Broadband and The Wisconsin Economy

April 2021

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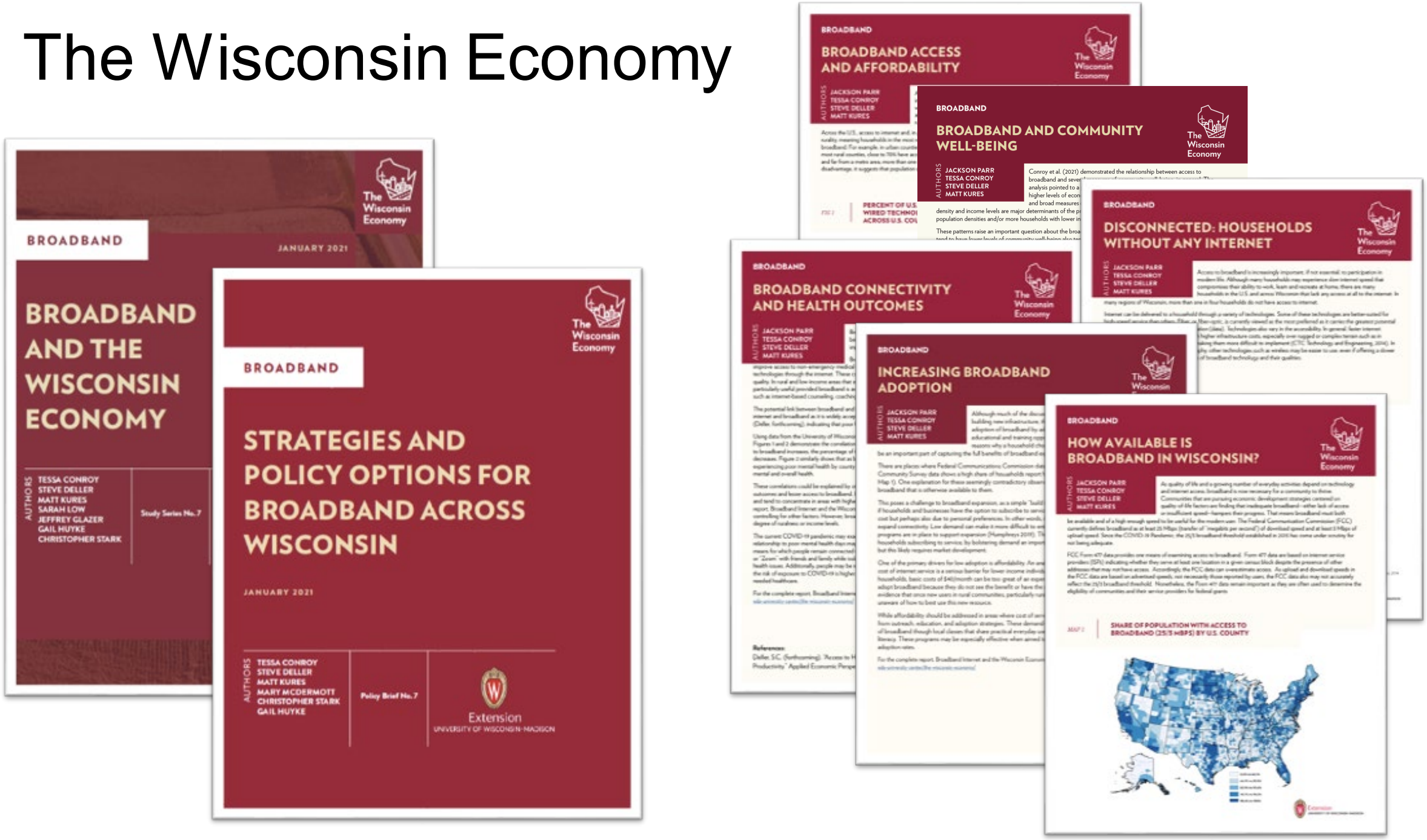
The Wisconsin Economy



Broadband Report Team

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A brief overview…

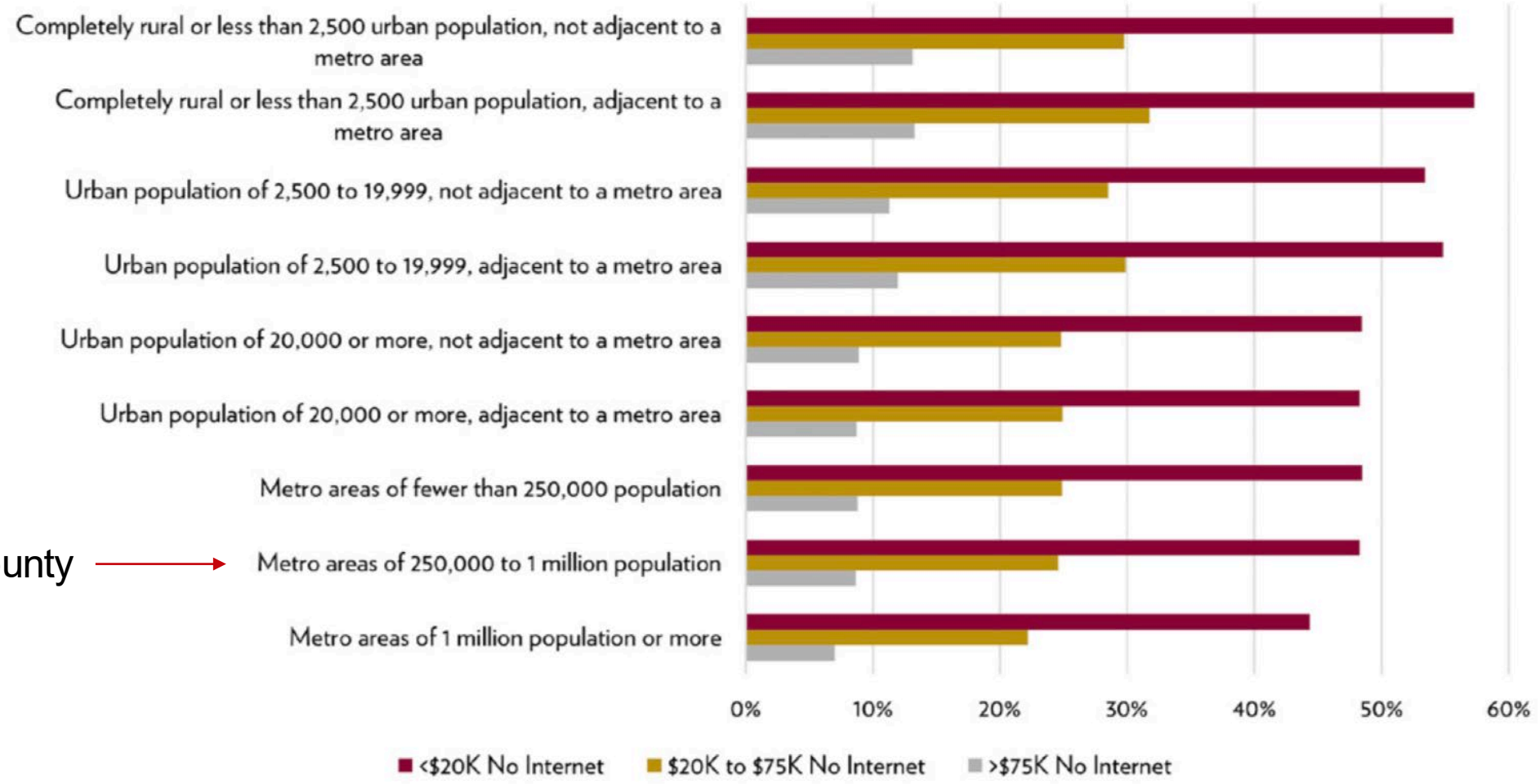
- Broadband was a challenge before the pandemic.
  - 14% of households do not have a broadband subscription.
- Broadband is much more than a modern amenity.
- Challenges more acute as people work, go to school, recreate, get healthcare at home due to the pandemic.
- Broadband has made it easier to adjust for those who have it.
- The economic costs of going without are becoming clearer.

Considering Disparities

- There are still significant shares of the population without internet.
- Rural-urban disparities and income-level disparities.
- Address supply (infrastructure).
- Address demand (affordability, willingness to pay, demonstrating relevance, and education).

FIG 5

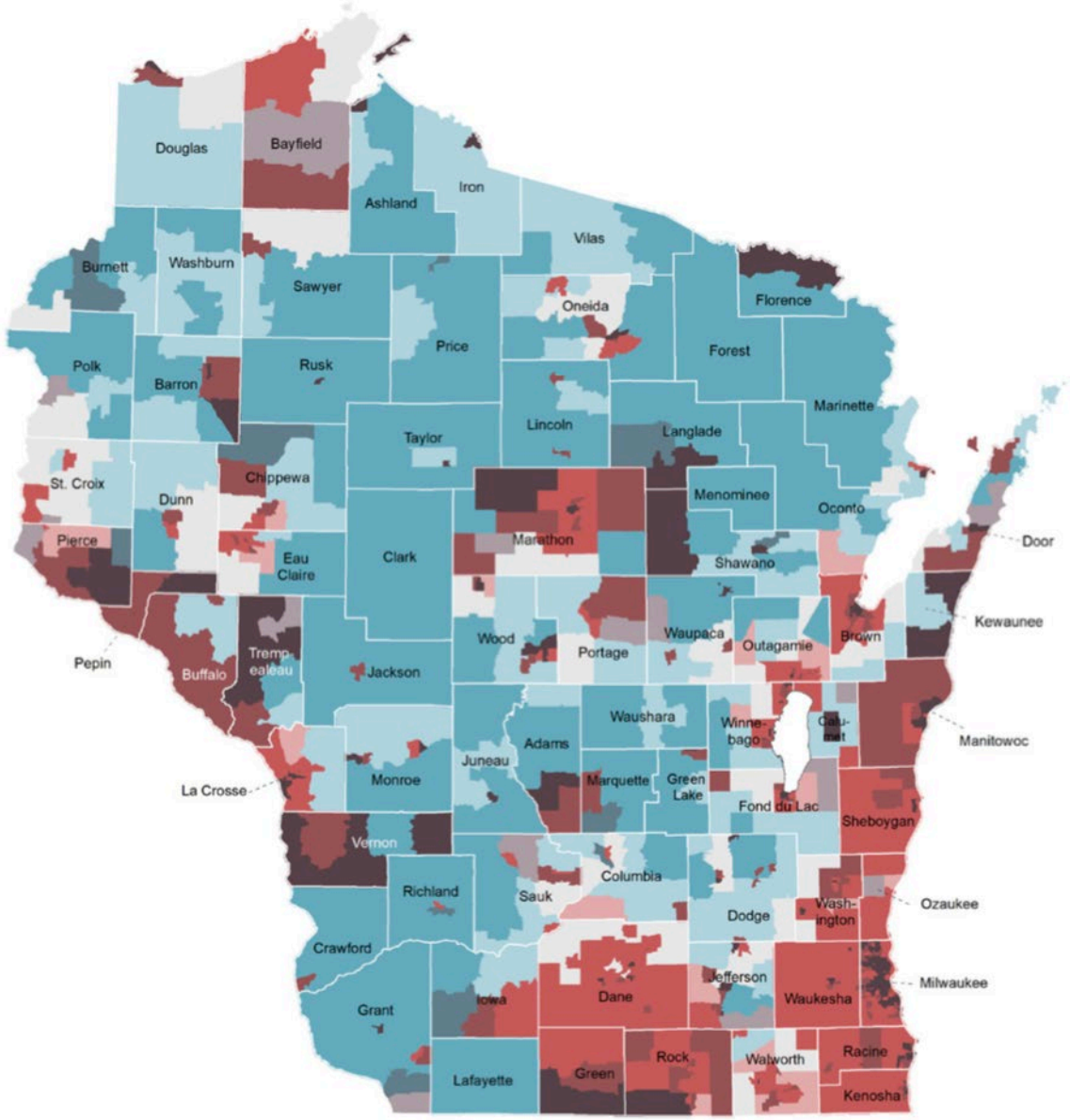
PERCENT OF U.S. POPULATION WITHOUT INTERNET ACCESS BY HOUSEHOLD INCOME ACROSS U.S. COUNTY URBAN-RURAL CONTINUUM

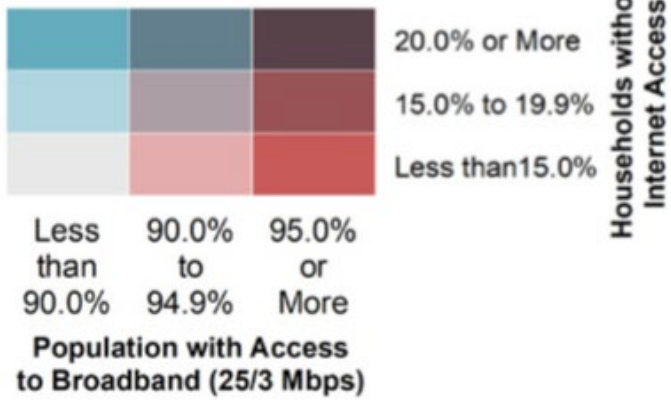


Dane County →

MAP 6

SHARE OF POPULATION WITH ACCESS TO BROADBAND VS. SHARE OF HOUSEHOLDS WITHOUT INTERNET BY WISCONSIN CENSUS TRACT





Share of Population with Access to Broadband (FCC Form 477):

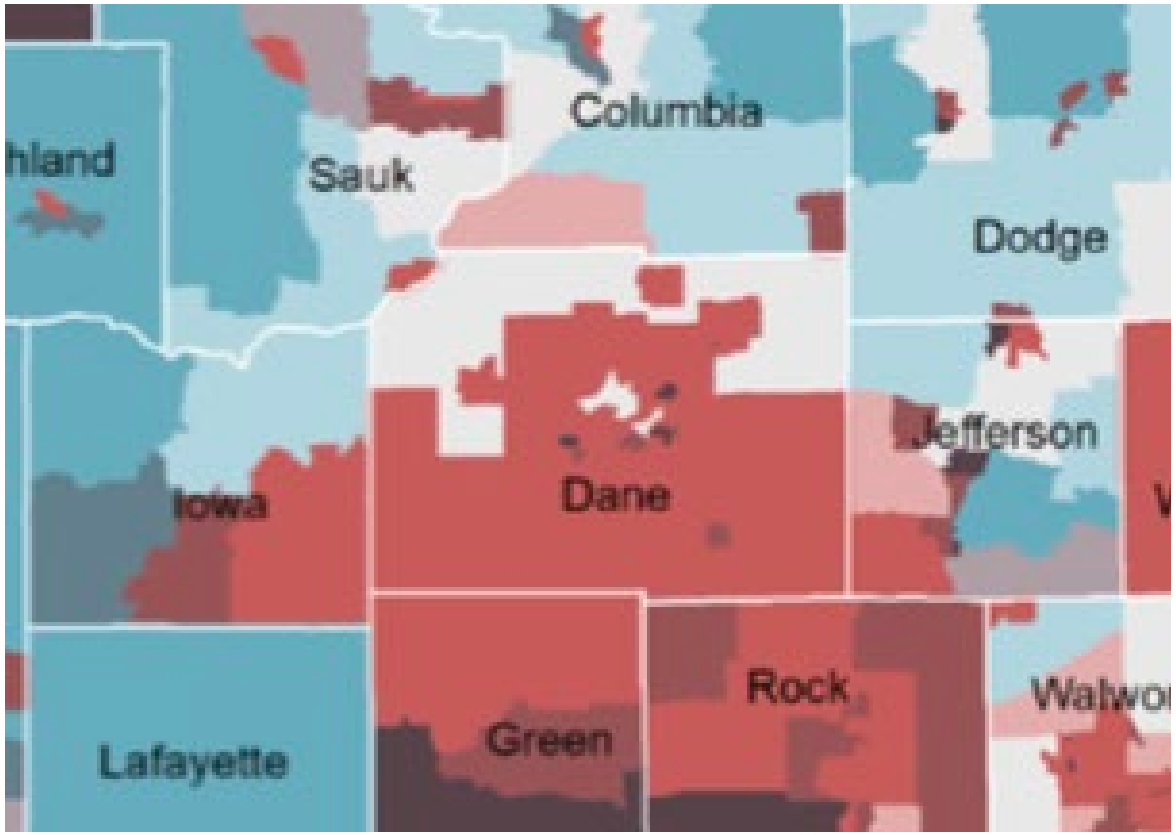
State of Wisconsin: 92.3%

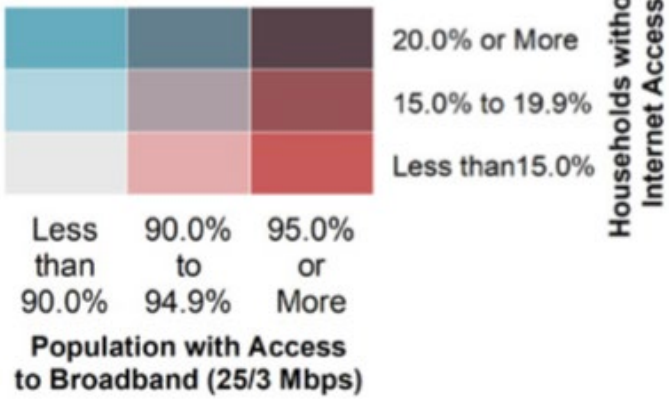
United States: 94.8%

Share of Households without Internet Access (ACS):

State of Wisconsin: 15.8%

United States: 15.8%





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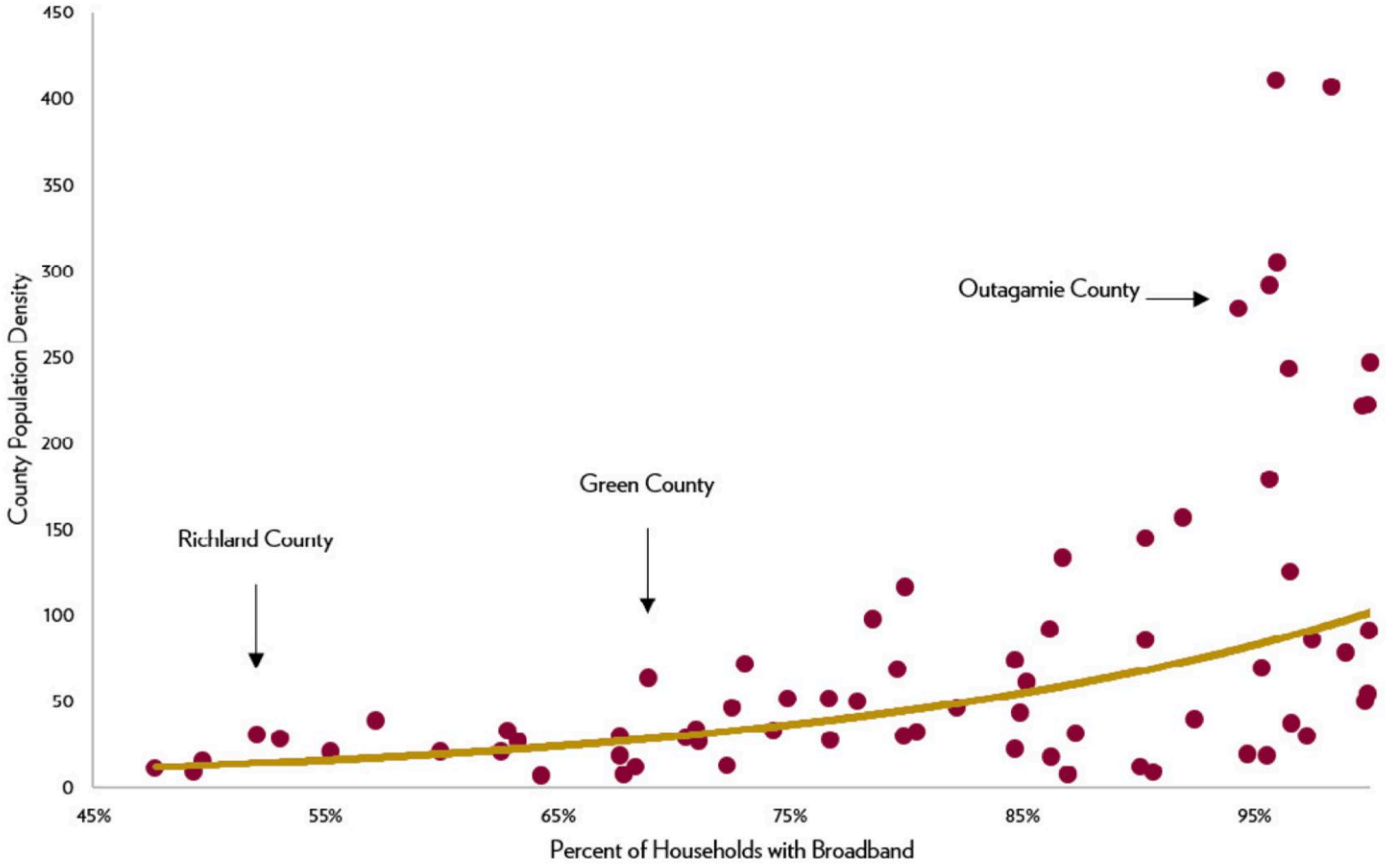
How did we get here?

- High-cost
  - Infrastructure
  - Terrain
- Low density
  - Take rates
  - Share of people who will subscribe if service were available.
- Low ROI

FIG 4

ACCESS TO BROADBAND (25/3 MBPS) BY WISCONSIN COUNTY POPULATION DENSITY



How did we get here?

- Grants and initiatives

- Data limitations
  - Demonstrating need and the FCC data.
    - Collected from providers.
    - Report whether they can or do provide service within a census block.
    - At least one location in the block.
    - Based on advertised speeds.
    - Overstates coverage.

  - DATA Act

How did we get here?

- Additional data needs
  - Nearby providers, existing infrastructure, land, and zoning.

- Limited to specific types of entities.

- Can be cumbersome.
    - Data
    - Technical expertise
    - Financing

- Technical assistance.
    - Broadband Connectors Pilot

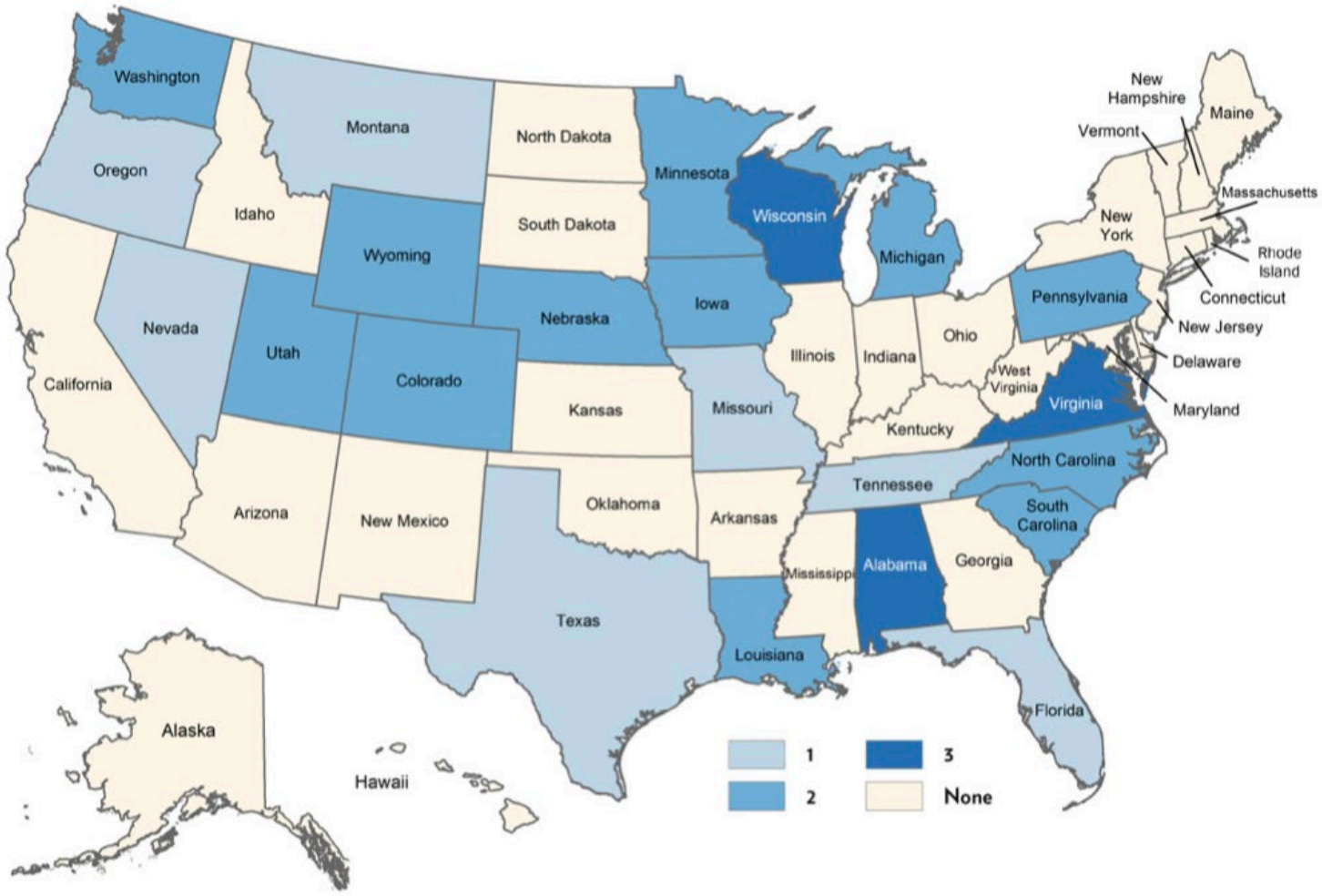
How did we get here?

- Municipal Barriers
  - Whitacre and Gallardo (2020).
- Several cooperative providers.
  - Cost and expertise advantages?

MAP 5

NUMBER OF STATE BARRIERS TO MUNICIPAL BROADBAND

FUNDING, COMPETITION, AND BUREAUCRATIC BARRIERS



[5] Wis. Stat. 66.0422(2)(a)(b)(c)
[6] Wis. Stat. 66.0422(3d)
[7] Wis. Stat. 66.0422(3m)
[8] Wis. Stat. 196.204(2m)

FIG 6

FEDERAL COST OF IMPLEMENTATION OF ANALOGOUS INFRASTRUCTURE

IN BILLIONS OF DOLLARS. INFLATION ADJUSTED FOR 2017

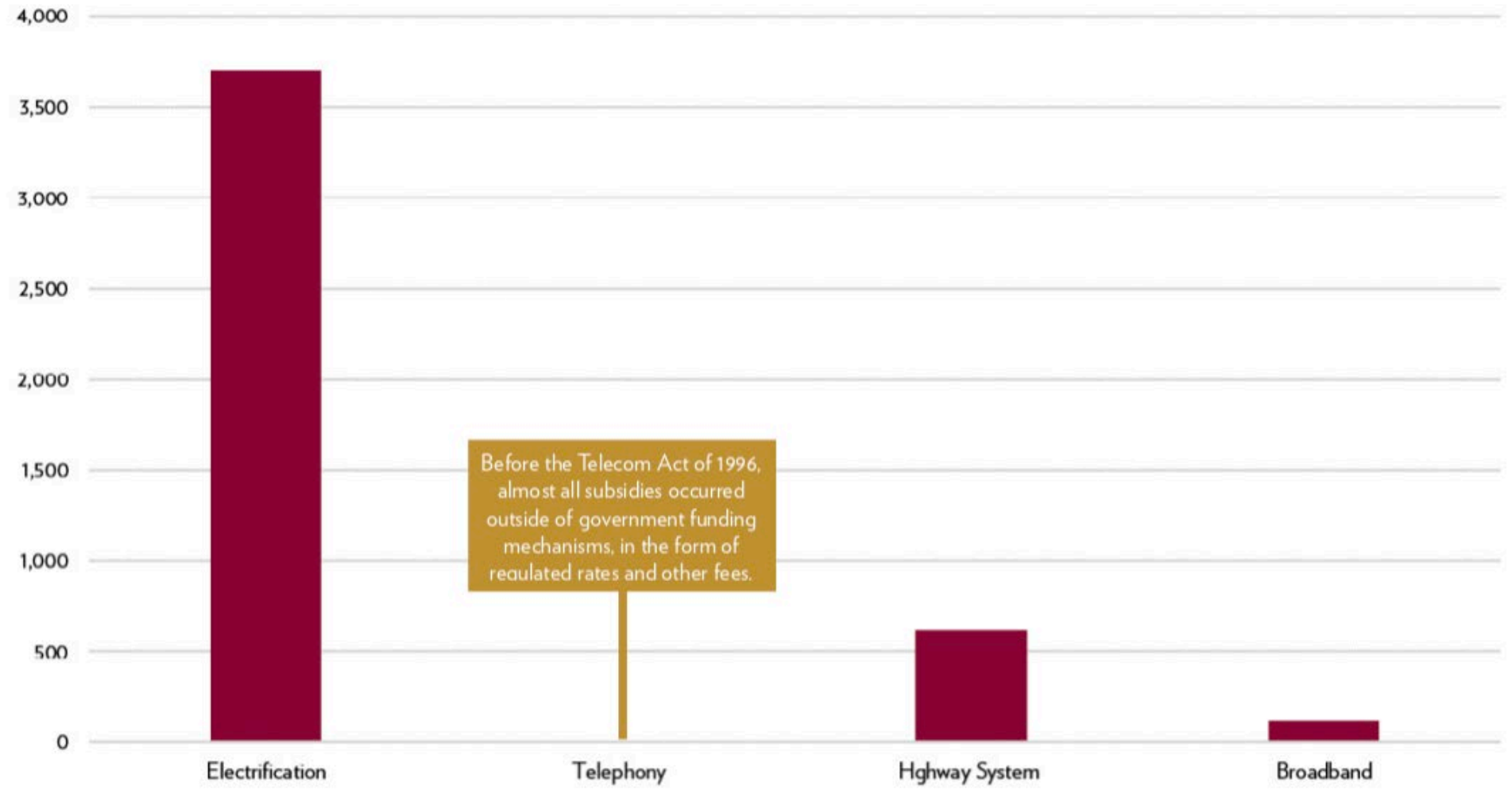


Figure reproduced from Low, S.A. "Rural Development: Perspectives from my Federal and State - Local Experiences," April, 6, 2019. Presidential Address. Southern Regional Science Association

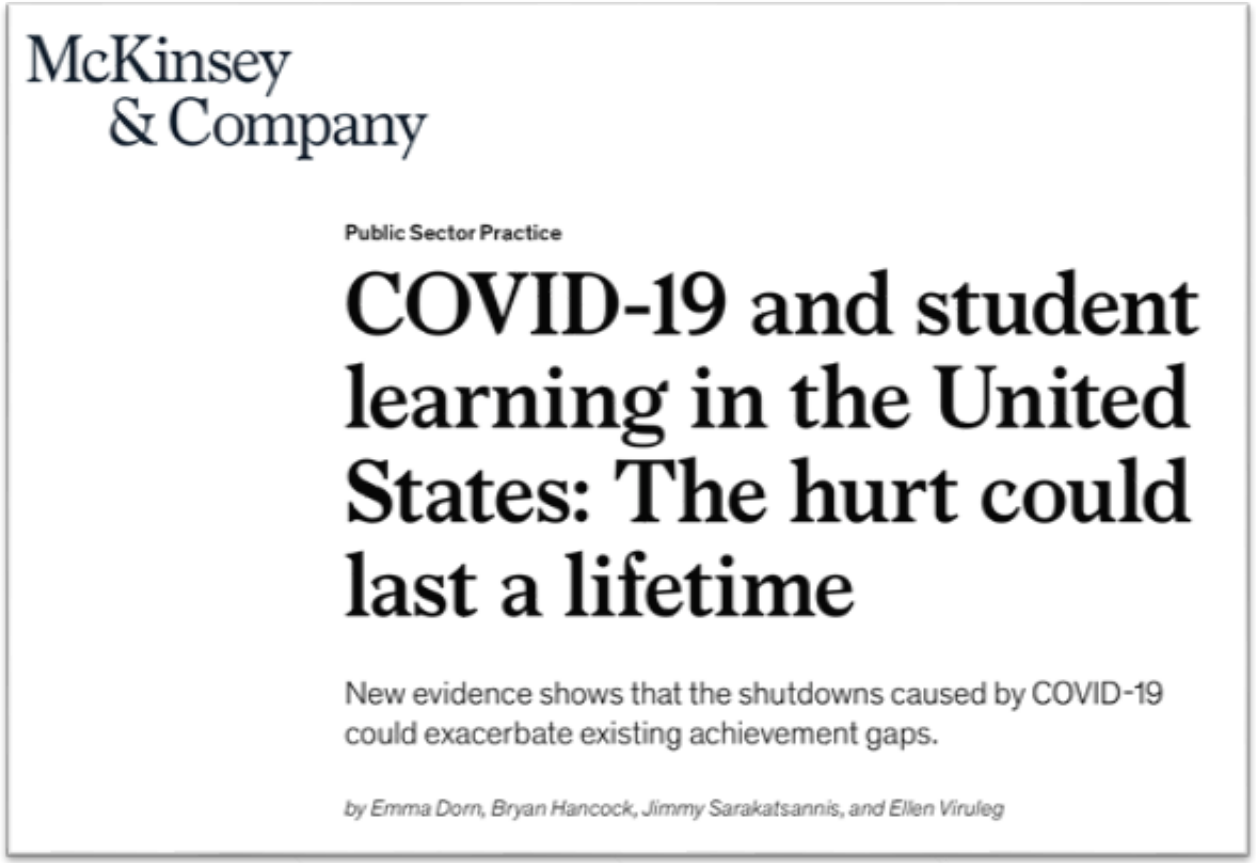
What are the costs?

- Population and employment
  - Preferences for places with broadband
  - Housing values
  - COVID-era shifts in telecommuting

- Entrepreneurship
  - More startup activity in places with greater access
  - Connection to job creation, income growth, and poverty alleviation.

What are the costs?

- Education
  - Better outcomes in places with greater access.
  - 3rd grade reading scores
  - ACT Scores
  - Share of the population with some college.
  - COVID era?


McKinsey & Company

Public Sector Practice

COVID-19 and student learning in the United States: The hurt could last a lifetime

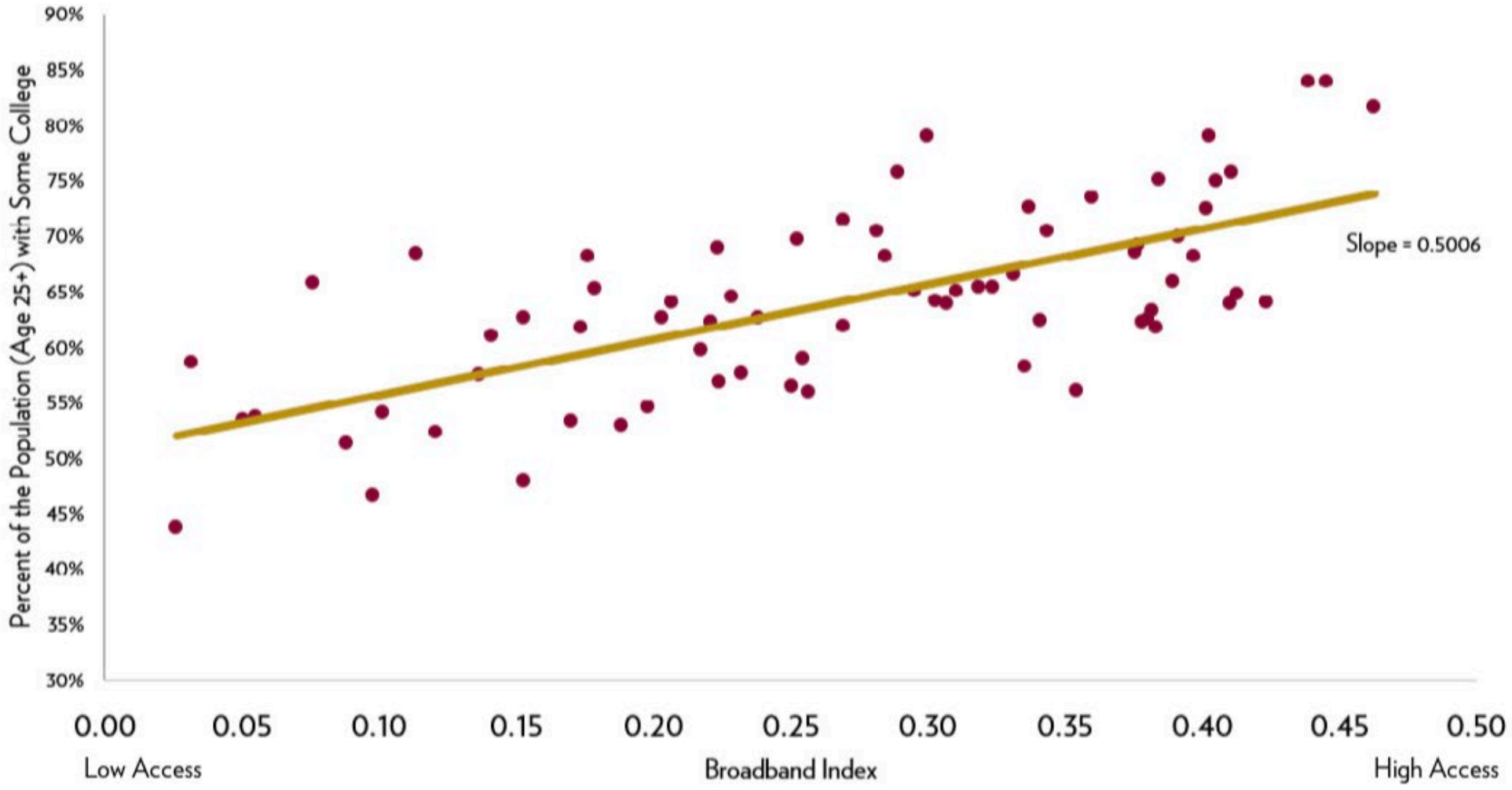
New evidence shows that the shutdowns caused by COVID-19 could exacerbate existing achievement gaps.

by Emma Dorn, Bryan Hancock, Jimmy Sarakatsannis, and Ellen Viruleg

FIG 8

BROADBAND INDEX AND EDUCATIONAL ATTAINMENT IN WISCONSIN COUNTIES

PERCENT OF POPULATION (AGE 25+) WITH AT LEAST SOME COLLEGE



What are the costs?

- Health
  - Better health outcomes in places with greater access.
    - Percent of the population reporting Poor or Fair Health.
    - Poor mental health days.
  - Broadband viewed as “super-determinant of health.”
    - Health outcomes largely determined by socioeconomic factors.
    - “Social Determinants of Health”
      - Education
      - Income
      - Access to healthy food
      - Safe housing
    - Broadband an underlying factor for several determinants

Broadband Access

- State Broadband Program
  - Communicating
  - Planning
  - Data management and improvement
  - Grant administration

- Funding
  - 57 Federal Programs
  - State-level grants and loans
  - Tax incentives, bonds, specific-purpose funds, philanthropy

Broadband Access

- Alternative providers/local provision
  - Municipal
  - Cooperatives
  - Anchor institutions
    - Schools
    - Libraries
    - Hospitals

Broadband Adoption

- Gap in adoption
  - Nonmetro lags metro adoption rates by 12-13 percentage points
- Due to demographic characteristics (Whitacre et al. 2015)
  - Rather than lack of infrastructure
- Low adoption attributed to…
  - Lower income
  - Education attainment
  - Older population
- Lower willingness to pay
  - Low valuation of service.
  - Affordability challenges.
  - Less prevalent computer ownership.
  - Digital literacy gaps

Broadband Adoption

- Less than ¼ of federal spending on rural expansion has gone toward affordability/adoption.

- Important for attracting private investment.
  - Affects the take rate

- Affordability
  - Assistance for households who could utilize programs
    - Subsidy?
  - Cost of infrastructure
  - Competition and alternative models
    - Models other than profit maximization

- Preferences
  - Value and willingness to pay
  - Digital literacy

Considerations for Success

- Leadership
  - Person, team, organization
  - Technical assistance

- Partnership
  - With providers
  - Cooperatives
  - Anchor institutions

- Data alternatives.
  - Surveys
  - Speed tests

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