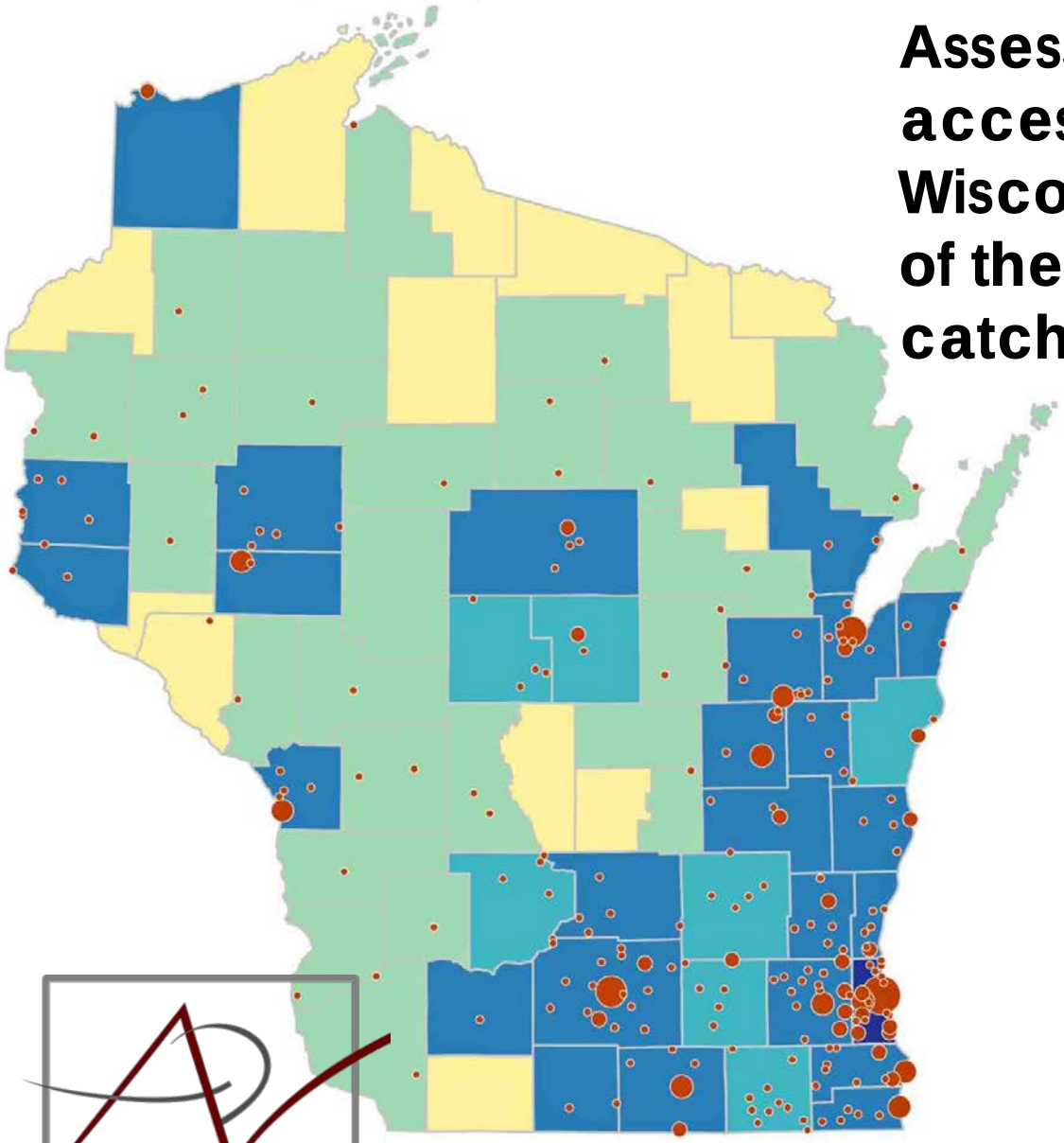

Assessing geographic access to primary care in Wisconsin: An application of the two-step floating catchment area approach

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- Focus on health risks and outcomes that occur in space
- Innovative methods and theory in spatial demography
- Specialty in data visualization and web-based mapping

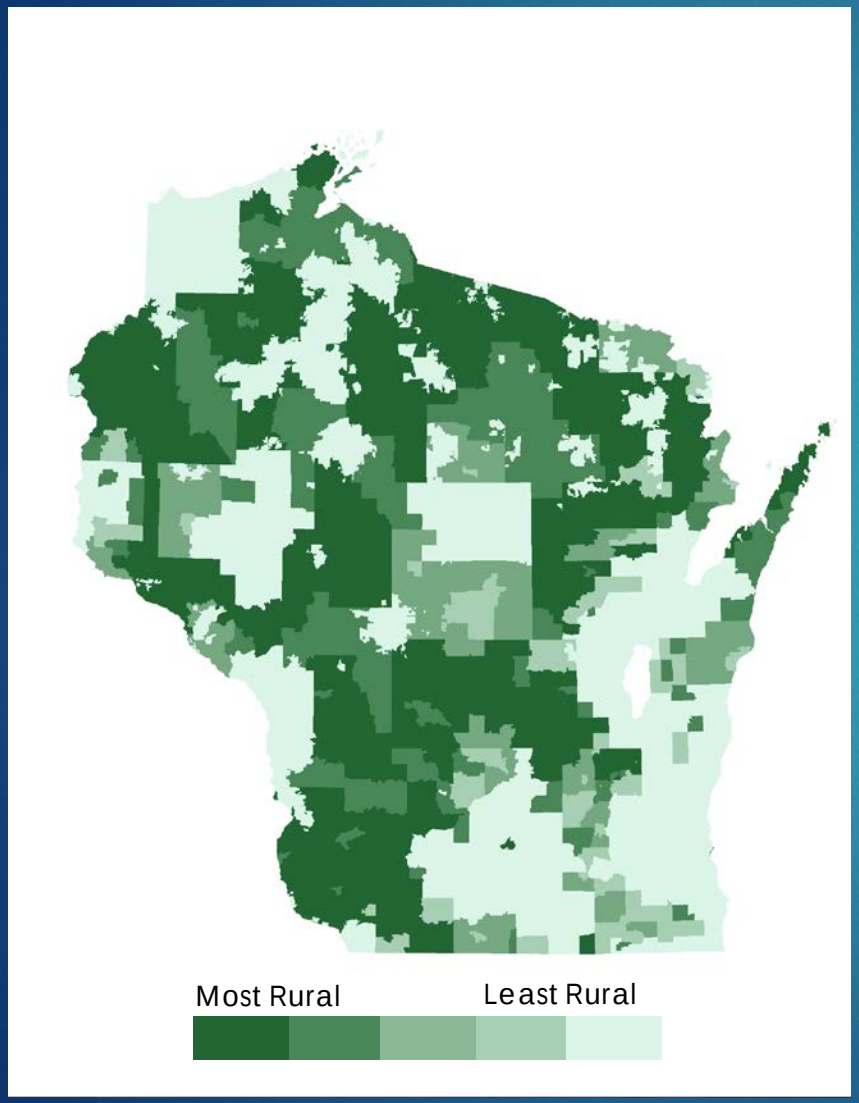
Background: Access to Care

- Access to primary healthcare = better health outcomes
- 5 A's of Access (Pechansky and Thomas 1981)
  - Affordability
  - Availability
  - Accessibility
  - Accommodation
  - Acceptability
- Geographic access as a component of access
  - Major barrier to access in "rural areas"
  - What is a rural area, anyway?

Policy Environment

- ACA led to an increase in insurance coverage among working-aged adults in WI
- State legislature is aggressively attempting to privatize Medicare under leadership of Gov. Walker
- Federal efforts to repeal the Affordable Care Act led by Speaker of the House Paul Ryan (WI-R)
- Health Services Resources Administration (HRSA) currently supports several shortage areas with funding for rural clinics
- State-level efforts to develop telemedicine for service delivery in underserved areas
- Few county- or state-level efforts have engaged with the extent of projected aging and effects on health care system

Background: Rural Wisconsin



Rural as defined by Rural-Urban Commuting codes

71%

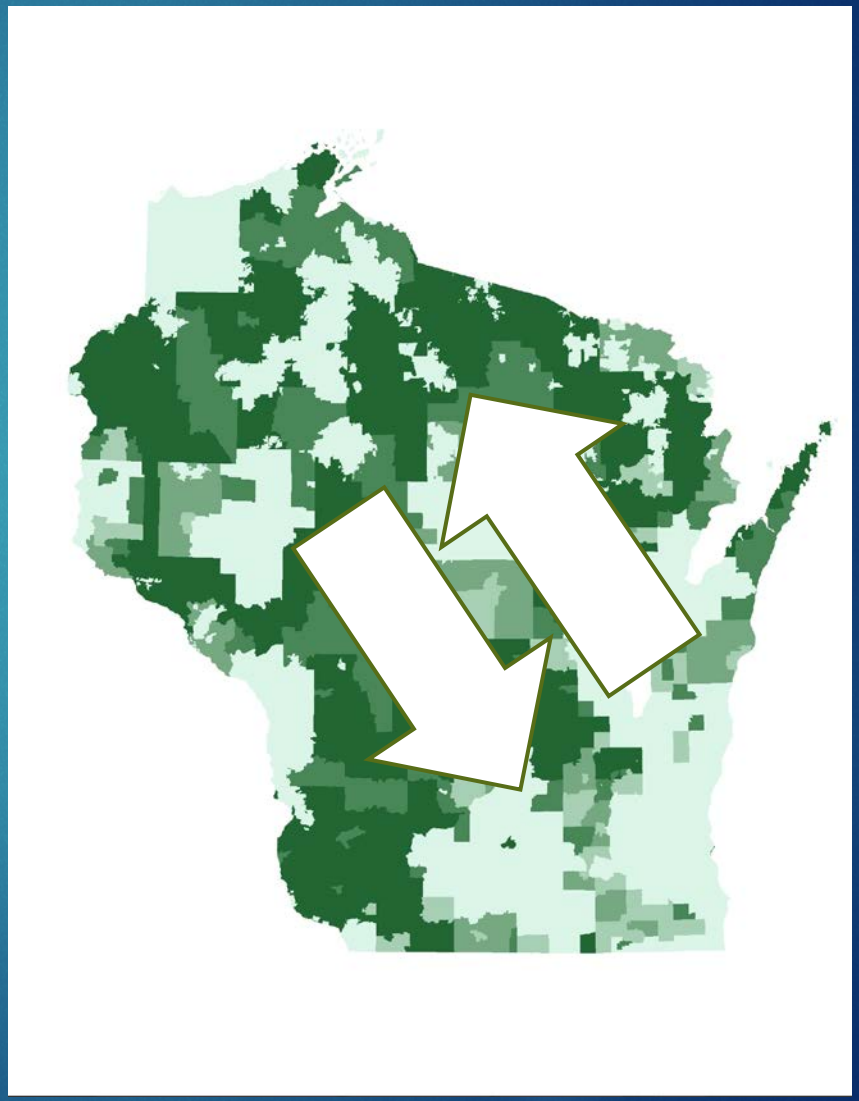
Rural by land area

30%

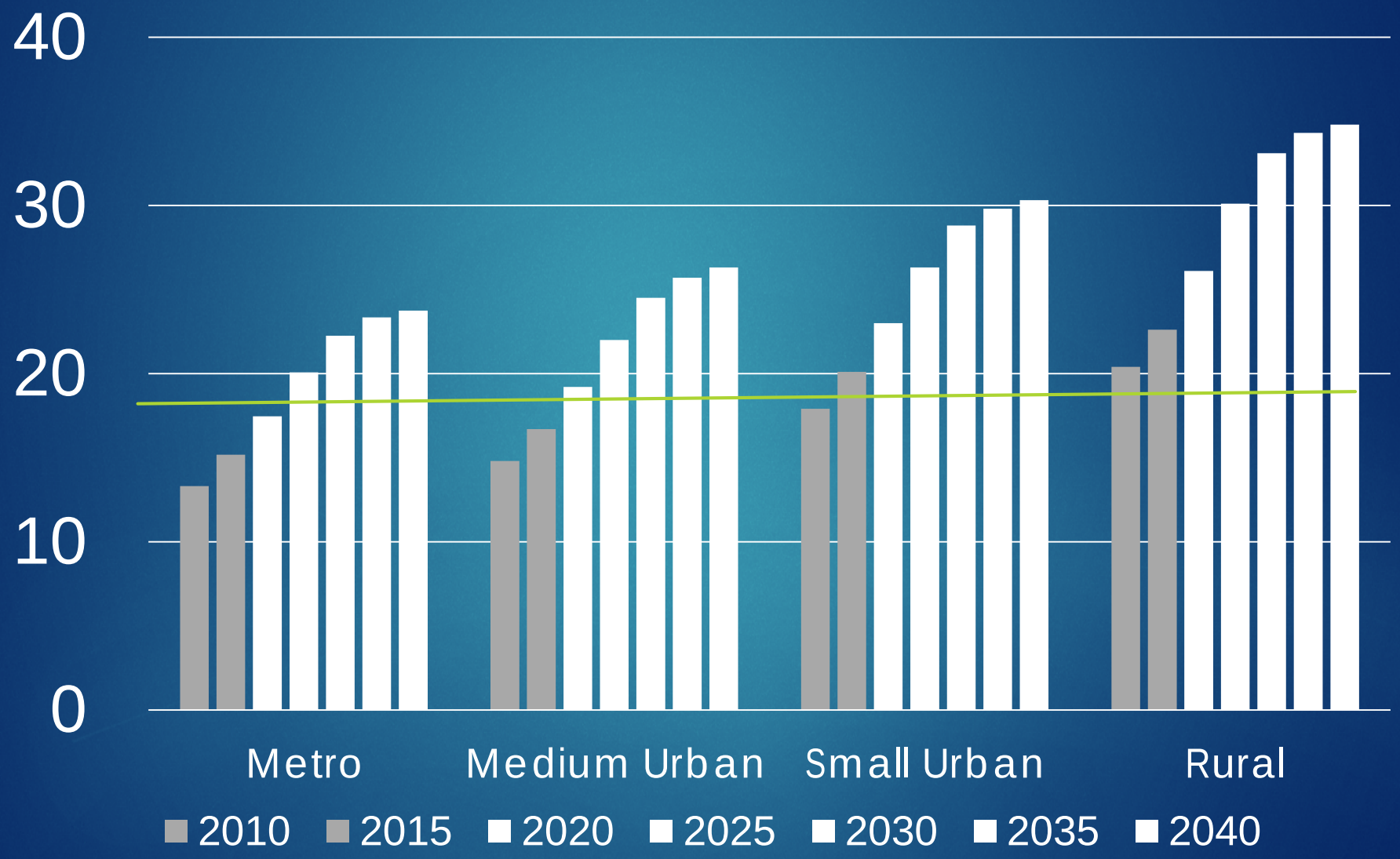
Rural by population

Background: Aging in Rural Wisconsin

- Rural Wisconsin is facing rapid aging
- Aging boomers + double migration process
  - In-migration from retiring baby boomers
  - Out-migration of working-age people



Projected percent population over age 65 by county rurality, Wisconsin



Simplified version of the USDA Rural-Urban Classification Codes used to define rural areas

Data & Methods

- Primary care providers
  - APL-generated census of all primary care providers in WI and in parts of neighboring states
    - Started with the NPPES (National Plan and Provider Enumeration System) and verified one-by-one
    - 5447 WI providers, 3273 MN, 6002 IL, and 322 MI and IA
- Population data:
  - ACS 5-year estimates at county & tract level, 2015 vintage
  - WI state demographer's office & APL population projections at the county level in 5-year age groups, 2013 vintage

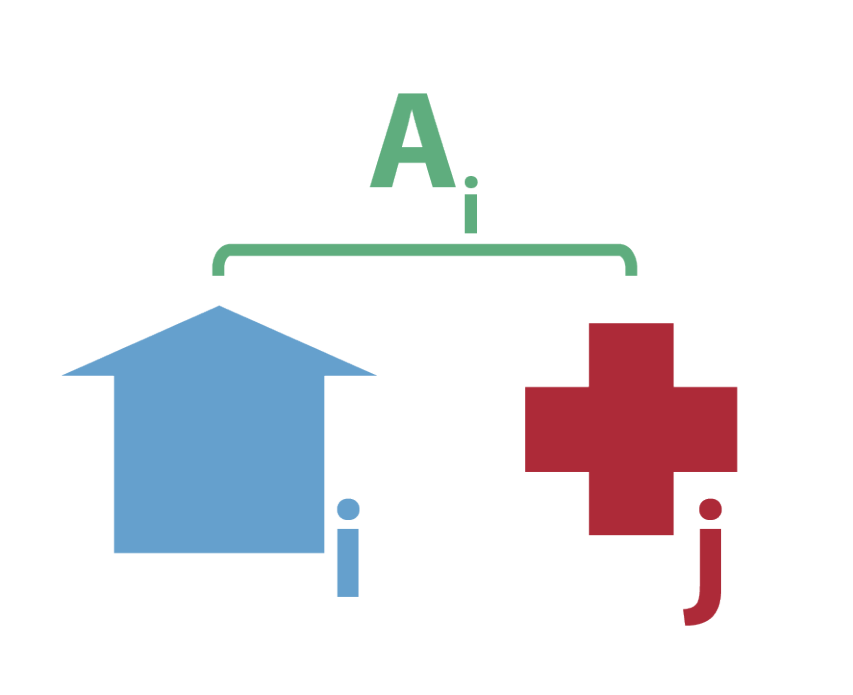
Brief review of access to care assessment approaches

- Distance to nearest provider
- Patient-to-provider ratios within administrative areas (zip codes, counties, etc.)
  - Health Resources and Services Administration (HRSA) definitions of heathcare provider shortage areas (HPSA's)
- Our approach: the 2-step floating catchment area with distance decay (2SFCA-WDD)

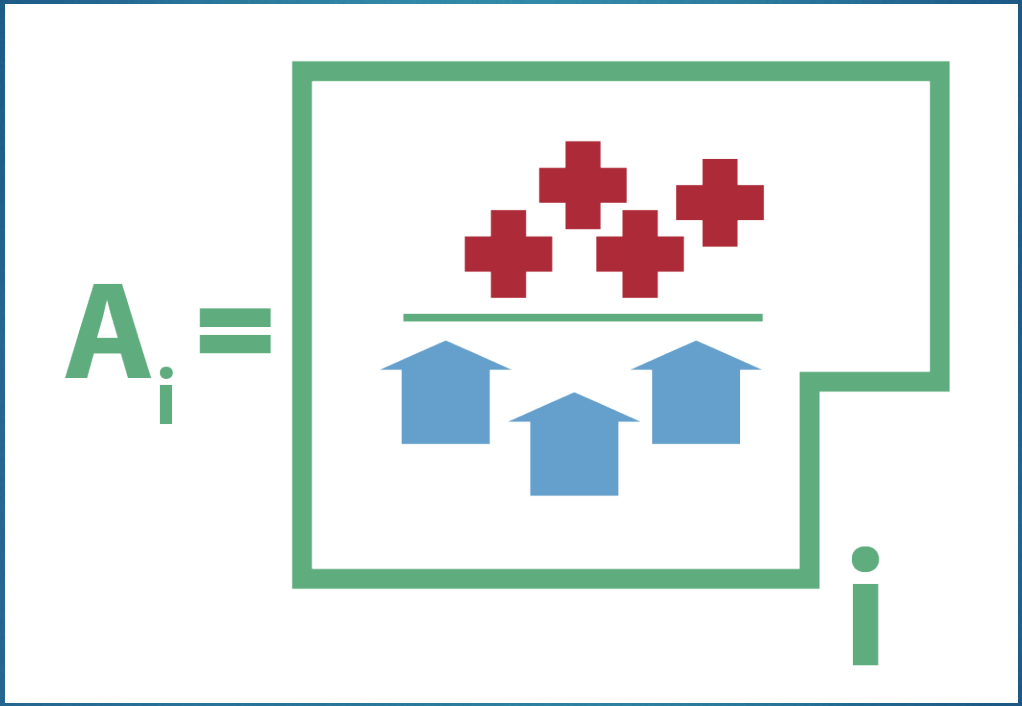
Data & Methods

- Estimate “geospatial access” for each census block group using a 2-step floating catchment area approach, assuming a 30-45 minute drive time is OK
  - Drive-time specific to rurality based on RUCA codes

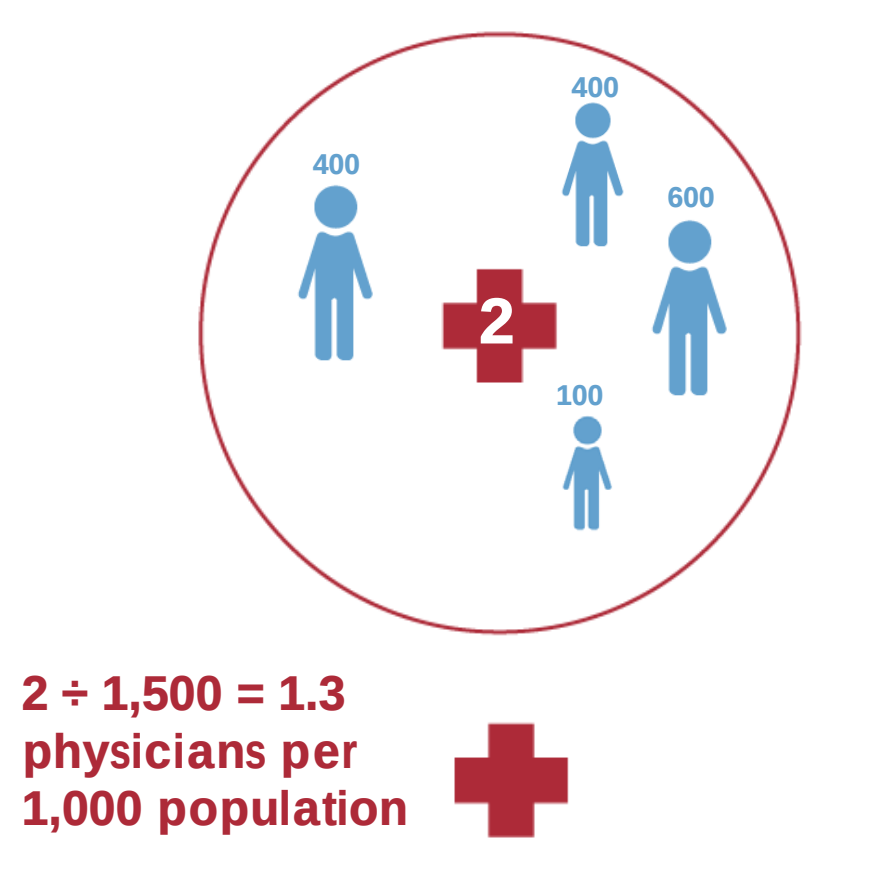
distance to nearest provider



physician-to-population ratio

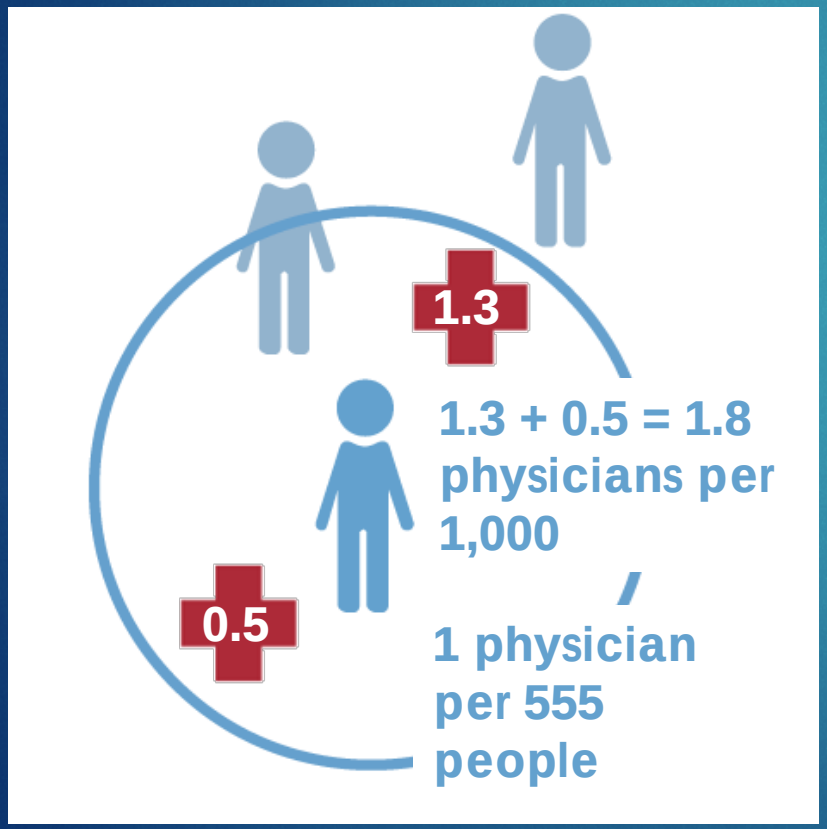


two-step floating catchment area: step 1



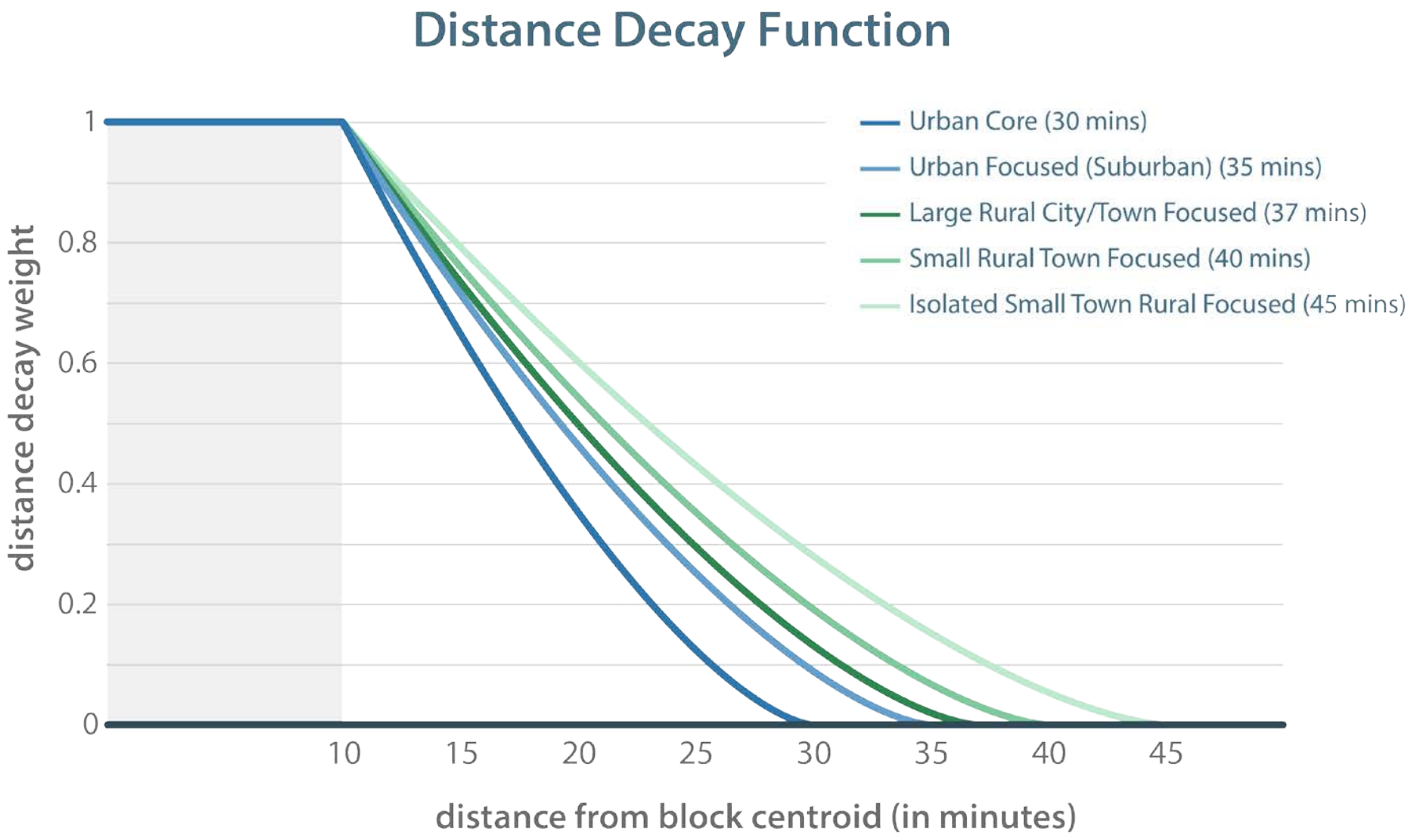
- For each clinic, draw a catchment area based on assumed acceptable drive times.
- Add up the population within the catchment area
- Divide the number of providers at the clinic by the population within their catchment.
- After repeating this for all provider locations, each provider location will have a provider-per-population ratio.

two-step floating catchment area: step 2



- For each areal unit (block group), draw a geographic range based on assumed acceptable drive times.
- Sum the provider-to-population ratios (created in Step 1) of any provider locations that land within this geographic range. This gives us a measure of access for each block group.
- Invert this summed provider-to-population ratio for a population-to-provider ratio.
  - Can be interpreted as panel size for each provider.

+ Distance Decay



Rural as defined by Rural-Urban Commuting codes

Provider-to-population ratios (or panel sizes)

Access quality	Panel Size
Good	1,052 or smaller
Good assuming 50% primary care task delegation	1,053-1,387
Good assuming 60% delegation	1,388-1,523
Good assuming 77% delegation	1,523-1,947
Poor access	1,948 – 2,300
Effective no access	2,301 or greater

Data & Methods

- Estimate "geospatial access" for each census block group using a 2-step floating catchment area approach, assuming a 30-45 minute drive time is OK
  - Drive-time specific to rurality based on RUCA codes
- Compare provider-to-population ratios to ideal panel sizes to determine quality of access

Data & Methods

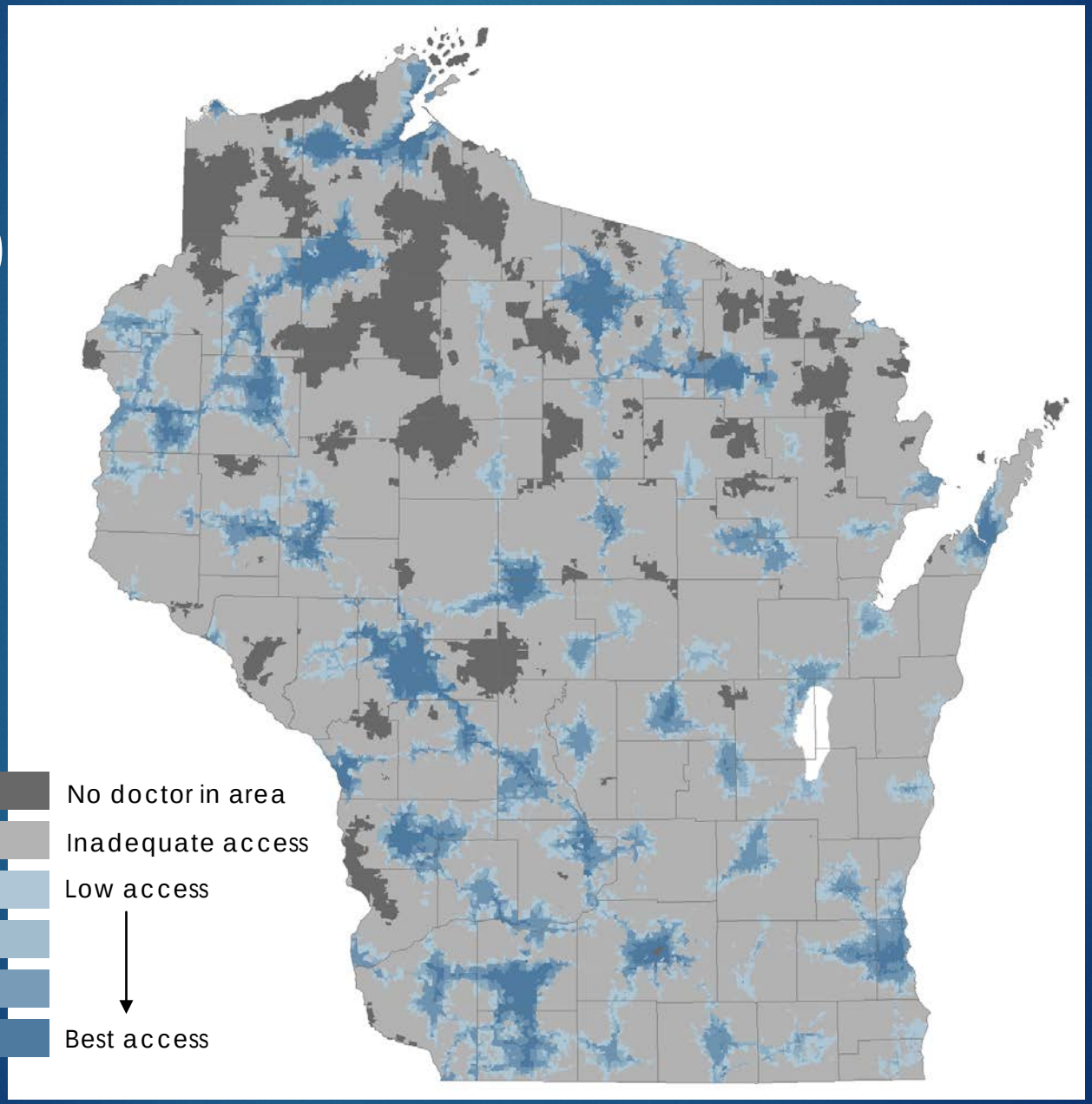
- Estimate "geospatial access" for each census block group using a 2-step floating catchment area approach, assuming a 30-45 minute drive time is OK
  - Drive-time specific to rurality based on RUCA codes
- Compare provider-to-population ratios to ideal panel sizes to determine quality of access
- Summarize block group access to tract/county level
- Overlay access with current and projected population age data
- Compare age structure in areas of poor access to areas of better access

Results: Current geographic access to care

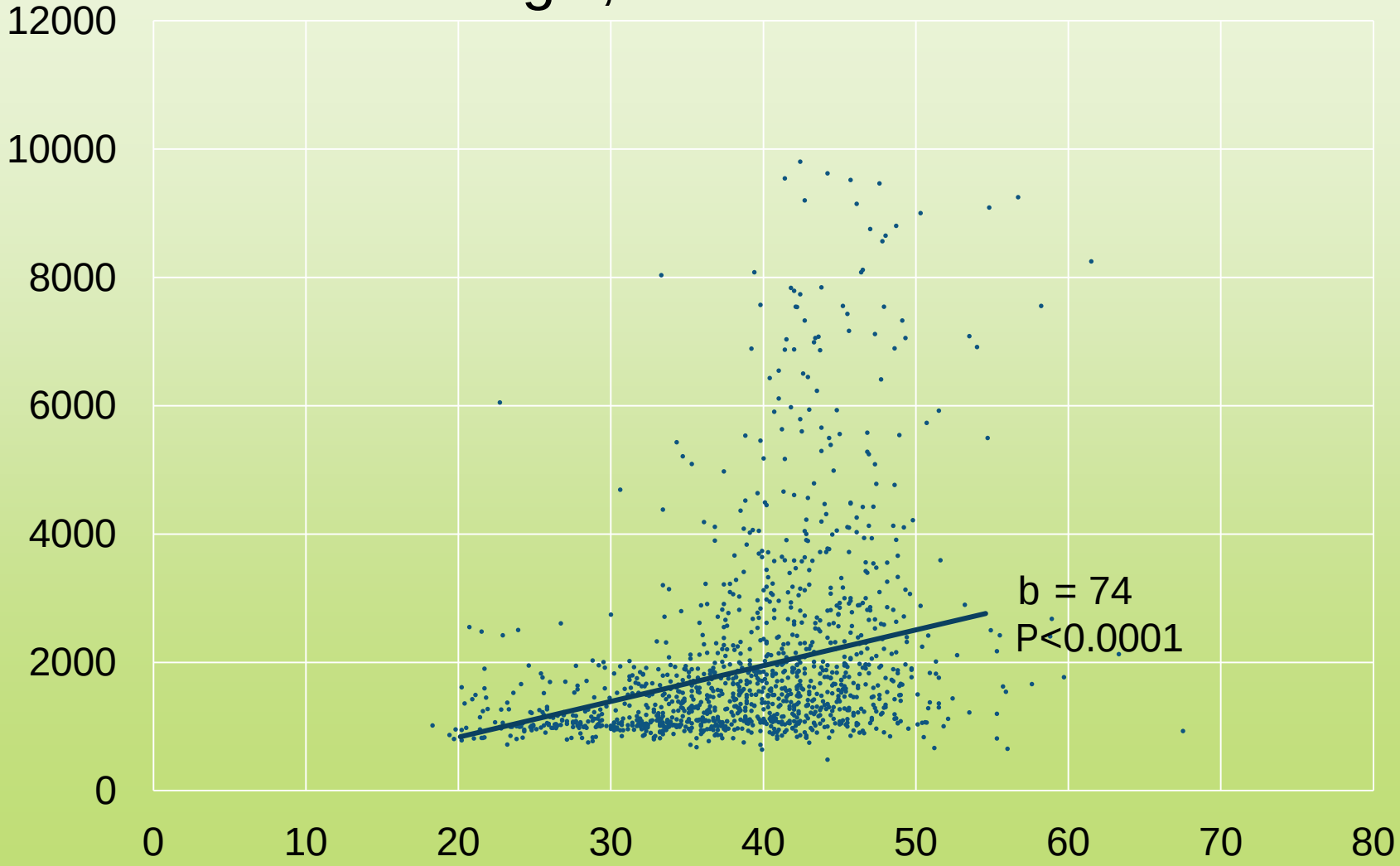
39%

of total pop has poor or no access

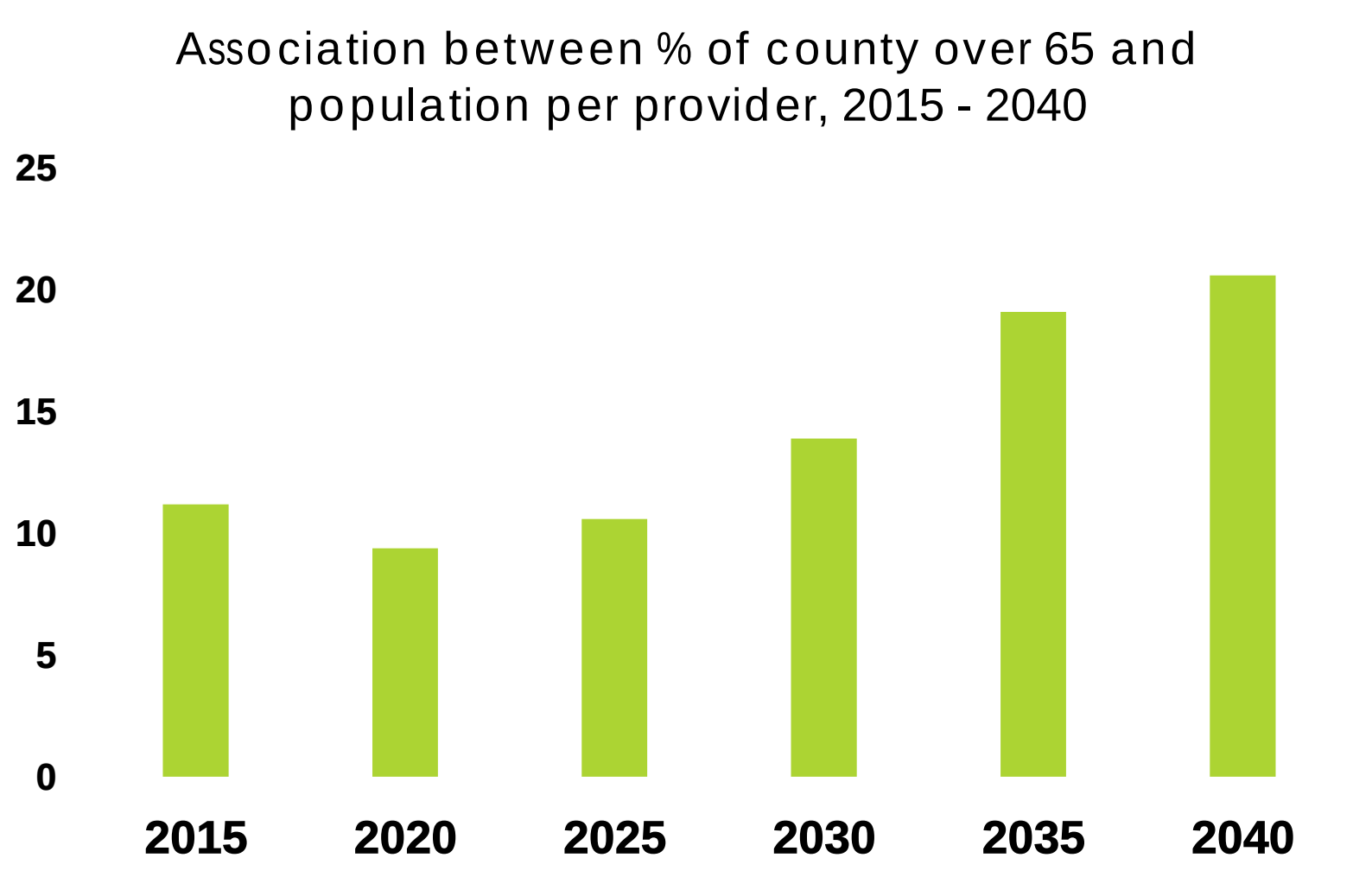
2.2 million people



Population Per Provider and Median Age, Census Tracts



Results: population projections



Conclusions

- Primary care shortage areas affect nearly 40% of the total population of the state
- Shortage areas are considerably more rural and older than the general population
- Shortage areas are expected to experience substantial population aging
- Policy approaches to improving access to primary care in rural areas are warranted
  - Practical approaches may include expanding mobile clinics/home visits, telemedicine, and increasing the availability of N.P.'s

Next Steps

- Evaluate assumptions about acceptable drive times using survey data
- Consideration of specialty care availability, especially geriatrics and chronic disease management
- Sub-county level population projections for aging
- Work directly with the Office of Rural Health and other state agencies to identify and address areas of greatest need

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