Institute for Health
Metrics and Evaluation

US County Health Care System Performance:

Evaluating performance and key associated factors (2014-2019) under the Triple Aim Framework

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APHA, November 2025

UNIVERSITY of WASHINGTON

Outline

1. Background
2. Methods
3. Results

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1. ***Background***
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What is the Triple Aim?

1. Framework to assess health system performance, introduced in 2008
2. Globally used by researchers and policymakers

TRIPLE AIM

The Triple Aim: Care, Health, And Cost

by Donald M. Berwick, Thomas W. Nolan, and John Whittington

ABSTRACT: Improving the U.S. health care system requires simultaneous pursuit of three aims: improving the experience of care, improving the health of populations, and reducing per capita costs of health care. Preconditions for this include the enrollment of an identified population, a commitment to universality for its members, and the existence of an organization (an "integrator") that accepts responsibility for all three aims for that population. The integrator's role includes at least five components: partnership with individuals and families, redesign of primary care, population health management, financial management, and macro system integration. [*Health Affairs* 27, no. 3 (2008): 759–769; 10.1377/hlthaff.27.3.759]

Positive patient experience

High levels of health outcomes

Expend relatively few resources

Research aims

1. Quantify progress towards the Triple Aim among US counties
2. Control for county characteristics that can make care delivery easier or harder
3. Assess the policies systematically associated with high performing counties

February 14, 2025

Tracking US Health Care Spending by Health Condition and County

Joseph L. Dieleman, PhD[1]; Meera Beauchamp, BS[1]; Sawyer W. Crosby, BA[1]; et al

» Author Affiliations

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Life expectancy by county, race, and ethnicity in the USA, 2000–19: a systematic analysis of health disparities

GBD US Health Disparities Collaborators †

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Evaluating US county health-care system performance and key associated factors (2014–19): a Triple Aim framework analysis

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Show Outline

Summary

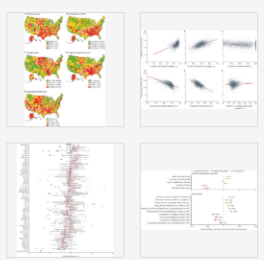
Background

The Triple Aim of health care—defined as the simultaneous pursuit of positive patient experience, positive health outcomes, and low spending—has been established as a goal for health-care systems. The US health-care system has high rates of health spending and poor health outcomes relative to other countries, although there is substantial variation within the country at both state and county level. Assessing which US counties have been most successful in achieving the Triple Aim, and which implemented policies are associated with high performance, could be valuable for developing policies that improve health care nationwide. In this study, we aimed to quantify progress towards the Triple Aim at the US county level.

Methods

In this ecological analysis, county-level data on each component of the Triple Aim were combined to assess health-care system performance from 2014 to 2019. Patient experience was assessed via a composite indicator, health outcomes via life expectancy, and

Figures (4) Figure Viewer



Outline

1. Background
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1. Estimate Triple Aim components individually

Informed by prior literature, an indicator, or set of indicators captured each aim

Health expenditure: age-standardized health care spending per capita by county from the US Disease Expenditure project

Health outcomes: life expectancy at birth by county from the US Health Disparities Project

Patient experience: composite score based on PCA analysis of accessibility, prevention, safety, appropriateness and effectiveness, and patient-centeredness

2. Quantify performance under the Triple Aim

1. Normalized 3 aims between 0.01 and 1 (1 is optimal performance)
2. County score = geometric mean across the three aims
3. State score = population-weighted mean across the county scores in the state

3. Adjust health system performance scores

- Counties with a high unadjusted performance score had favorable county characteristics
- Desire to adjust the performance score for the different county characteristics that each system operates in

County traits
Percent of population with high school degree
Median household income
Percent of population by age group: • <= age 20 • >= age 65
Percent rural households
Prevalence of obesity
Prevalence of current smokers

Predict performance score given county levels of selected county characteristics, take residual

Adjusted score with ***positive value indicated better than expected performance***

4. Assess health system performance score policy associations

Regressed unadjusted performance score on health system variables, including the county traits as controls

- Controlled for changes over time and used robust standard error clustered on county.
- Market concentration (higher concentration means lower competition) was measured using the Herfindahl–Hirschman index (HHI).

Health system variable
Percent of Medicare enrollees on managed care
Percent of Medicaid enrollees on managed care
Whether the state had expanded Medicaid that year
Medicaid income eligibility limits for parents as % of the Federal Poverty Level
Medicaid and CHIP income eligibility limits for pregnant women as % of the Federal Poverty Level
Medicaid and CHIP income eligibility limits for children as % of the Federal Poverty Level
Concentration of small group insurance (HHI)
Concentration of large group insurance (HHI)
Concentration of individual insurance (HHI)
Concentration of hospitals, using a 30-min driving radius (HHI)

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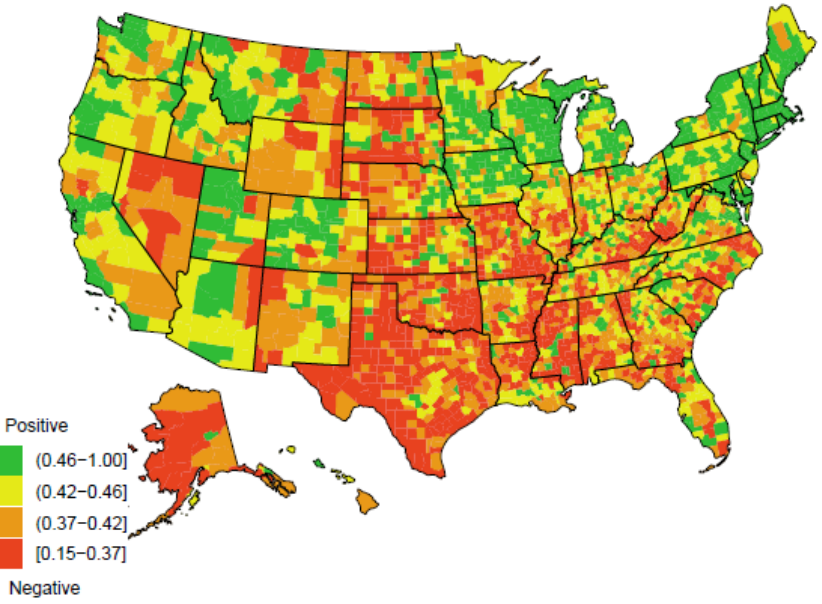
Results

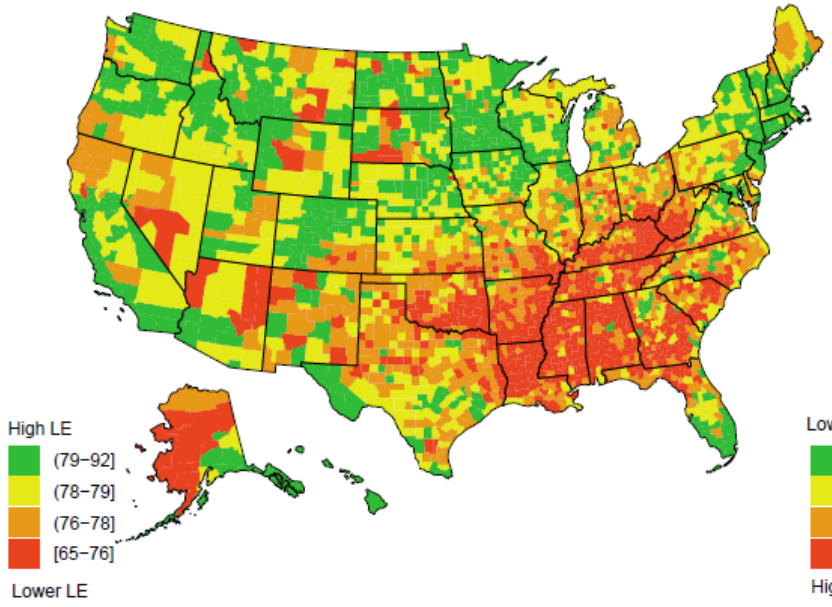
1. Triple Aim components
2. Unadjusted performance scores
3. Adjusted performance scores
4. Policy regressions

Triple Aim components: County results

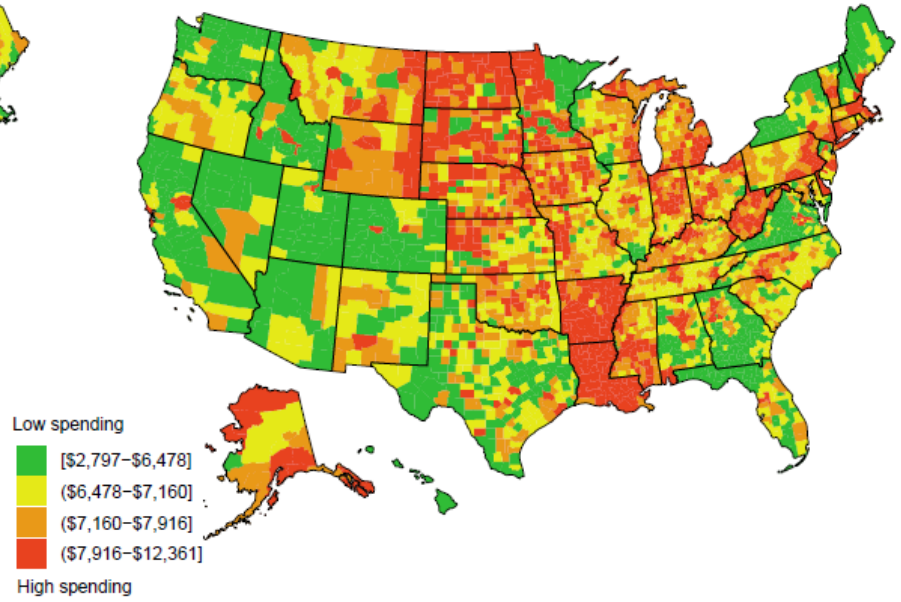
Panel A: Patient experience



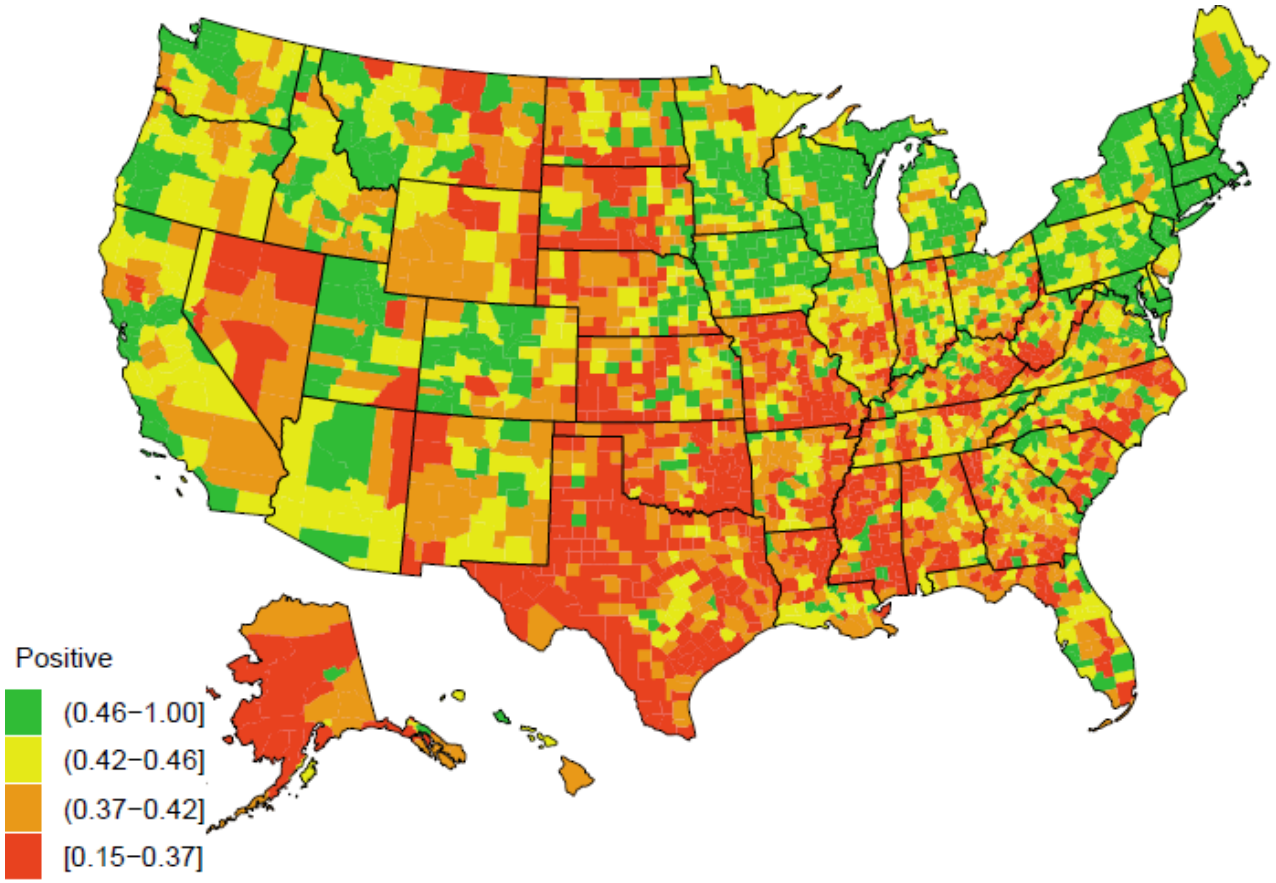
Panel B: Life expectancy at birth



Panel C: Spend per capita (age−standardized, price adj)

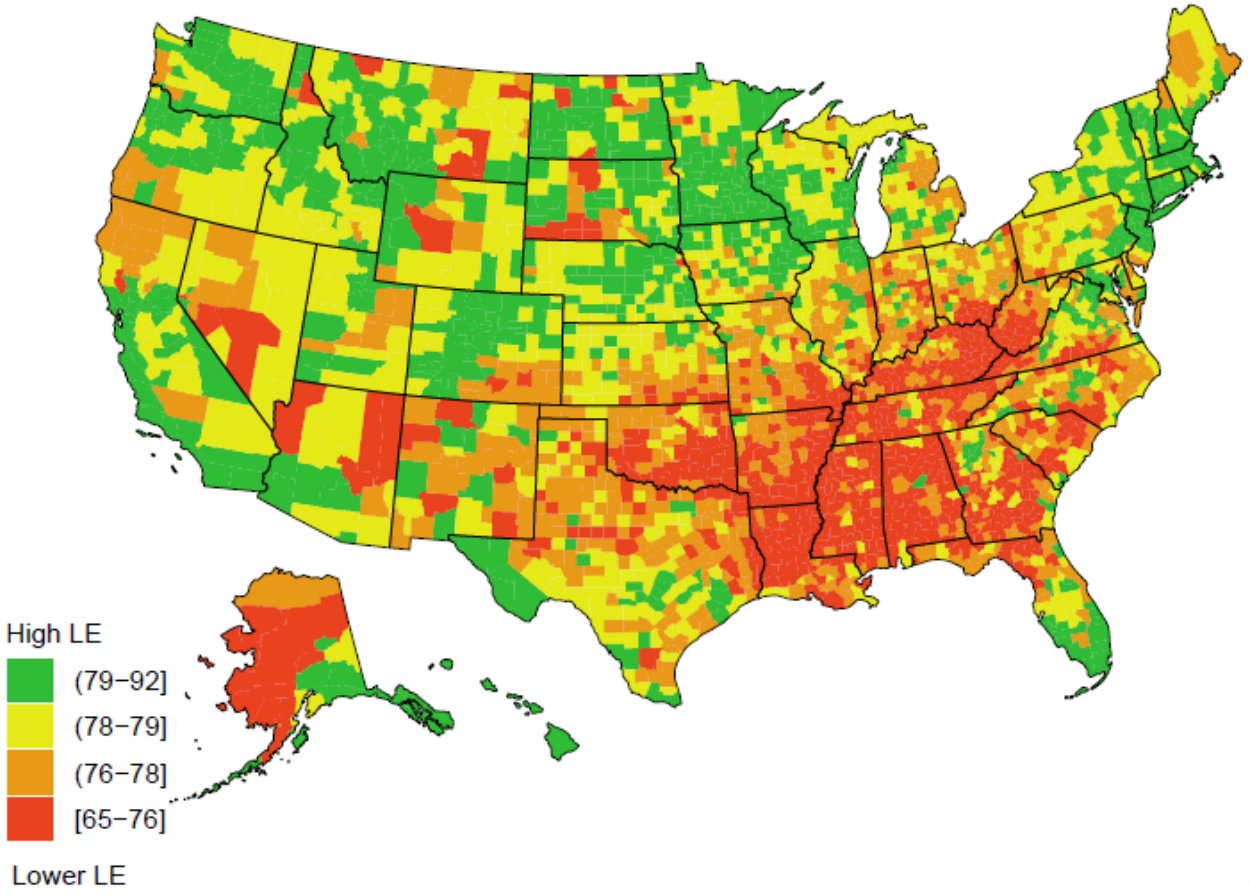


Aim 1: Patient experience



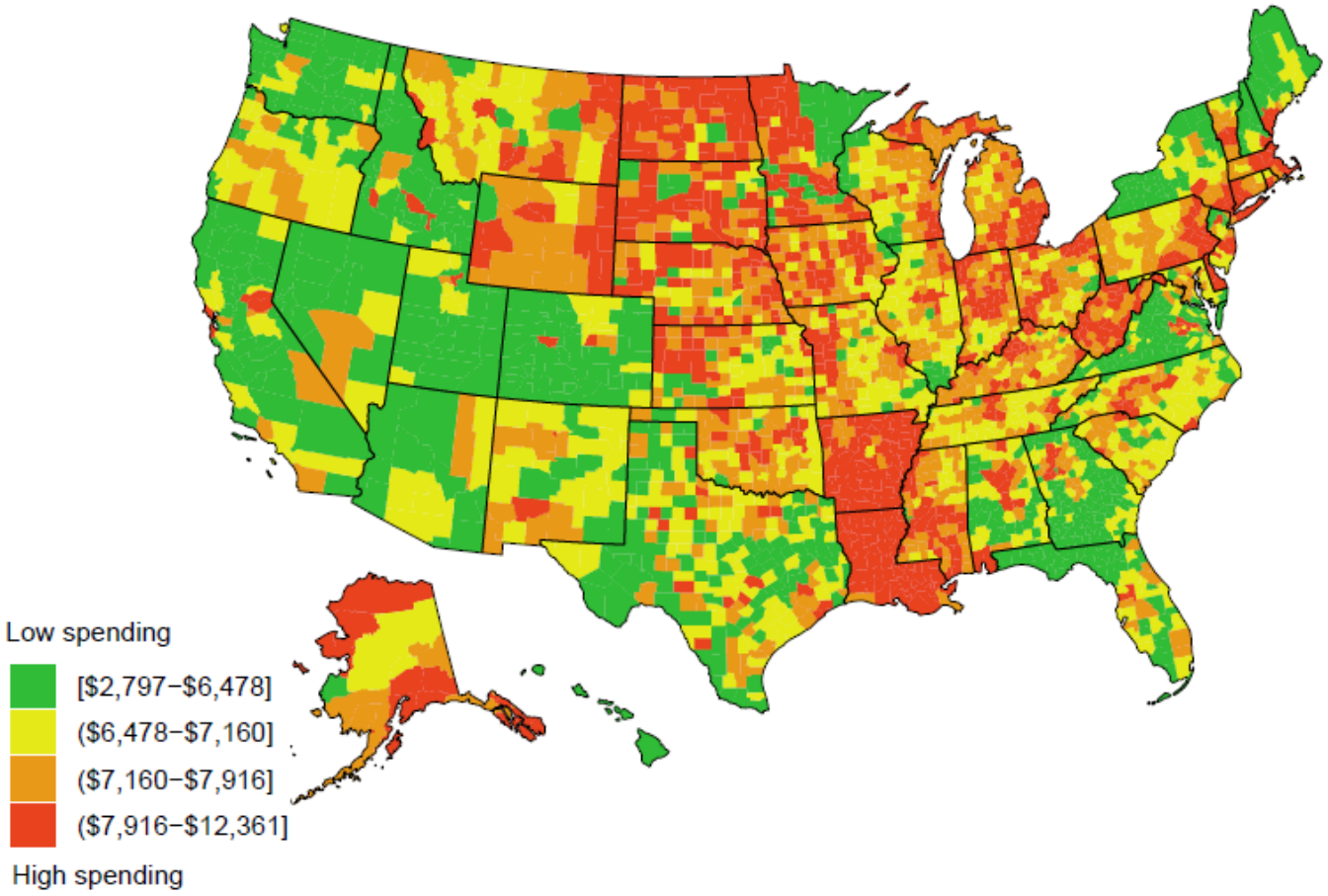
- Based on 5 subdomains: accessibility, prevention, safety, appropriateness & effectiveness, and patient-centeredness.
- States with highest patient experience scores were **Rhode Island, Massachusetts, and the District of Columbia**.

Aim 2: Life expectancy at birth



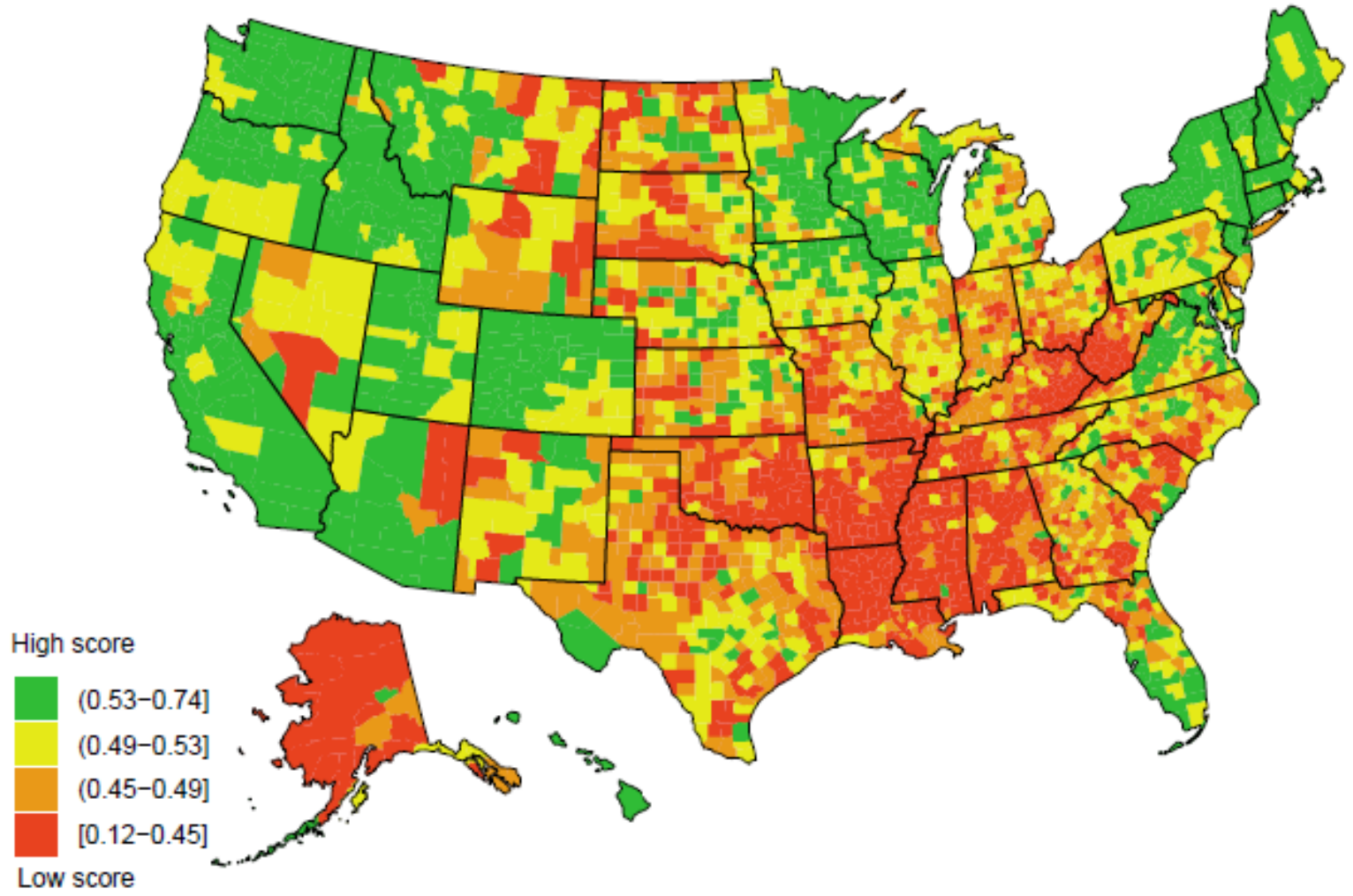
States with the highest life expectancy were **New York, Hawaii, and California**

Aim 3: Health spending per capita



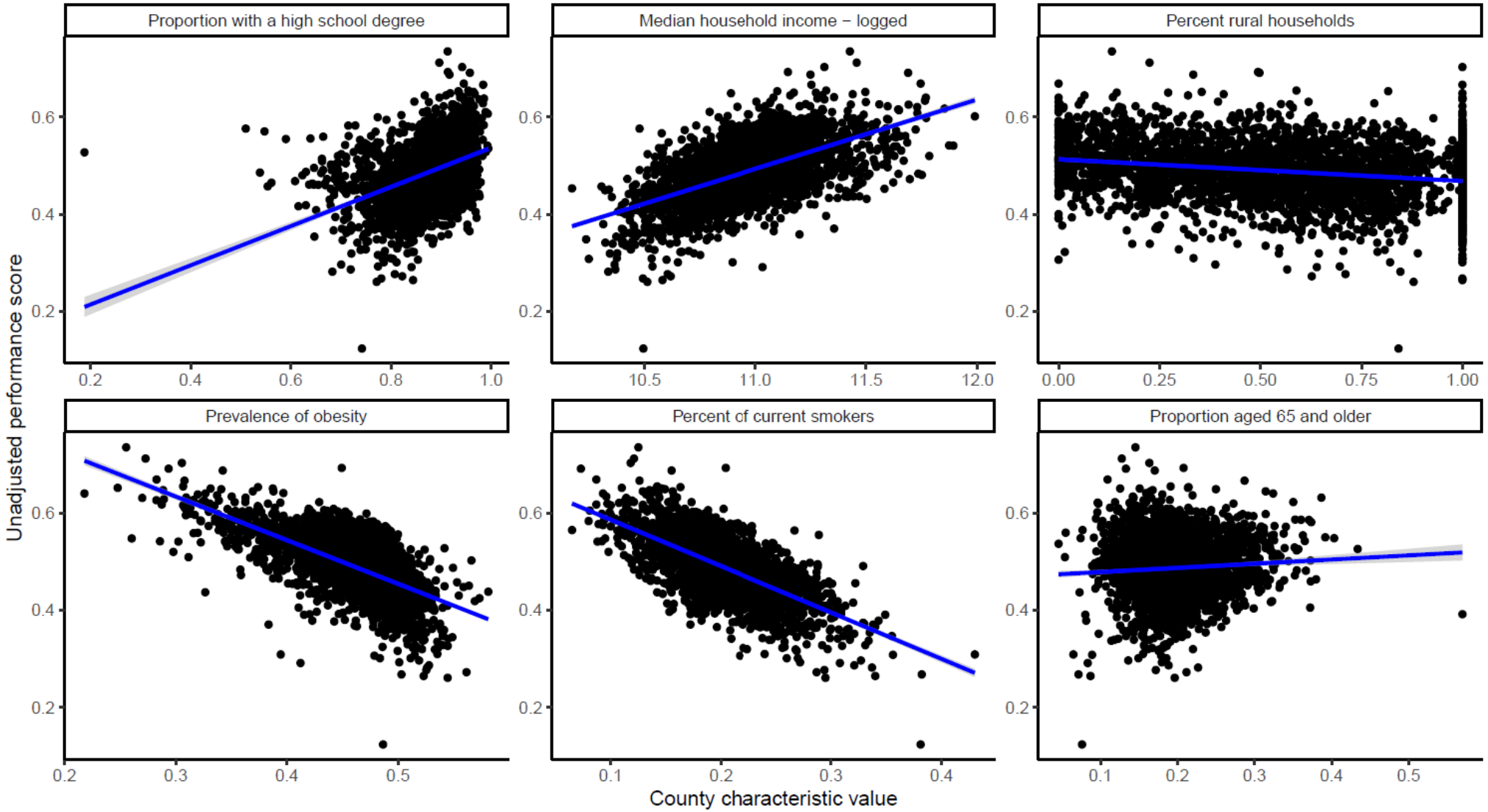
States with the lowest spending were **Hawaii, Washington, and Utah.**

Unadjusted performance score

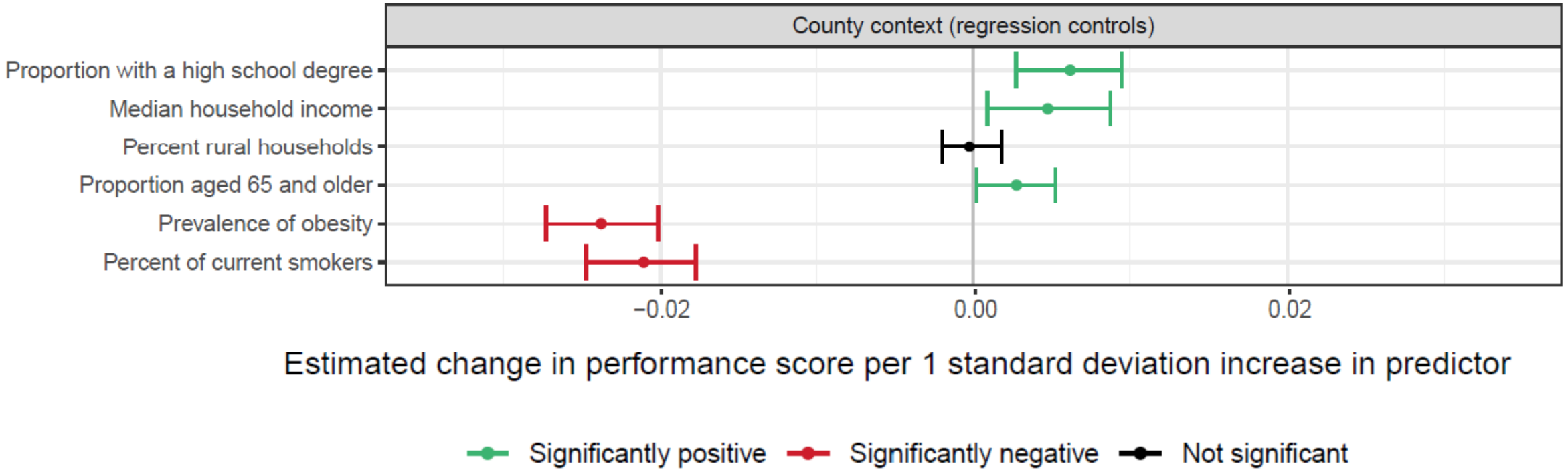


Mean unadjusted performance score across the 3,110 counties in 2019 was **0.49.**

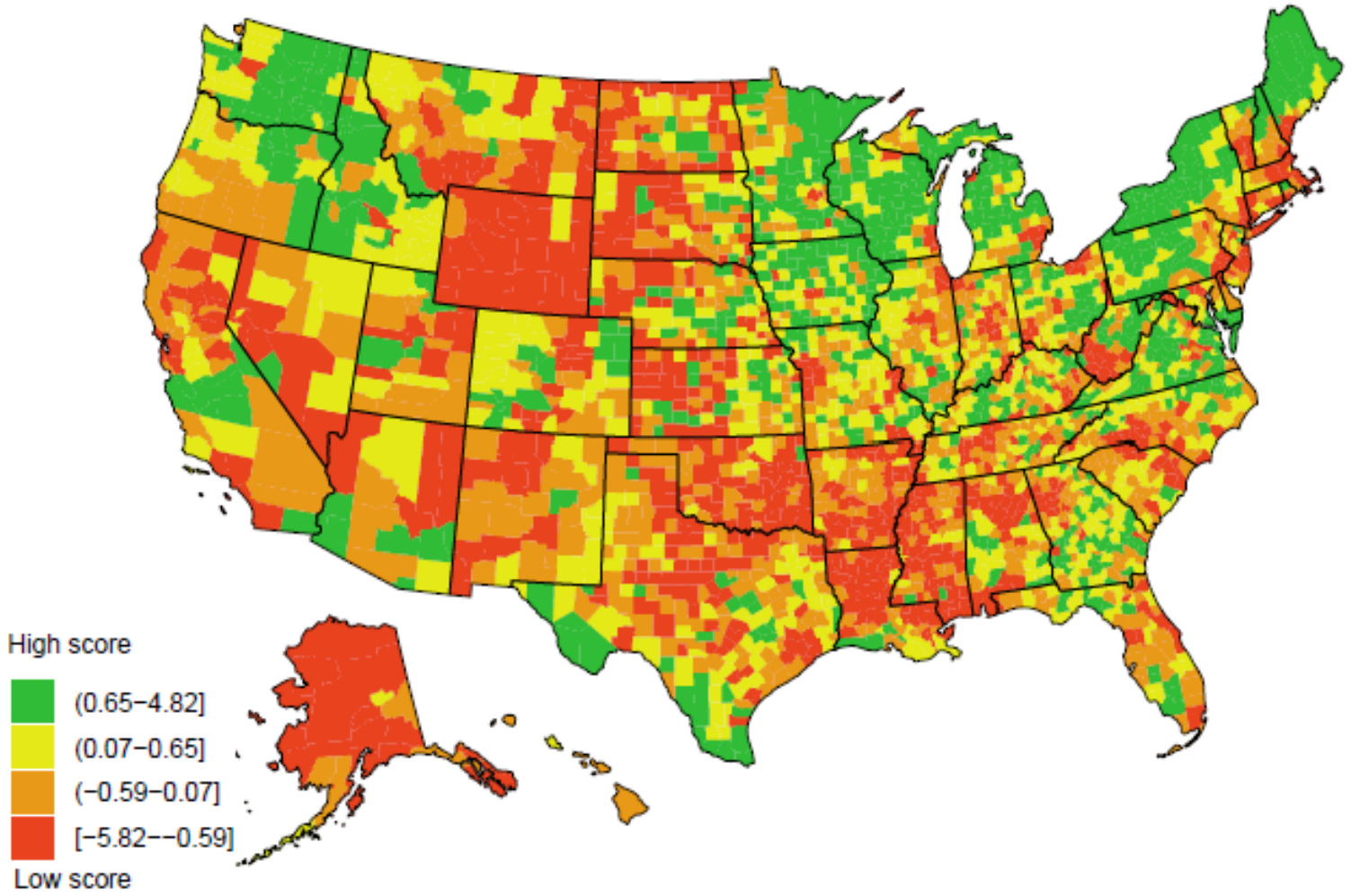
County characteristics



County traits associated with performance
Years 2014-2019



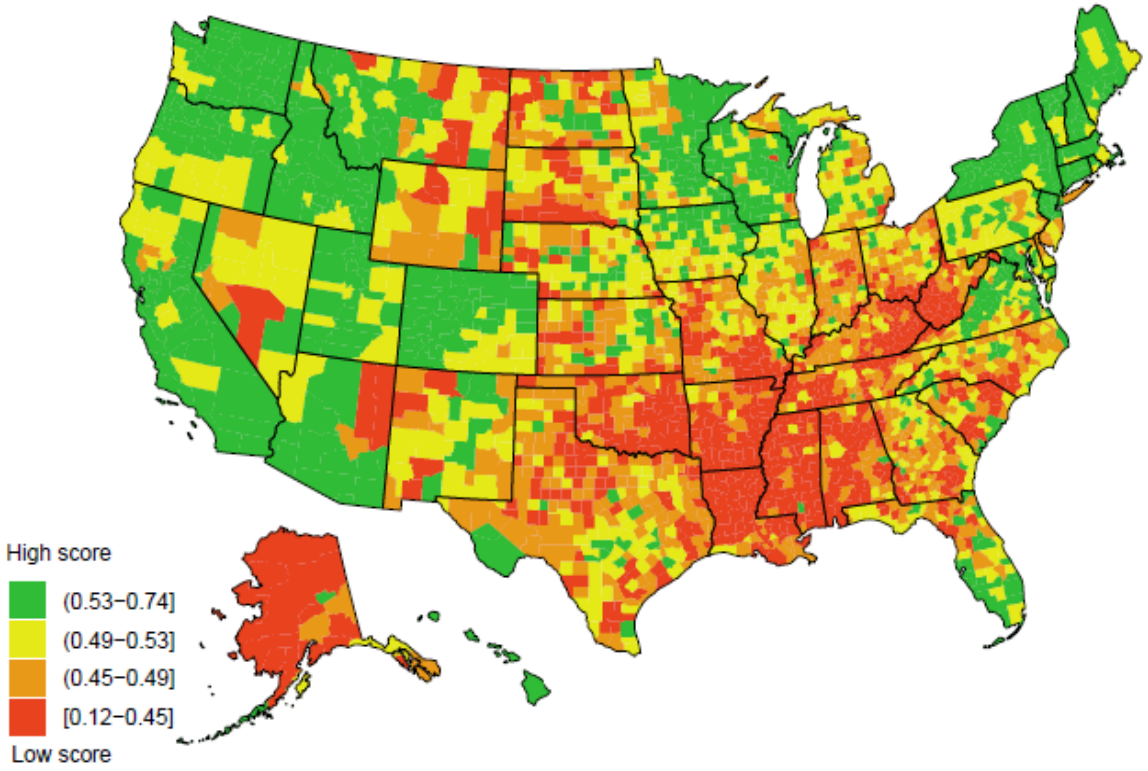
Adjusted performance score



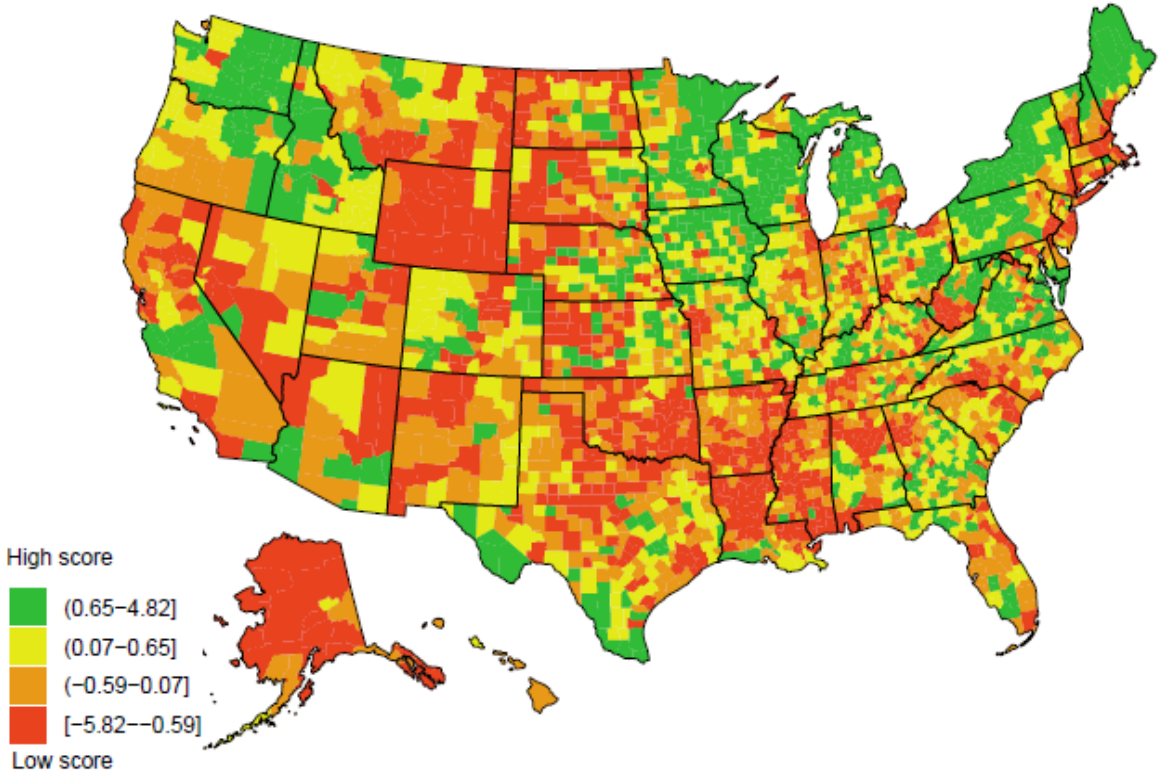
41% (n = 1,275) of counties had significantly positive performance scores, indicating **better** than expected performance given their population characteristics.

Importance of adjusting for underlying county traits

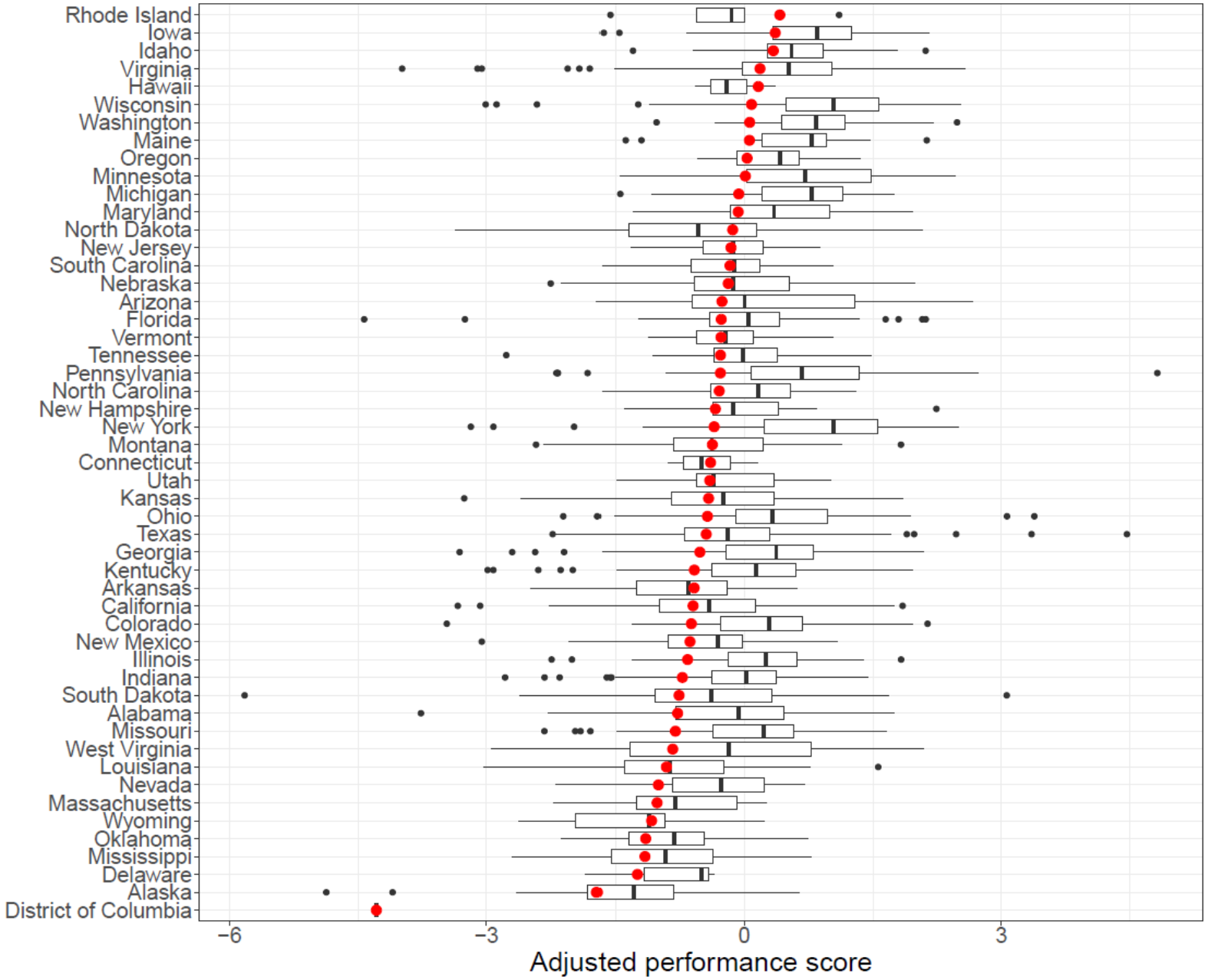
Unadjusted performance score



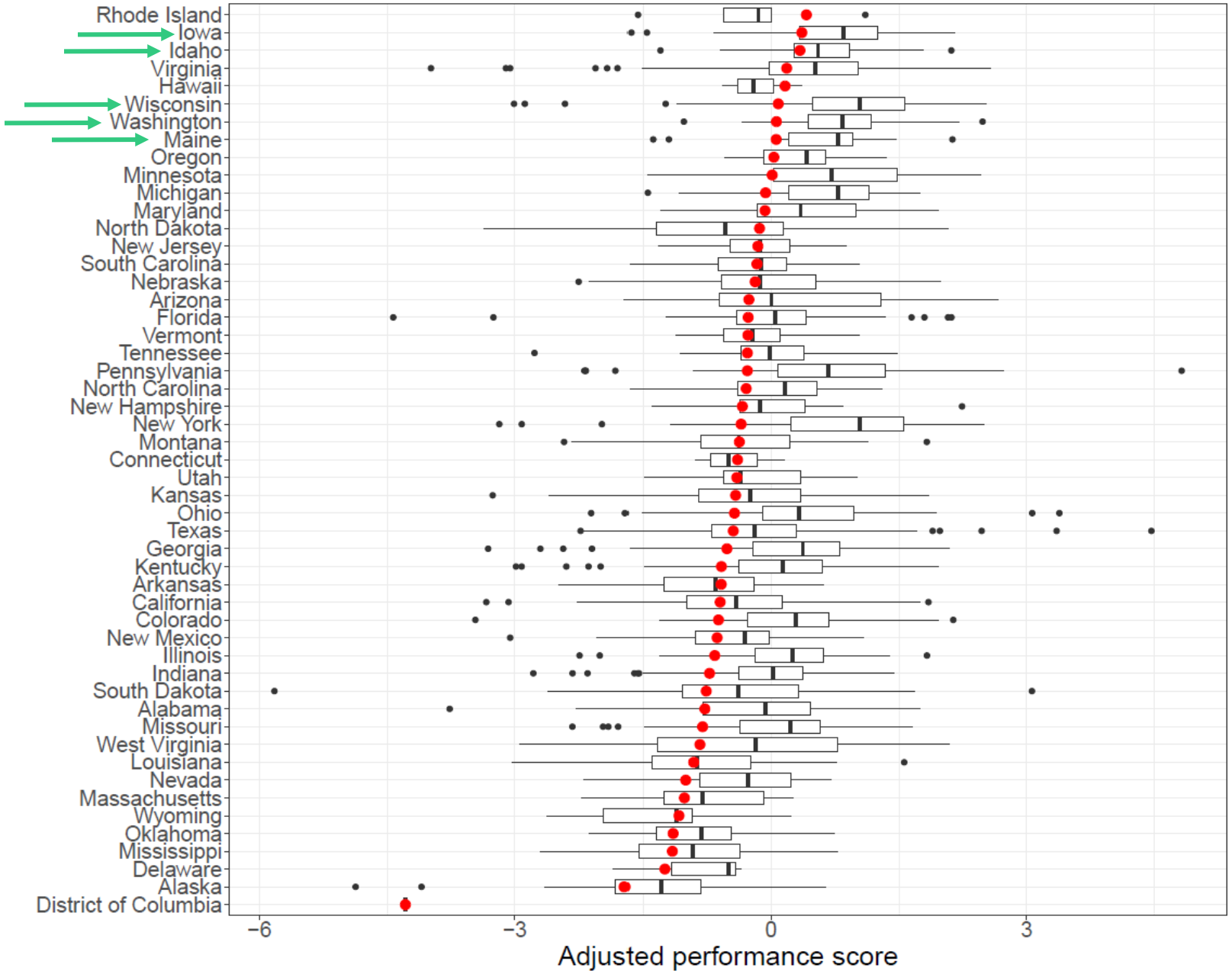
Adjusted performance score



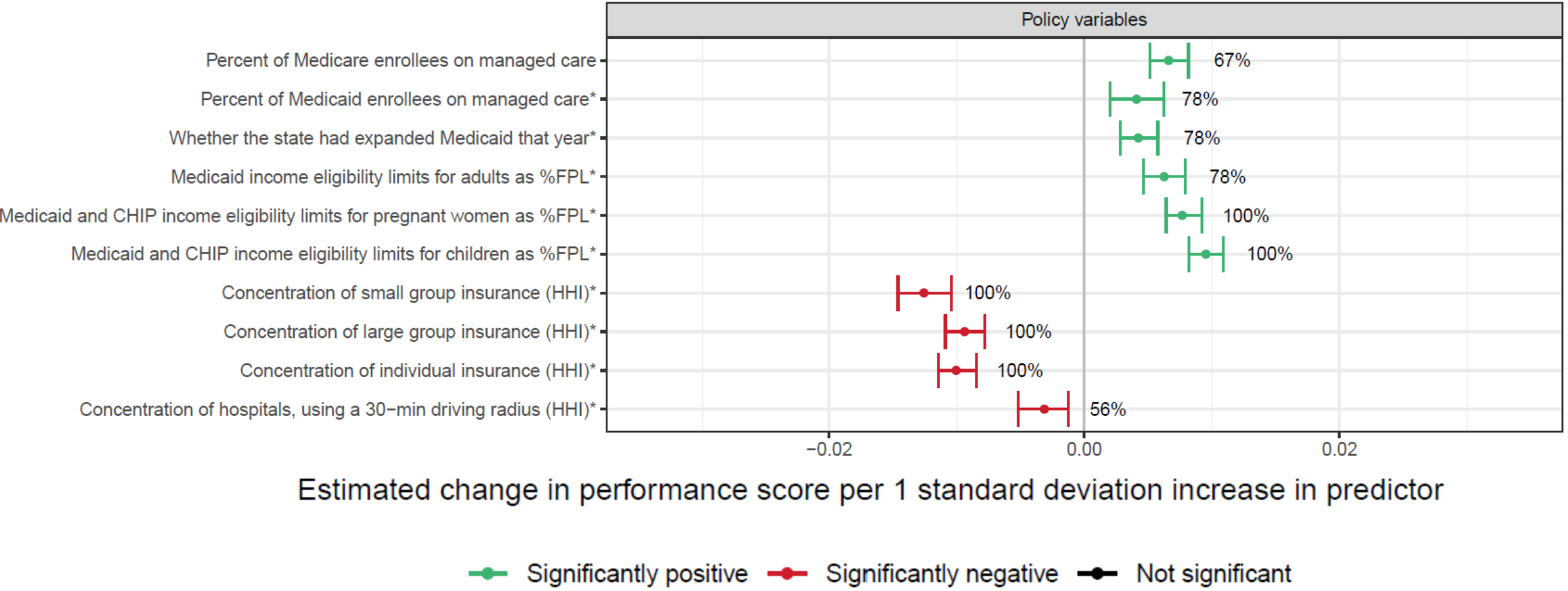
State adjusted performance score distribution, 2019



State adjusted performance score distribution, 2019



Policy variables associated with performance
Years 2014-2019



Conclusions

- This analysis operationalizes the triple aim framework to create a single performance score
- Locations with optimal performance scores are locations with relative privilege
- There is large variation in performance across states
- Important policy takeaways include prioritizing managed care, expanding Medicaid coverage, and incentivizing competitive hospital and insurance markets

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Thank you.

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Sensitivity analyses

Results set	Patient experience measure	Health outcomes measure	Spending measure	Performance score method	Policy regression note
Main results presented in manuscript	PCA composite. (Table S1.1)	Life expectancy at birth	Spend per capita, age-standardized and state price adjusted	Geometric mean	Controls included
Sensitivity #1	PCA composite update • Uninsured rate instead of access composite • Postoperative sepsis instead of safety composite	Life expectancy at birth	Spend per capita, age-standardized and state price adjusted	Geometric mean	Controls included
Sensitivity #2	PCA composite update • Use readmission rate instead of PQI 90	Life expectancy at birth	Spend per capita, age-standardized and state price adjusted	Geometric mean	Controls included
Sensitivity #3	HCAPHS summary hospital rating only	Life expectancy at birth	Spend per capita, age-standardized and state price adjusted	Geometric mean	Controls included
Sensitivity #4	PCA composite. (Table S1.1 + S1.4)	Premature mortality rate	Spend per capita, age-standardized and state price adjusted	Geometric mean	Controls included
Sensitivity #5	PCA composite. (Table S1.1 + S1.4)	Life expectancy at birth	Spend per capita, age-standardized	Geometric mean	Controls included
Sensitivity #6	PCA composite. (Table S1.1)	Life expectancy at birth	Spend per capita, age-standardized and state price adjusted	Arithmetic mean	Controls included
Sensitivity #7	Not included in composite	Life expectancy at birth	Spend per capita, age-standardized and state price adjusted	Geometric mean	Controls included
Sensitivity #8 - Only 1831 counties with no missing data	PCA composite. (Table S1.1)	Life expectancy at birth	Spend per capita, age-standardized and state price adjusted	Geometric mean	Controls included
Sensitivity #9	PCA composite. (Table S1.1)	Life expectancy at birth	Spend per capita, age-standardized and state price adjusted	Geometric mean	Controls not included