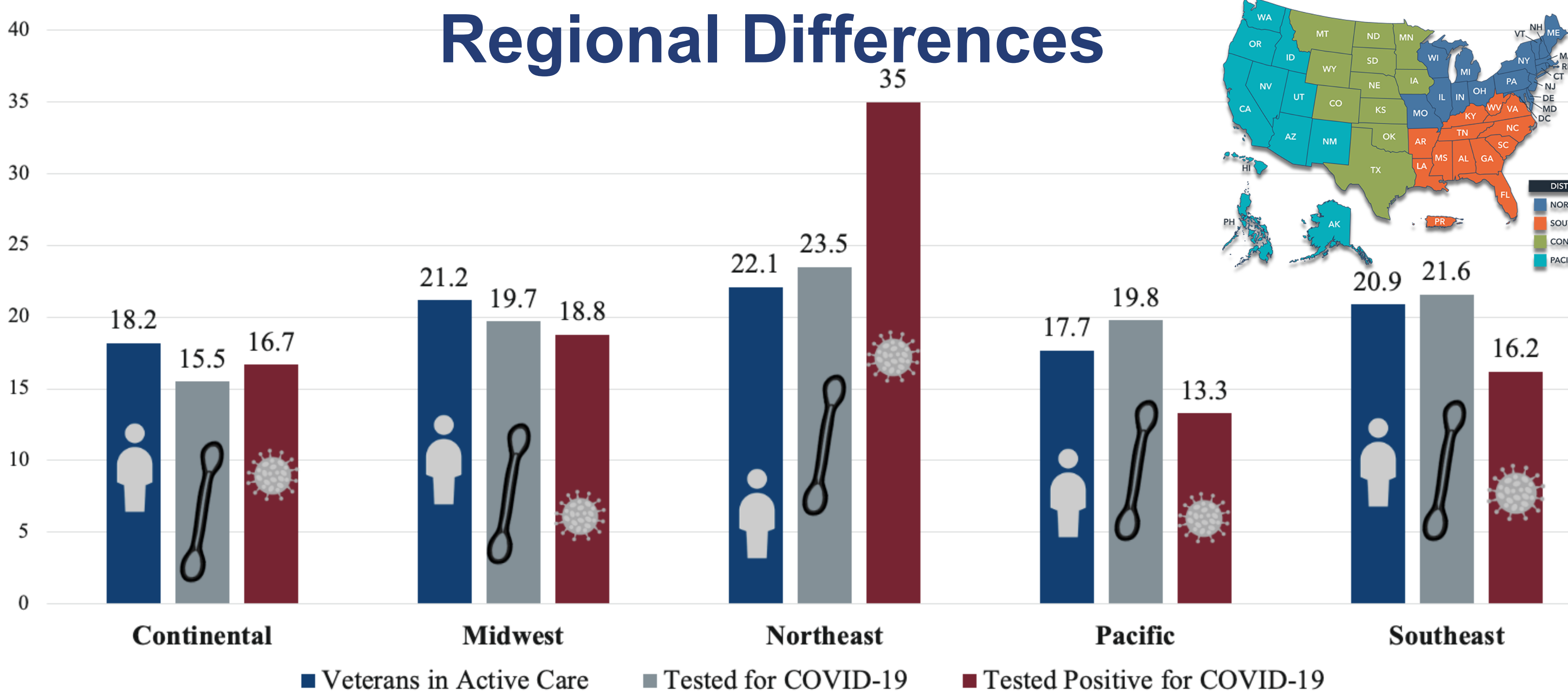
Followed for VA administered COVID-19 tests from February 8<sup>th</sup> (earliest recorded test) through June 23, 2020

## County Level Social Determinants of Health

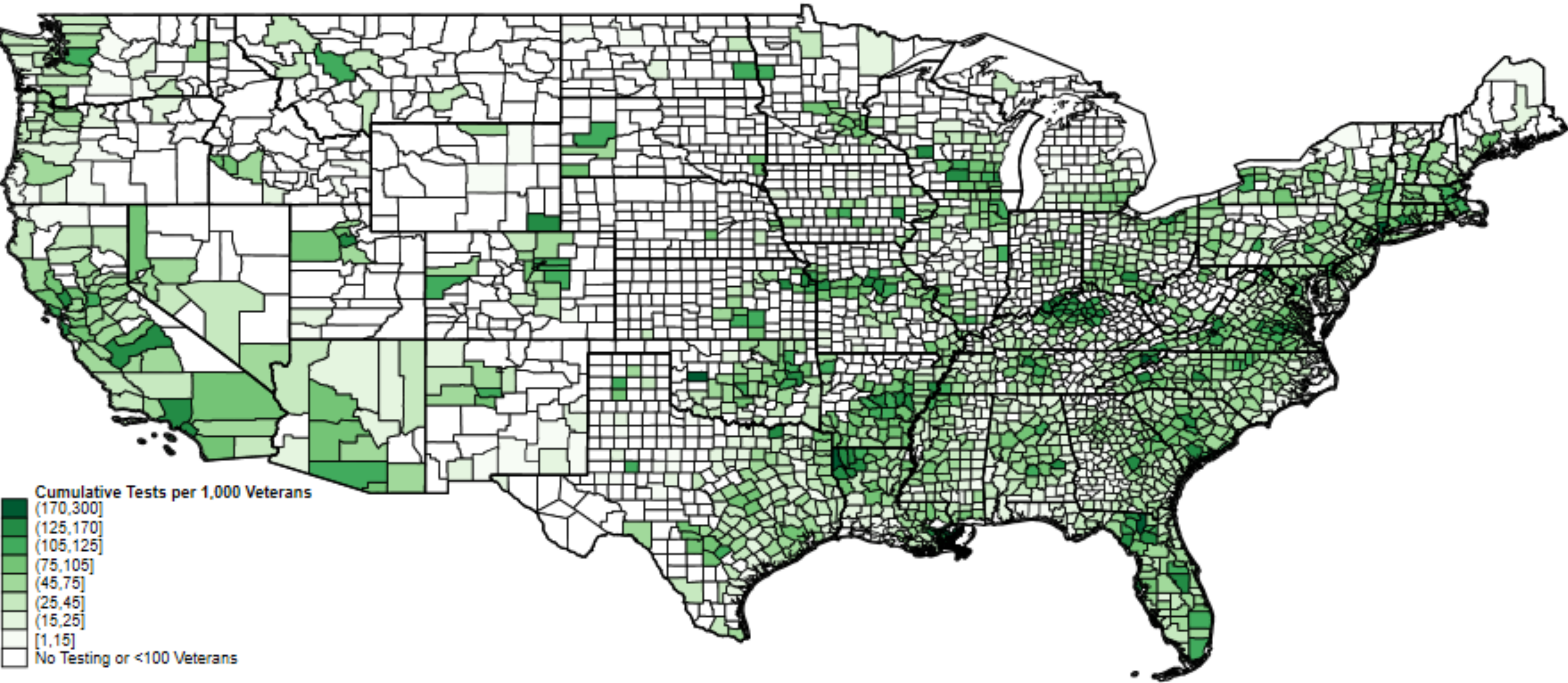
Measure	Source
Percentage of Persons in Deep Poverty, 2017	Area Health Resources Files
Percentage Persons 65+ in Deep Poverty, 2017	Area Health Resources Files
Percentage without High School Diploma, Ages 25+, 2013-2017 (5-year)	CDC
Percentage without 4+ Years College, Ages 25+, 2013-2017 (5-year)	CDC
Percentage Food Stamp/Supplemental Nutrition Assistance Program Recipients, 2015	CDC
Percentage Living in Poverty, All Ages, 2016	CDC
Percentage without Health Insurance, Under Age 65, 2016	CDC
Percentage Eligible for Medicaid, All Ages, 2012	CDC
Percentage in Crowded Housing, 2013-2017	Diversity Data for Kids
Percentage 65+ living alone, 2018	US Census Bureau
Percentage of households where grandparent have children under 18, 2018	US Census Bureau
Percentage of Households without a computer, 2018	US Census Bureau
Percentage of households without broadband, 2018	US Census Bureau
Percentage of US Non-Native Residents, 2018	US Census Bureau
Percentage Non-White, 2018	US Census Bureau
Median Household Income (thousands), 2016	CDC
Income Inequality (GINI Index), 2018	US Census Bureau
Unemployment Rate Ages 16+, 2017	CDC

Taylor Chin, Rebecca Kahn, Ruoran Li, Jarvis T. Chen, Nancy Krieger, Caroline O.Buckee, Satchit Balsari, Mathew V. Kiang: US-county level variation in intersecting individual, household and community characteristics relevant to COVID-19 and planning an equitable response: a cross-sectional analysis BMJ Open 2020;10:e03988

## Regional Differences

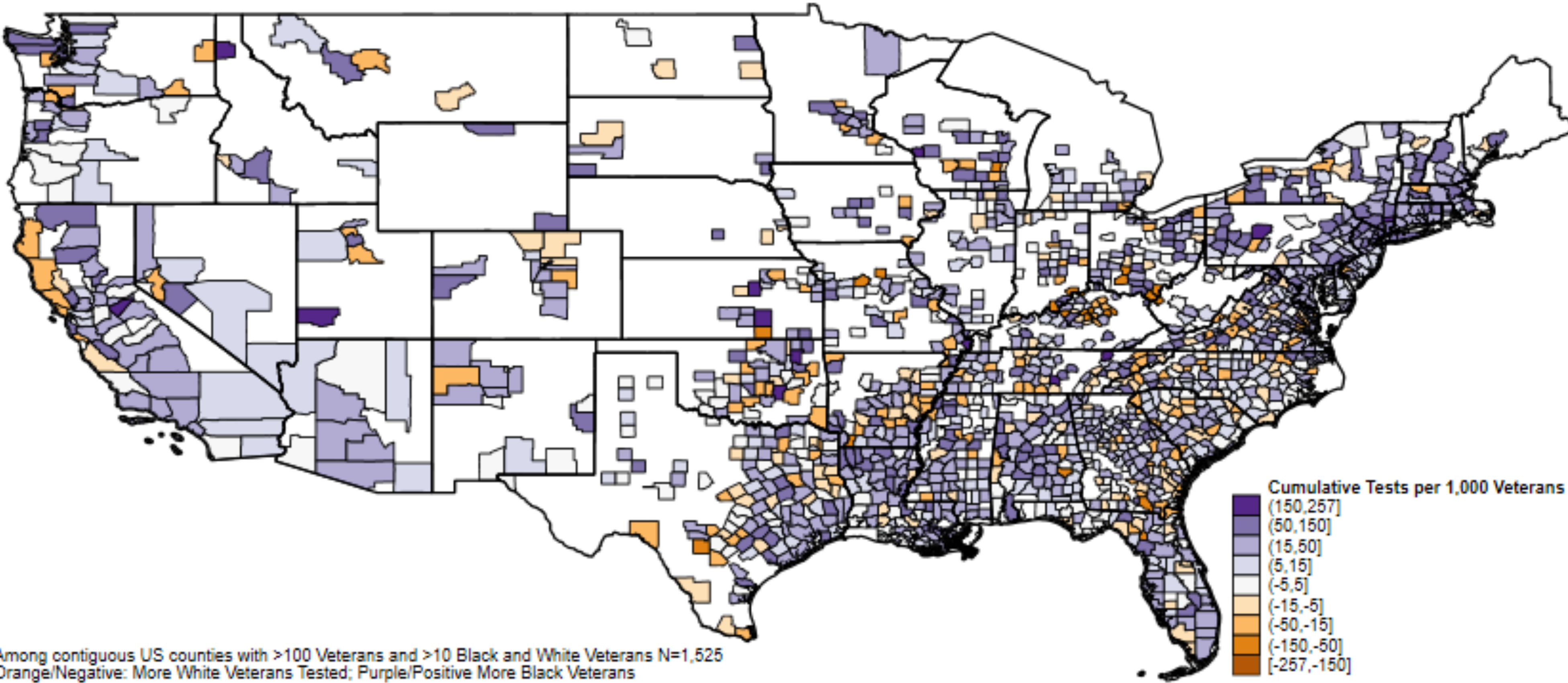


## Age Adjusted Cumulative COVID-19 Testing Rates by County through August 27th, 2020



Among contiguous US counties with >100 Veterans N=1,734

## Differences in Age-Adjusted COVID-19 Testing Rates Between Black and White Veterans through August 27th, 2020



Among contiguous US counties with >100 Veterans and >10 Black and White Veterans N=1,525  
Orange/Negative: More White Veterans Tested; Purple/Positive: More Black Veterans

## Conclusions

The higher risks of testing COVID-19 positive among Black and Hispanic Veterans, despite receiving more tests, suggest disparities remain. There is spatial heterogeneity in testing rates among Veterans active in VA care. Social determinants of health are a consequence of complex factors and history that drive health inequalities at baseline and have acute implications during this pandemic. While Veterans may have financial access barriers lowered, via subsidized or free VA healthcare, they are not immune to the negative impacts of social determinants of health they face outside of VA. Data is needed to optimize care strategies that identify at risk populations that require greater resources and support.