



AGENCY FOR HEALTHCARE RESEARCH AND QUALITY



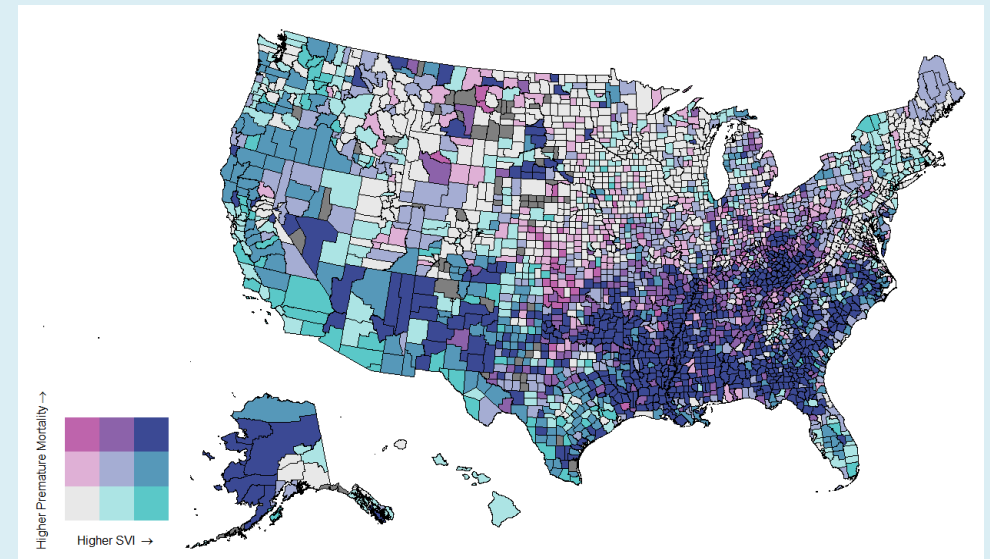
# AHRQ SDOH Database: Opportunities for Geographic Data Linkages

October 24, 2024

# AHRQ Social Determinants of Health Database

- “One stop” standardized community level SDOH data from multiple public sources
  - Social context, economic context, education, healthcare context, physical infrastructure
- Purpose
  - Make community-level SDOH data easier to use
  - Account for differences across areas
  - Link with other datasets for comprehensive analyses
  - Identify effective interventions
  - Inform efforts to improve health, equity
- Linkable by geography
  - County level (2009-2020)
  - Zip code level (2011-2020)
  - Census Tract level (2009-2020)

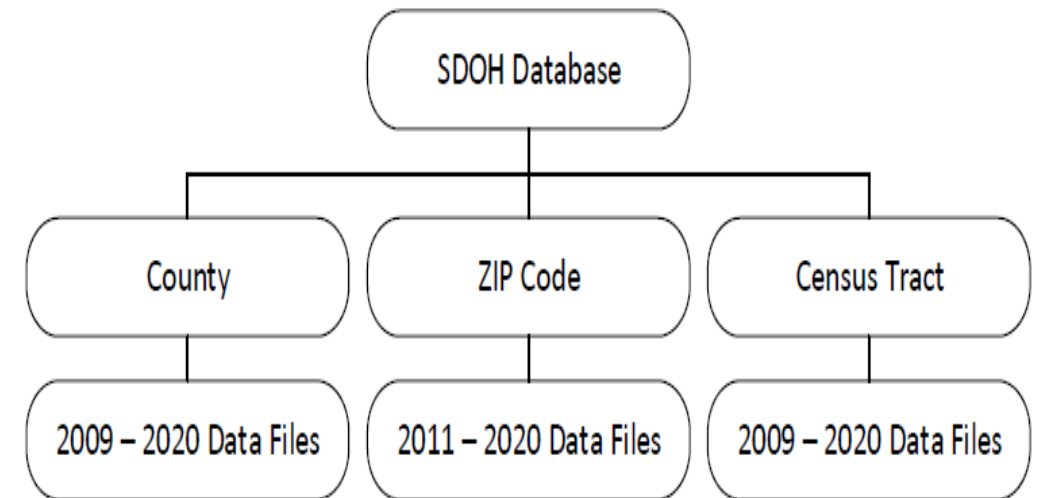
## Premature Mortality and Social Vulnerability Index across Counties in the U.S., 2018



Source: AHRQ SDOH Database, version 1, from 2018 County Health Rankings and 2018 CDC SVI. Darker shading is higher.

# Overview of SDOH Database

- First launched in 2018, then updated in July 2022; currently preparing for Version 2
- Data spans multiple years and 3 geographic levels
- Database contents draw from 44 different data sources, including over 17,000 variables across all geographies and years



# Overview of Planned Updates to SDOH Database



- Updating Version 2 database files in summer 2025, including
  - New geography at census block group level
  - New sources / variables (10-15 new sources / variables)
- Ongoing assessment and dissemination activities
- Planning for Version 3 database files (summer 2026)
  - Additional 10-15 new sources / variables

# Examples of Data Sources



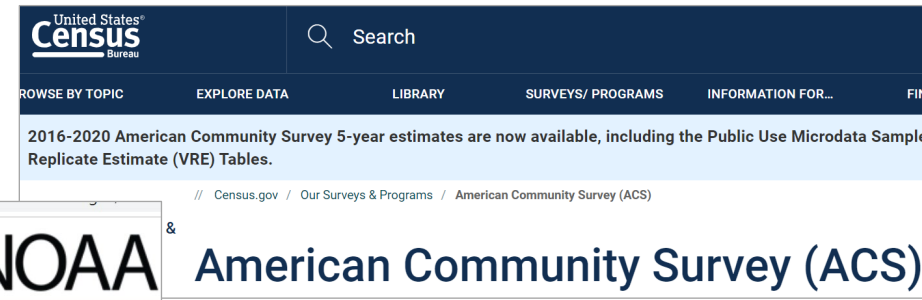
Centers for Disease Control and Prevention  
CDC 24/7: Saving Lives, Protecting People™

## PLACES: Local Data for Better Health



### County Health Rankings & Roadmaps

Building a Culture of Health, County by County



United States Census Bureau


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2016-2020 American Community Survey 5-year estimates are now available, including the Public Use Microdata Sample Replicate Estimate (VRE) Tables.

// Census.gov / Our Surveys & Programs / American Community Survey (ACS)

## American Community Survey (ACS)



## NOAA

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NCEI > Storm Events Database

Storm Events Database

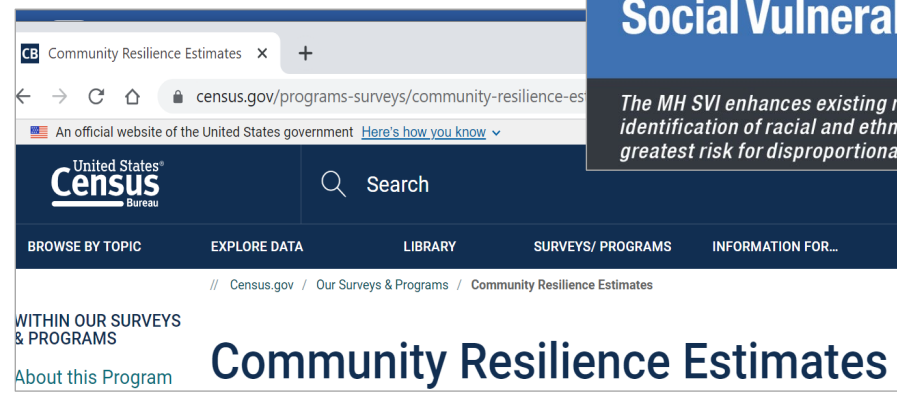
## CDC and OMH Minority Health Social Vulnerability Index

The MH SVI enhances existing resources to support the identification of racial and ethnic minority communities at greatest risk for disproportionate impact and adverse outcomes.

## CDC/ATSDR Social Vulnerability Index



## COMMON CORE OF DATA America's Public Schools



Community Resilience Estimates

United States Census Bureau

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## Community Resilience Estimates



## Provider of Services File - Hospital & Non-Hospital Facilities



## Area Health Resources Files



## The Opportunity Atlas

# Community-level SDOH Indicators Organized by Domains and Topics



## Social Context

- Demographics
- Disability
- Immigration
- Living conditions
- Segregation
- Socioeconomic disadvantage indices



## Economic Context

- Employment
- Income
- Poverty



## Education

- Attainment
- Education funding
- Literacy
- Numeracy
- School system



## Physical Infrastructure

- Access to Exercise
- Crime
- Environment
- Food access
- Housing
- Industry composition
- Internet connectivity
- Migration
- Social services
- Transportation



## Healthcare Context

- Characteristics of healthcare (facilities, providers)
- Distance to providers
- Health behaviors
- Healthcare quality
- Health insurance status
- Utilization and cost
- Health outcomes

# **Example Analysis using MEPS linked to SDOH Database:**

## **High Ambient Temperature and the Risk of Emergency Department Visits**



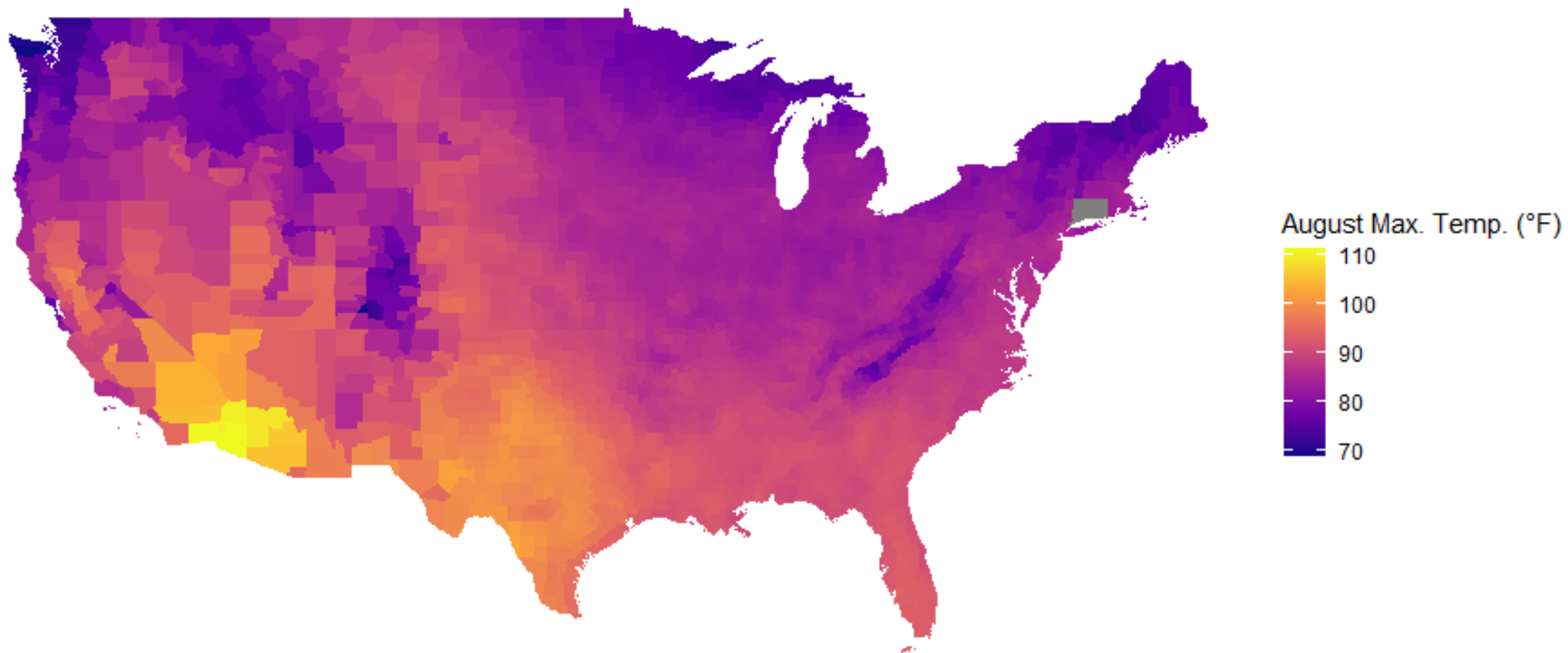
# Linkage

- From the SDOH database:
  - ▶ County FIPS
  - ▶ Mean, Minimum and Maximum Temperature by month
- From the Medical Expenditure Panel Survey:
  - ▶ Household longitude and latitude, county FIPS (available in secure data centers)
  - ▶ A variety of individual characteristics, experiences, attitudes
  - ▶ All medical events with dates, charges and payments
  - ▶ Conditions associated with events (ICD-10 and CCSR codes)



# Choropleth of August Maximum Temperature by County

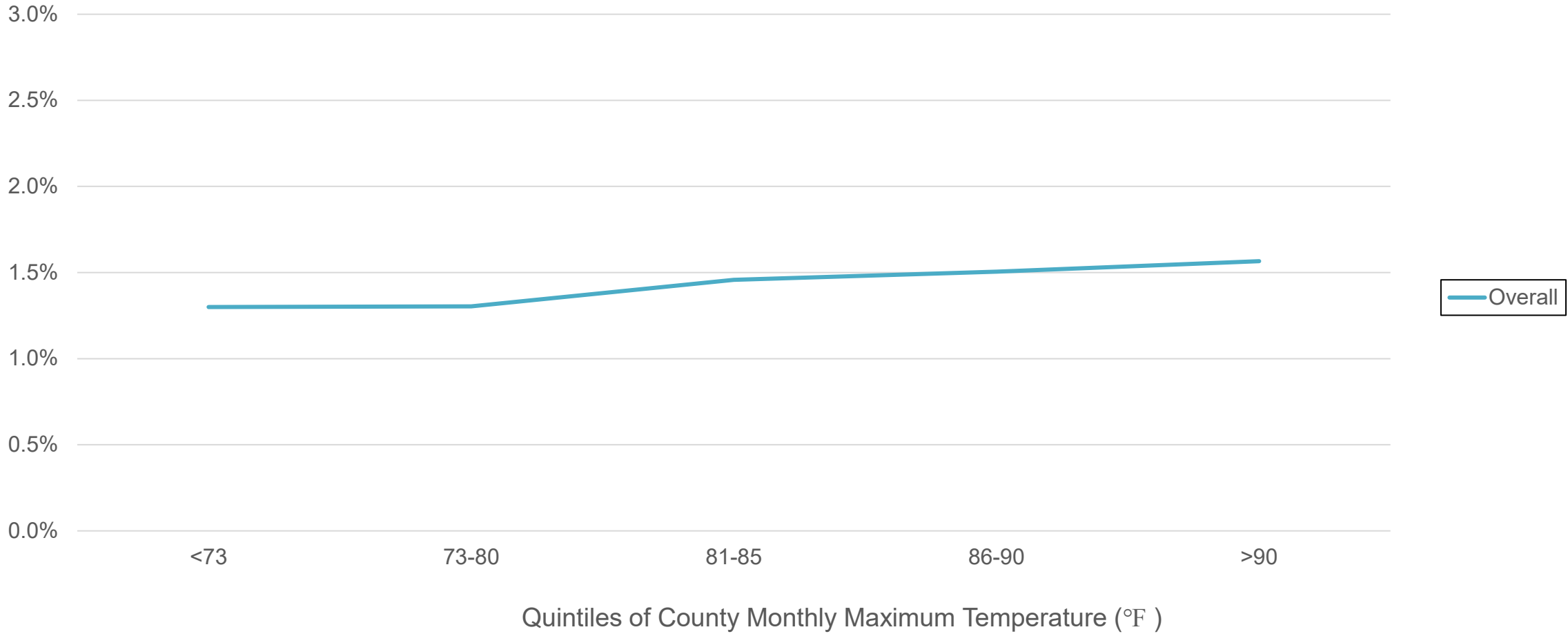
Source: 2019 SDOH Database



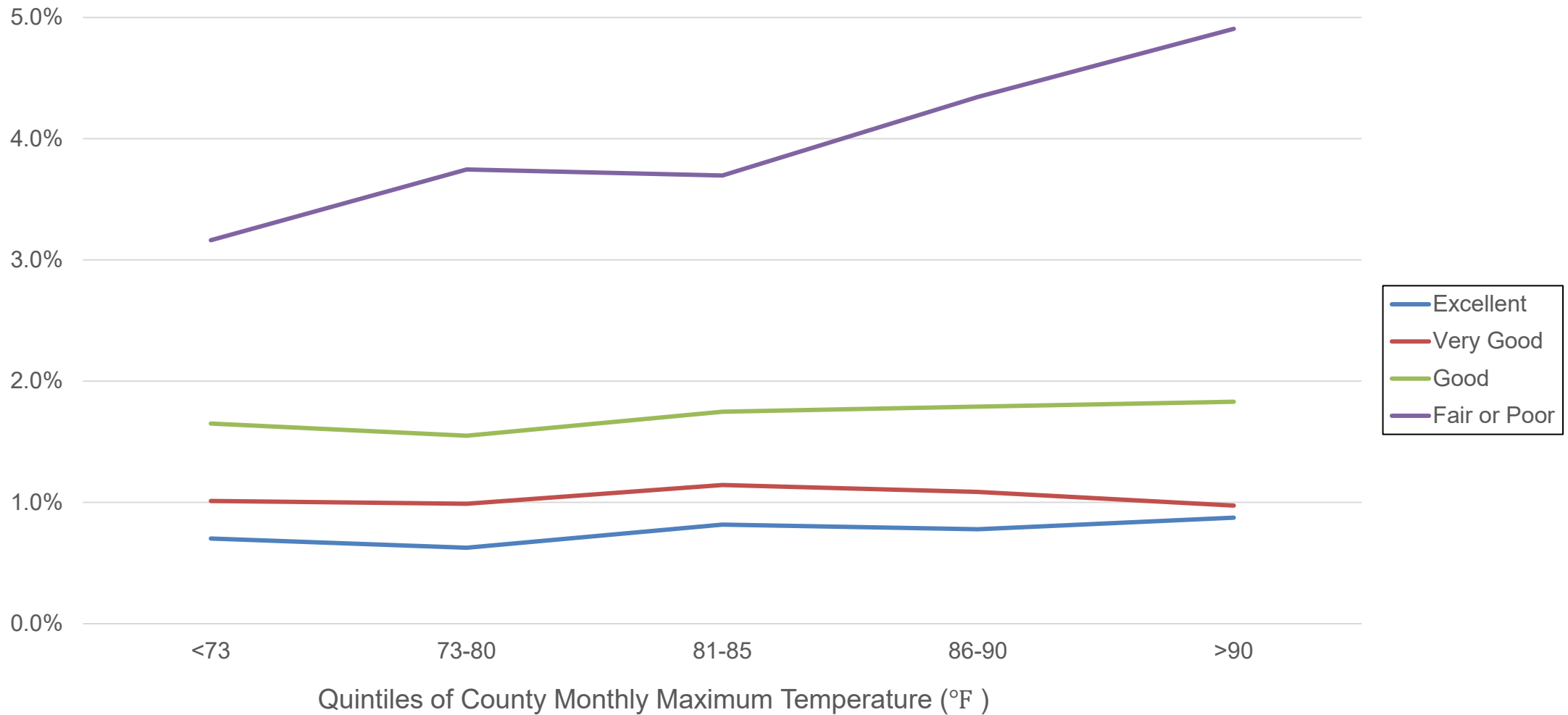
# Analytic Approach

- Linear probability models with person fixed effects
  - ▶ Unit of analysis is the person-month
  - ▶ Sample restricted to six hottest months (April-September)
- $Y_{it} = \beta_0 + BX_{it} + \alpha_i + \varepsilon_{it}$ 
  - $Y_{it}$  is an indicator variable that identifies whether person  $i$  had an ED visit in month  $t$
  - $X_{it}$  is a vector of variables measuring high temperature quartiles in counties
  - $\alpha_i$  fixed effects for each person
  - Models stratified by self-rated health, poverty and insurance status

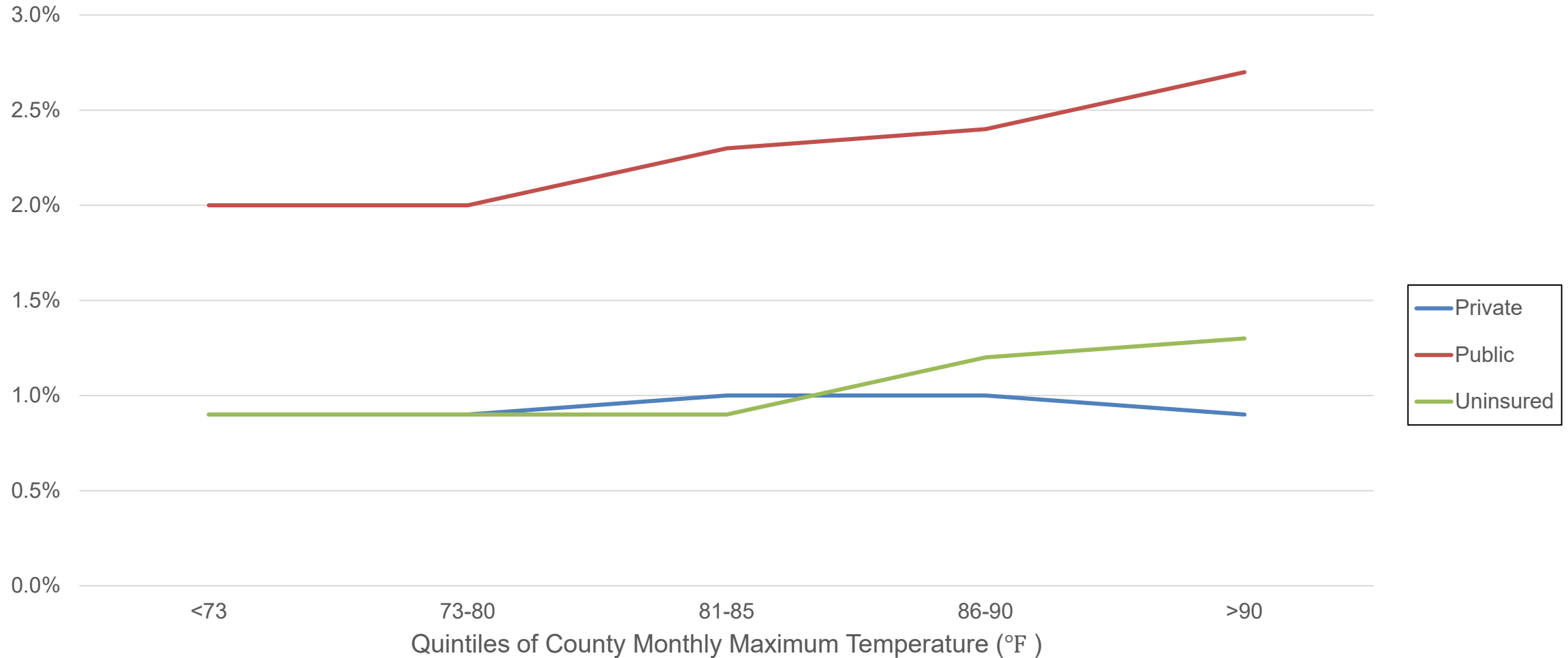
# Adjusted Probability of Having an ED Visit by Monthly Maximum Temperature, April-September 2018-2019



# Adjusted Probability of Having an ED Visit by Monthly Maximum Temperature and Self-rated Health, April-Sept 2018-2019



# Adjusted Probability of Having an ED Visit by Monthly Maximum Temperature and Insurance Coverage, April-Sept 2018-2019



# Summary of Findings

- Net of all time-invariant individual and county characteristics, higher temperatures are associated with increased risk of having an ED visit during the six warmest months of the year
- The strength of the association differs by individual characteristics
- Relative risk ratios (hottest vs. coolest months):
  - ▶ Overall (RR=1.20)
  - ▶ Among those who report poor or fair health (RR = 1.74)
  - ▶ Among those with Medicaid (RR = 1.34), Medicare (RR = 1.44), or uninsured (RR=1.44)

# Thank You!!



Feedback is welcome!

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