Current issues in rural health

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Rural Health Research Seminar Series

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Collaborative work: project team listed at end of presentation

About Carolina Seminars

- This research series is sponsored by Carolina Seminars
- The Seminars serve the public service mission of the University to the people of North Carolina and beyond through an expanding collaborative effort on timely topics of interest to public policy and scholarly exchange.
- More info: http://carolinaseminars.unc.edu

About the NC Rural Health Research Program

- Based at The Cecil G. Sheps Center for Health Services Research, UNC
- Major funder: Federal Office of Rural Health Policy (HRSA/HHS)
  - Conduct research to advise "the Secretary on health issues within these communities, including the effects of Medicare and Medicaid on rural citizens' access to care, the viability of rural hospitals, and the availability of physicians and other health professionals" (§711 SSA)

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Agenda

- Defining rural
  - (I know, I know…)
- Rural health at a glance
  - Focus on mortality
- Some “gotchas”
- Current issues
- NC Players

General posture

- Orientation to rural North Carolina
- Rural health, mix of NC as an example and US
- Focus more on secondary, quantitative analyses
- Interrupt as you want!

Defining Rural

What is *rural*?

Defining *rural*

- Rural means different things to different people
  - "There's a farm near us."
  - "There is no hospital for 122 miles."
- This location
  - 17 minutes from a Level I Trauma
  - Metropolitan county of 1m
  - Does not quality for FORHP grant
- Is it "rural"?

Metropolitan County, RUCA 2.0

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Measuring *rural*

- "Rurality" is a spectrum, subjectively defined
- For policy, we need formal definitions
- Common definitions:
  - County-based: Metro vs. non-metro (micropolitan and "non-core")
  - ZIP-based: RUCAs
  - FORHP: Nonmetro OR rural RUCA
- Can be important distinction (e.g. poverty rates)
  - Urbanized areas > non-urbanized areas
  - Metro areas < non-metro areas
  - *Census Bureau has reported it both ways*
- *Some of the places you think are rural might not be as measured by the federal government; the places you think are urban probably are urban*

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Defining rural

- Rural is a latent concept which needs to operationalized
  (access to healthcare, culture, lifestyle, socioeconomics…)

Take a moment to think about areas near here and whether you think they are rural

- Federal government has at least 15 definitions (11 by USDA alone). Most use some combination of three variables:

1. Size of population
2. Population density
3. Commuting patterns

Measured at different levels: county, Census tract, ZIP code are common

How do these different definitions exist in NC?

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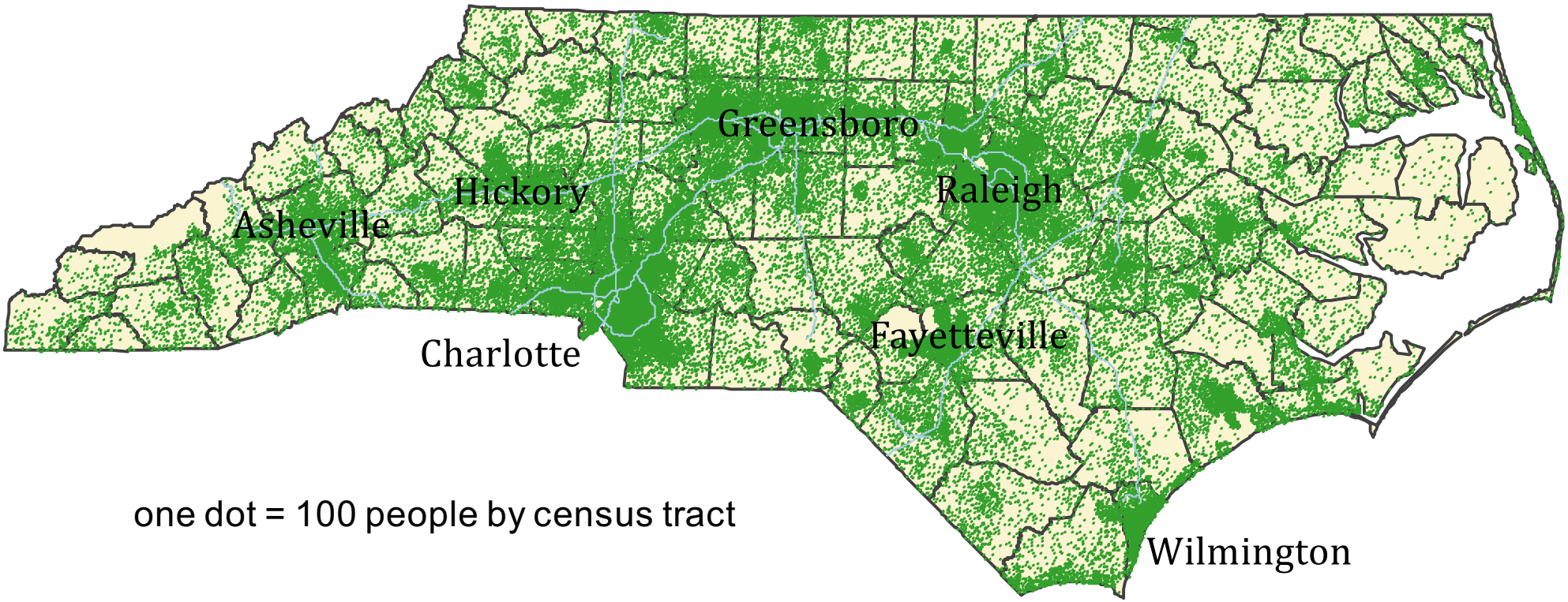
Where North Carolinians live



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Common county-based: metro, micro, “noncore”

+ “any adjacent counties that have a high degree of social and economic integration, as measured by commuting to work” (US OMB)

Metropolitan

- Core urban area of 50,000+
- Raleigh, Rocky Mount

Micropolitan

- Core urban area of 10,000 - 49,999
- Kinston, Wilson

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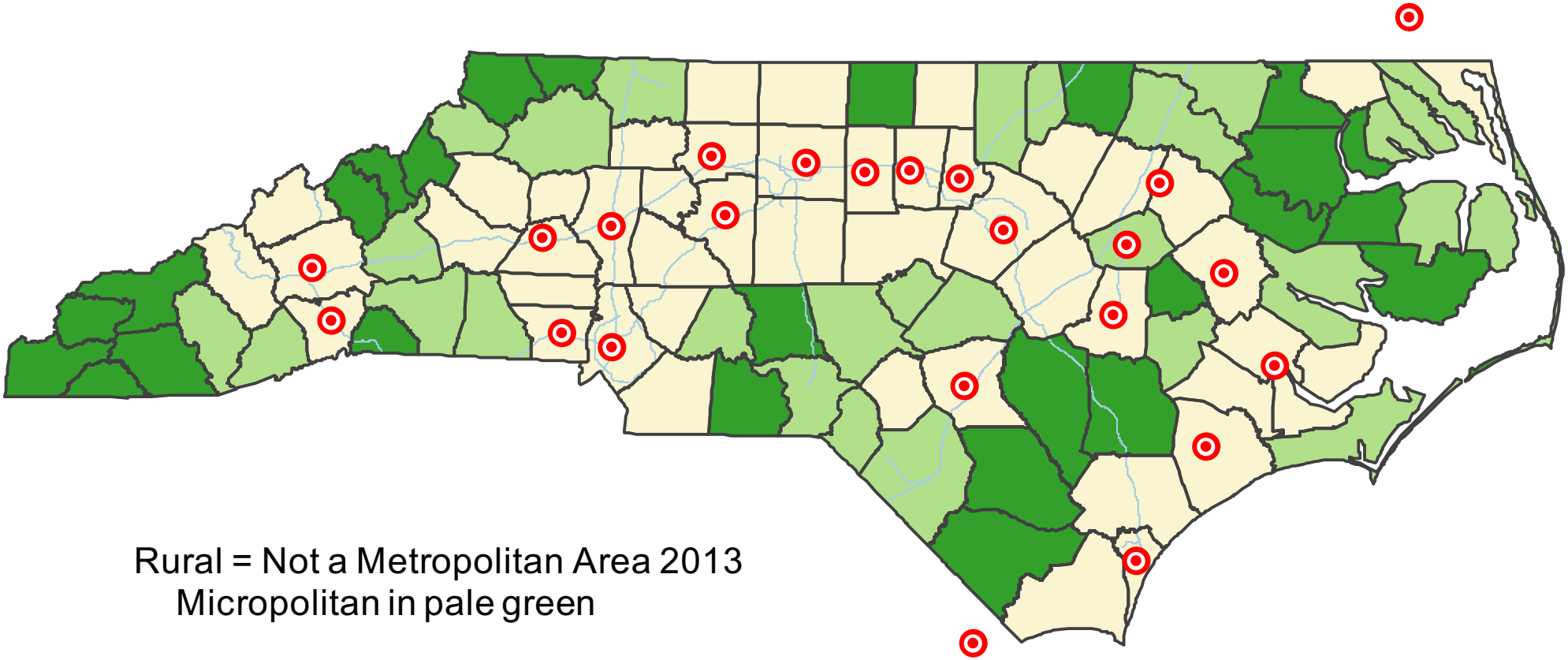
"Applebee's, Coral Springs" by User:Afl2784. Licensed under CC BY-SA 3.0 via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:Applebee%27s,_Coral_Springs.jpg#/media/File:Applebee%27s,_Coral_Springs.jpg

Targets!



Rural = Not a Metropolitan Area 2013
Micropolitan in pale green

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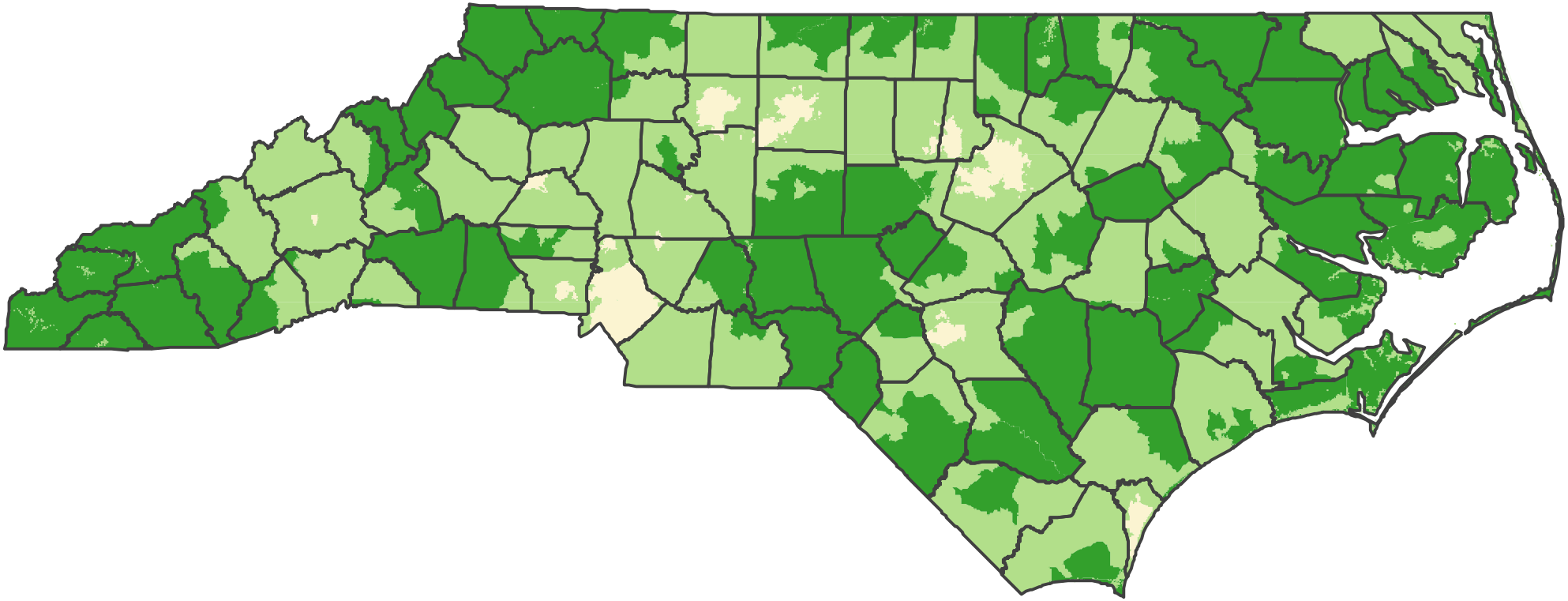
If we view as a continuum: sand = urban, forest = rural, light green = ¯_(ツ)_/¯



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Avoid the temptation of using local measures or building your own

There are lots of rurality measures, including some at the state level. Choose a standard measure to increase generalizability. Rural researchers gripe when you don't use a standard definition.

What Is Rural? Challenges And Implications Of Definitions That Inadequately Encompass Rural People And Places

Kevin J. Bennett, Tyrone F. Borders, George M. Holmes, Katy Backes Kozhimannil, and Erika Ziller

AFFILIATIONS

PUBLISHED: DECEMBER 2019 No Access

https://doi.org/10.1377/hlthaff.2019.00910

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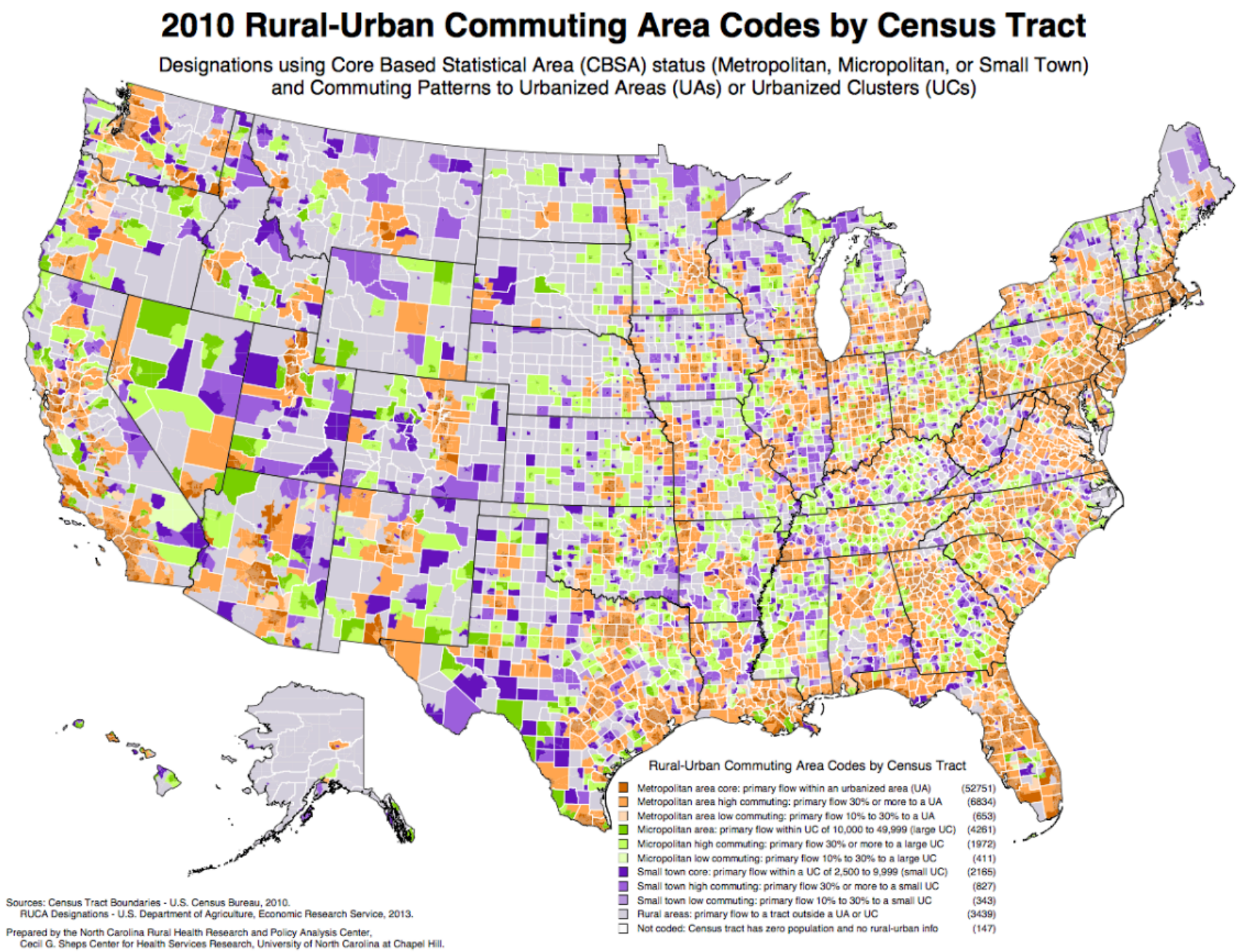
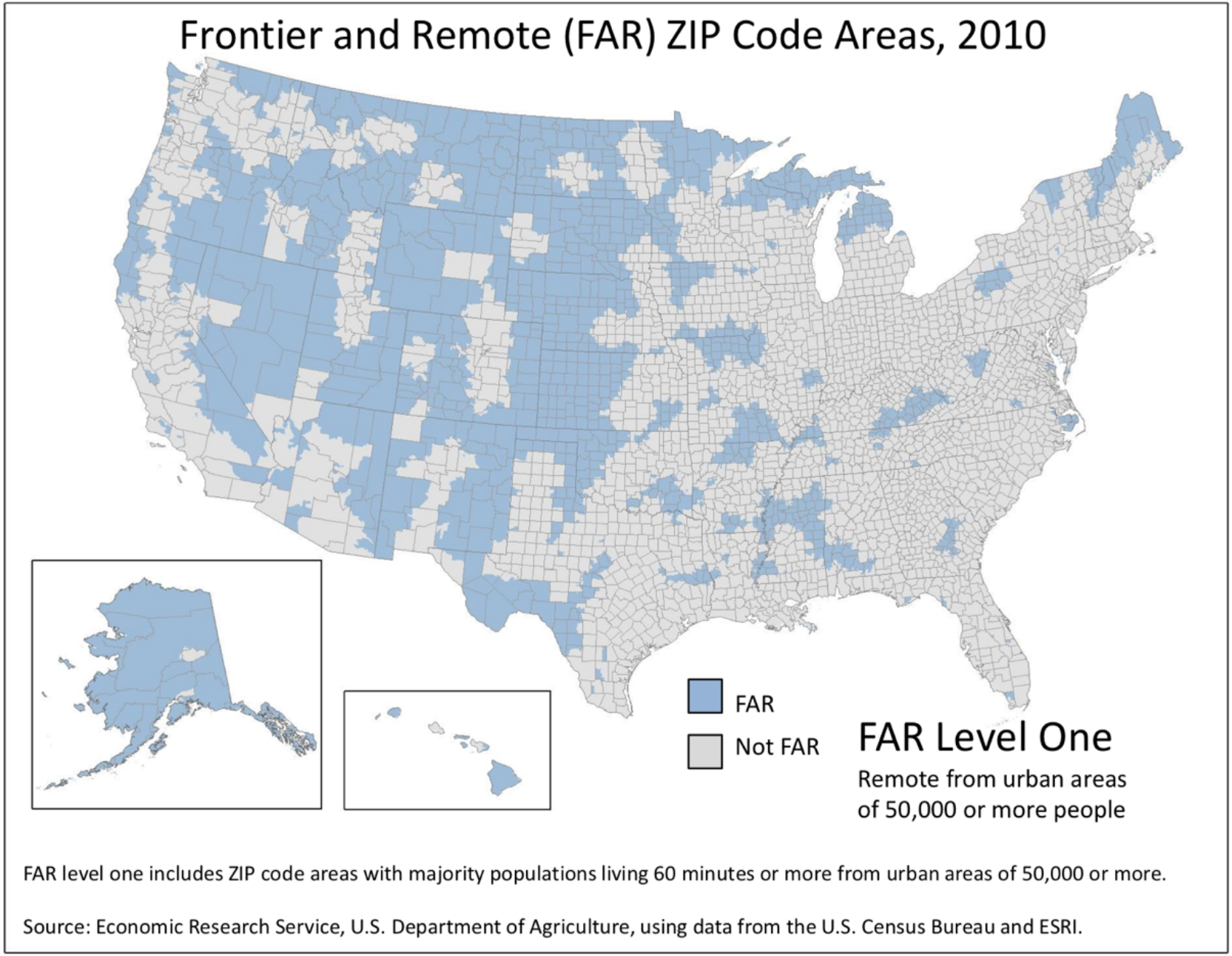
North Carolina rural is different from US rural

- Regardless of how you define it, North Carolinians are “less” rural than many other parts of country
  - Most parts of North Carolina are not too far from a medium size city
- Don’t bring your sense of rurality to the research setting
  - “Rural North Carolina”≠ “Rural Wyoming”

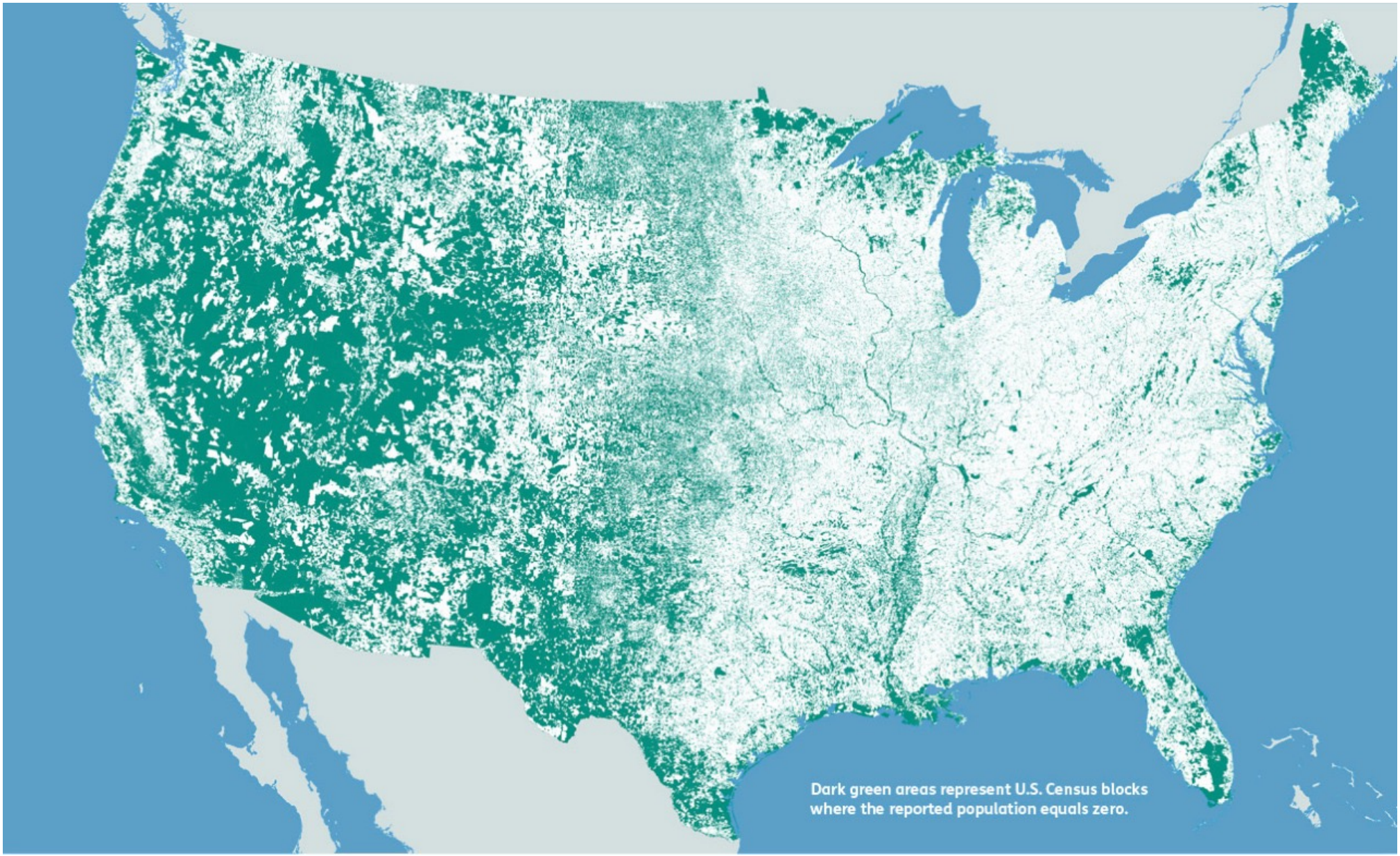
RUCAs: grey/purple “most rural”



ZIPs more than 60 mins from a 50K Urban



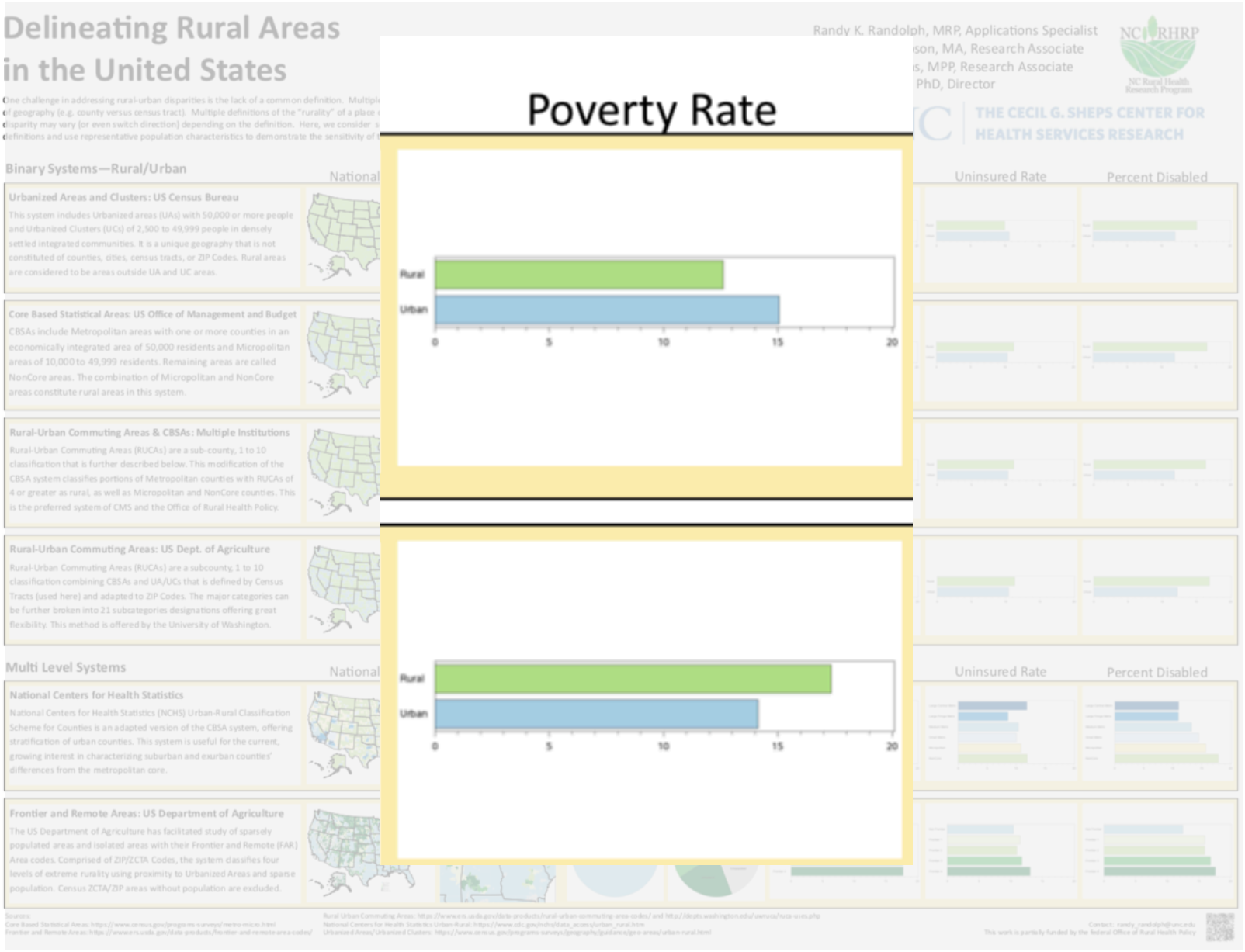
Census blocks with zero population



http://mapsbynik.tumblr.com/image/82791188950

Handy-dandy poster on ruralness

(& disparities depend on the rurality definition)



http://go.unc.edu/ncruralpubs

Takeaway: How we measure rural matters

- Yes, somewhat esoteric, but the definition can be important to the conclusion
- Casual readers probably don't care but the degree of rurality may affect your conclusion
  - Counties are convenient but clunky

Coconino County, Arizona: A Metropolitan County

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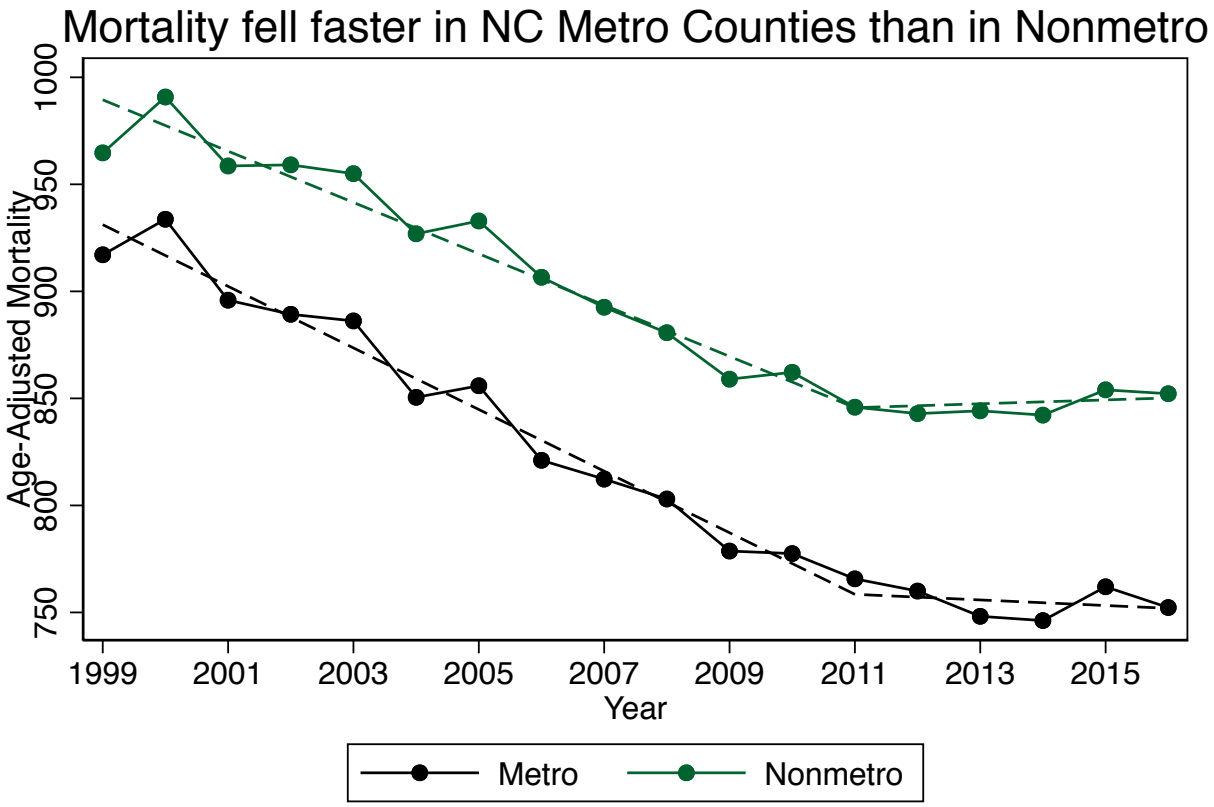
The Rural Context

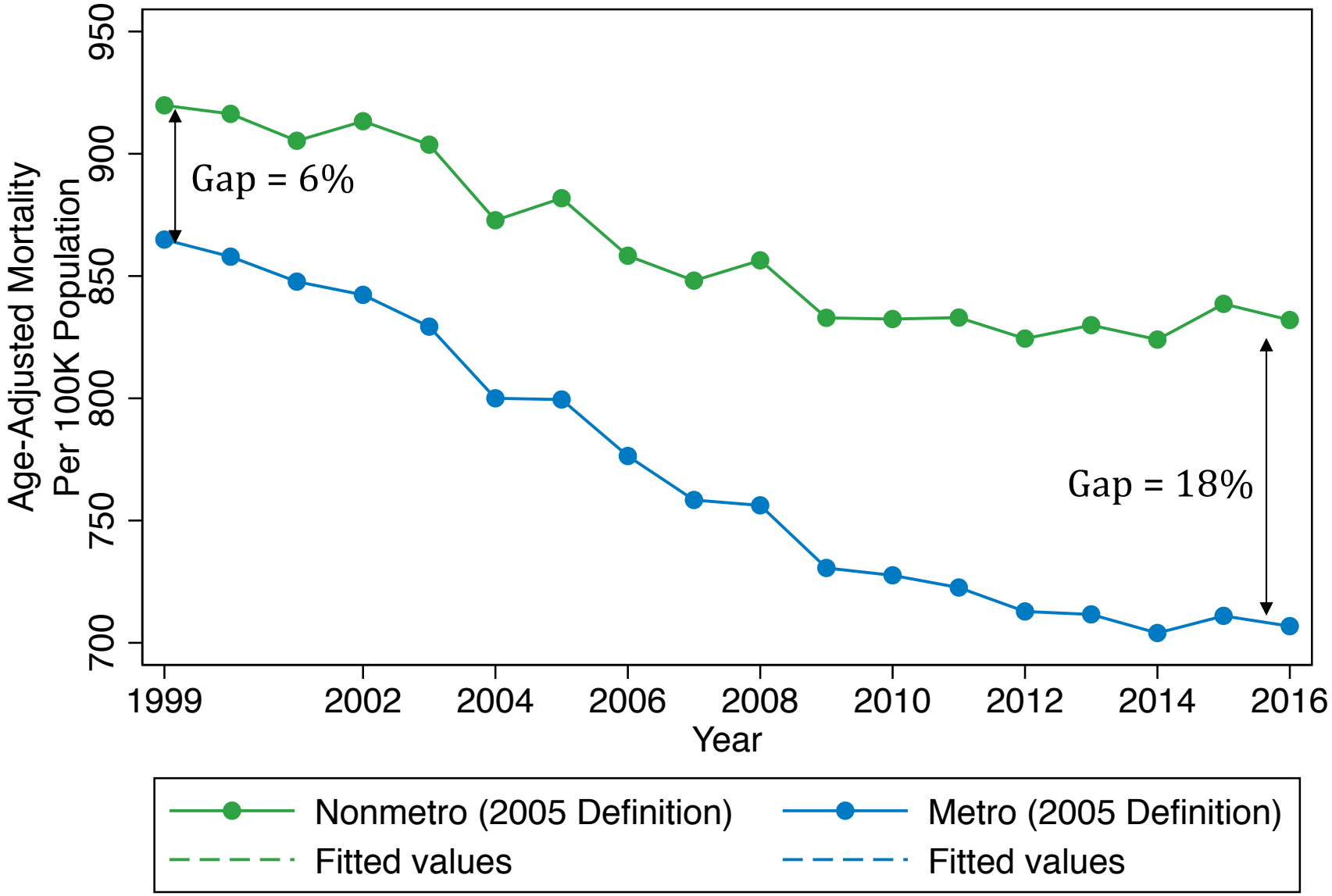
Rural Health at a Glance

- Rural areas poorer health on almost every measure
  - Older, poorer, more isolated
  - **Persistently higher mortality**
- Less healthcare infrastructure
  - Fewer docs, smaller hospitals
  - Half of rural hospitals lose money
- 163 rural hospital closures since 2005
  - 11 in NC



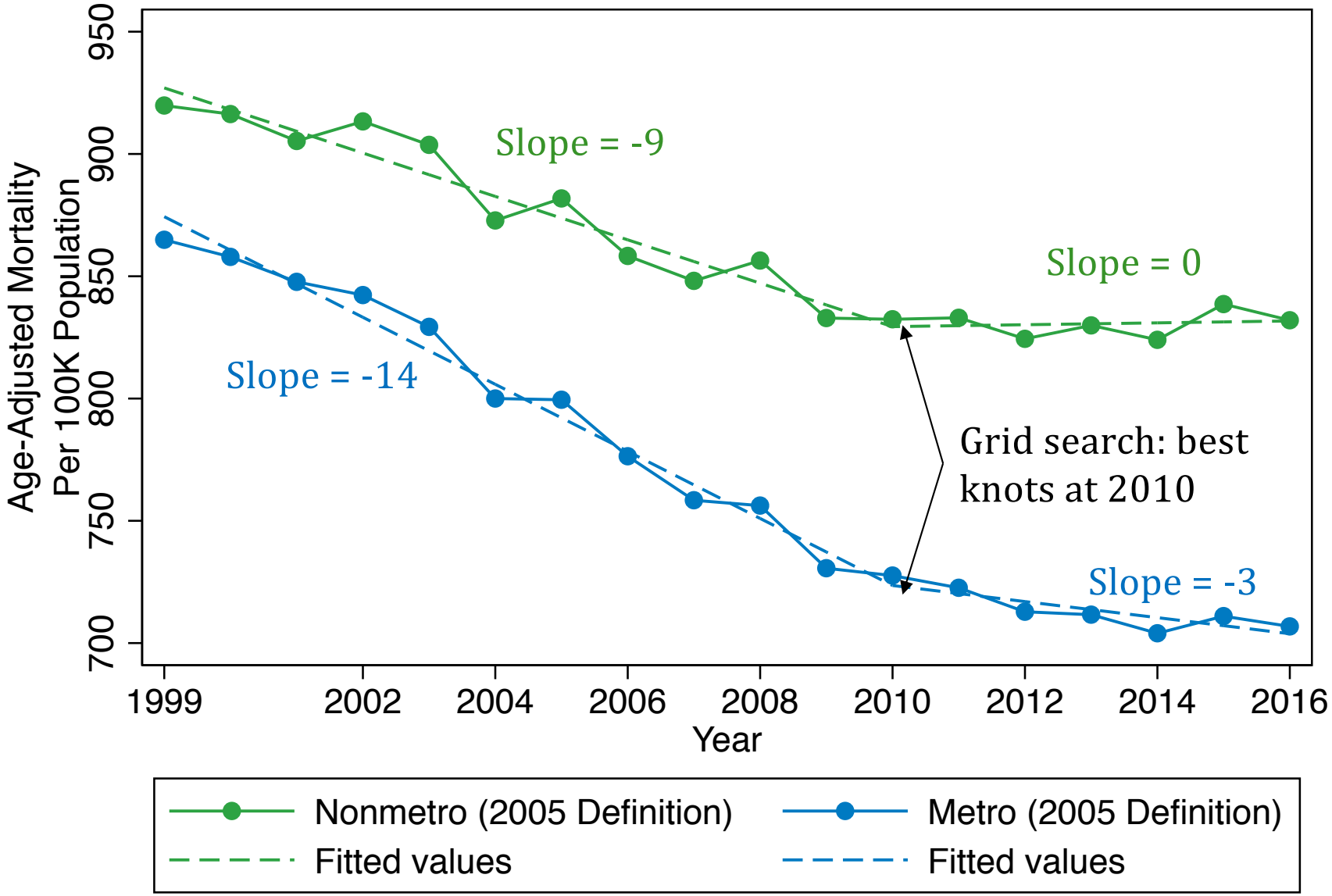
Source: CDC Wonder. Metro status as of 2005

Rural mortality falling more slowly than urban



Source: CDC WONDER / Compressed Mortality File

Rural mortality falling more slowly than urban



Source: CDC WONDER / Compressed Mortality File

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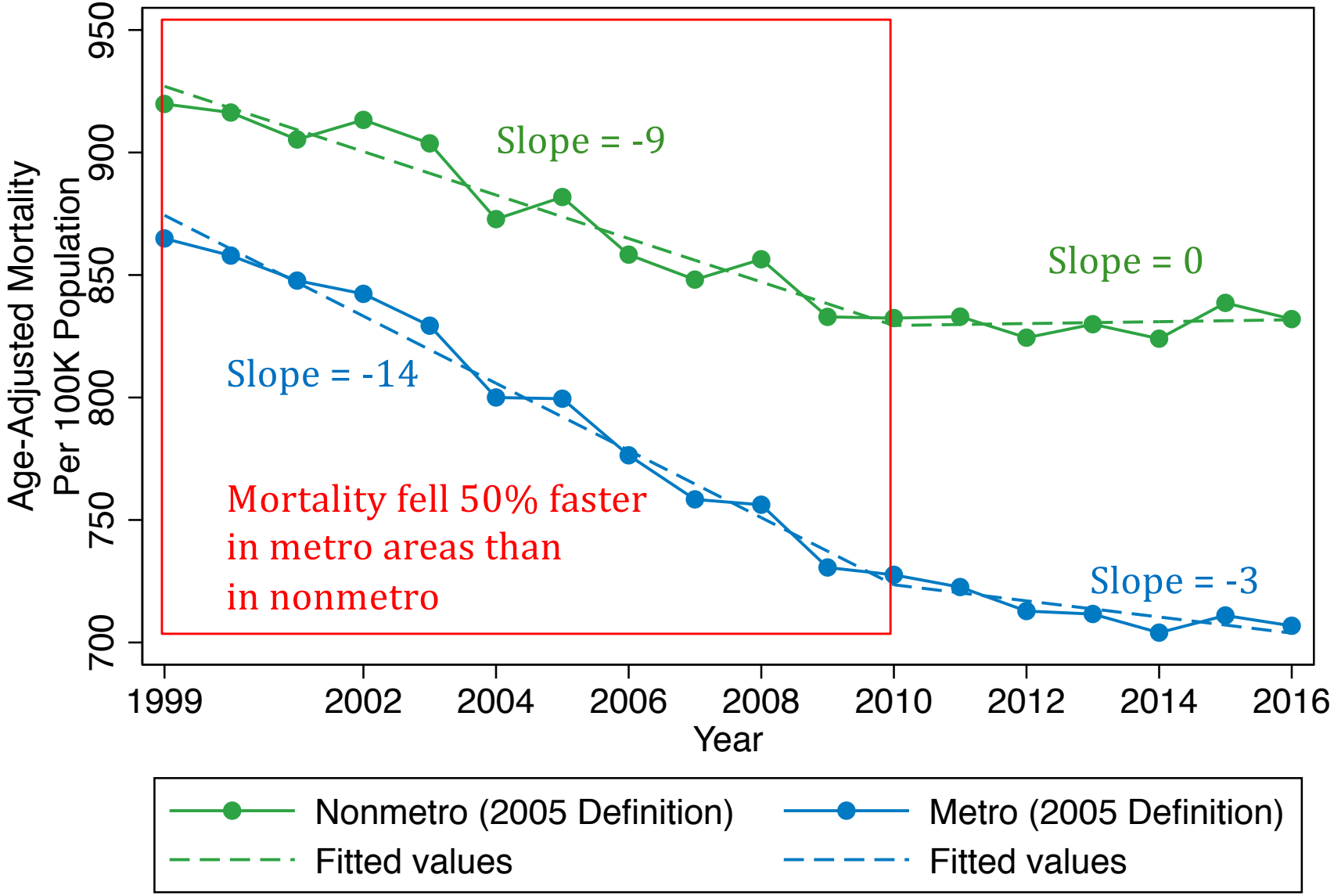

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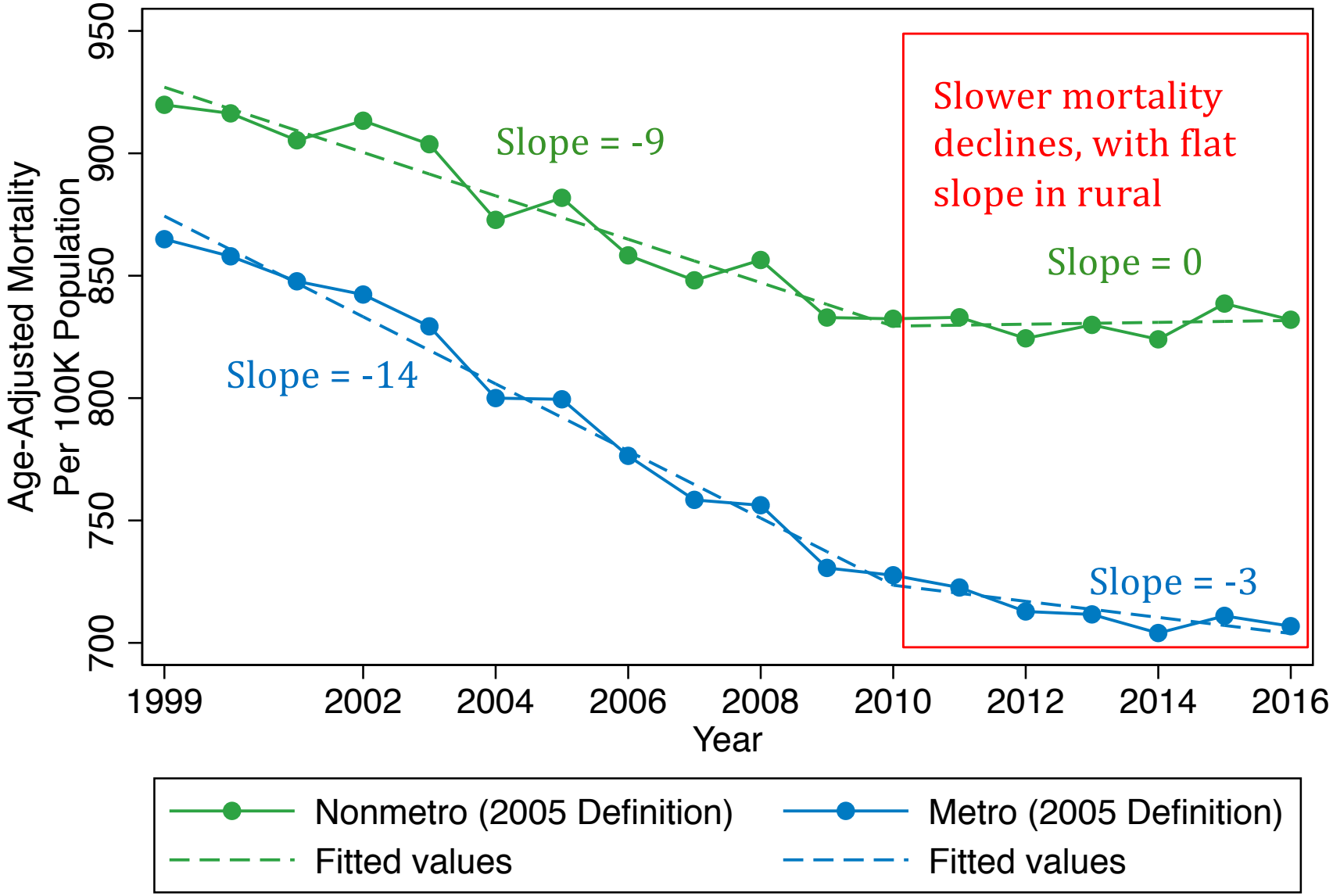
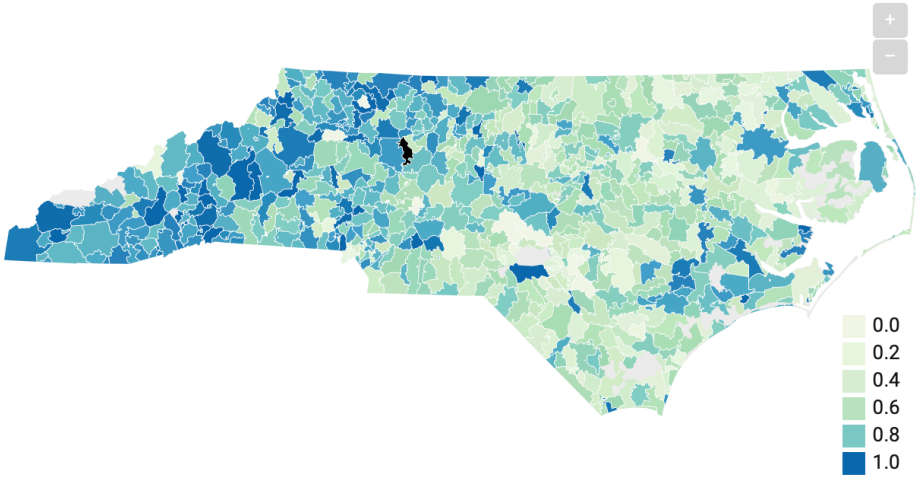


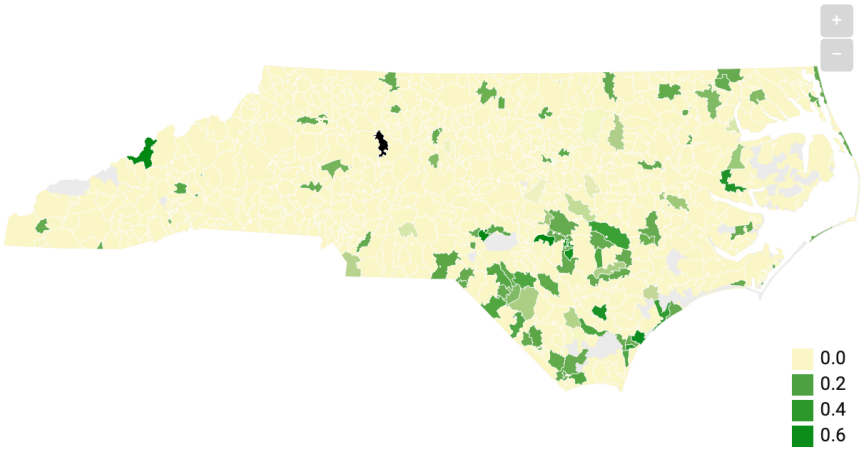
Source: CDC WONDER / Compressed Mortality File

Race/ethnicity

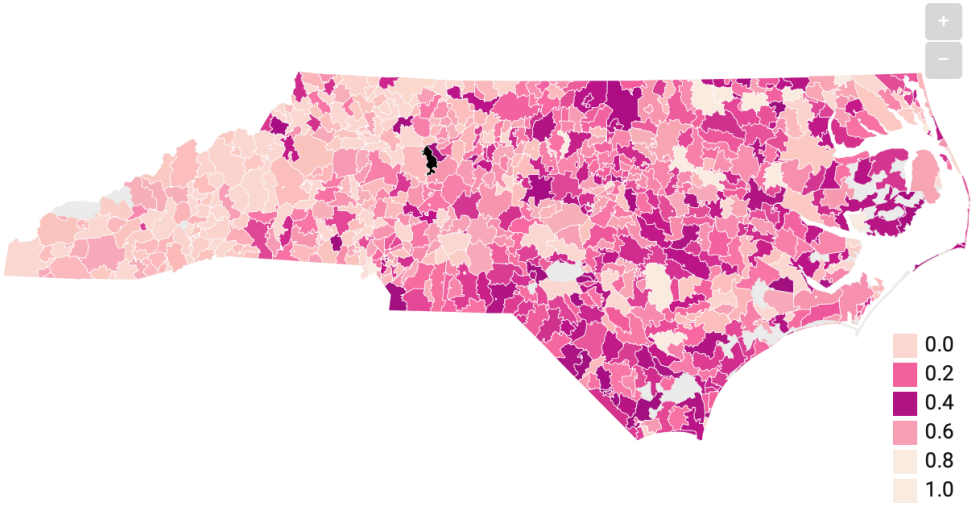
Percent Non-Hispanic White Only



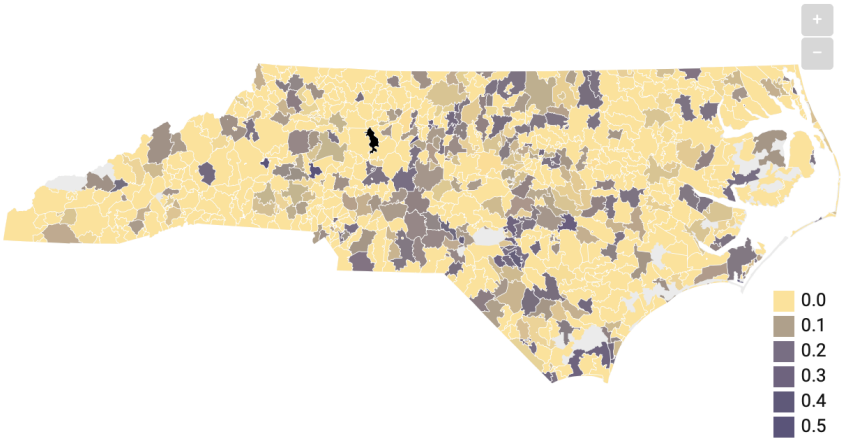
Percent Non-Hispanic American Indian Only



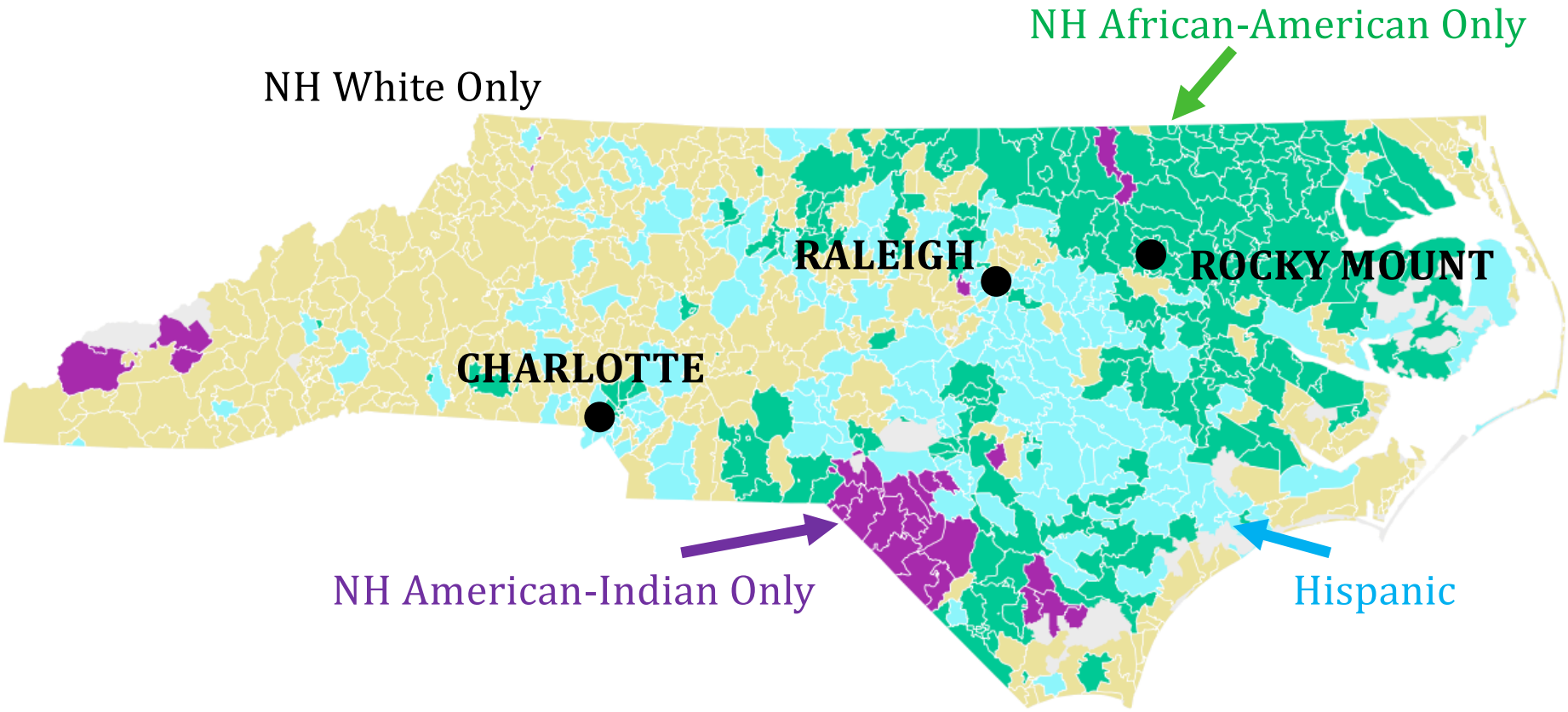
Percent Non-Hispanic African-American Only



Percent Hispanic

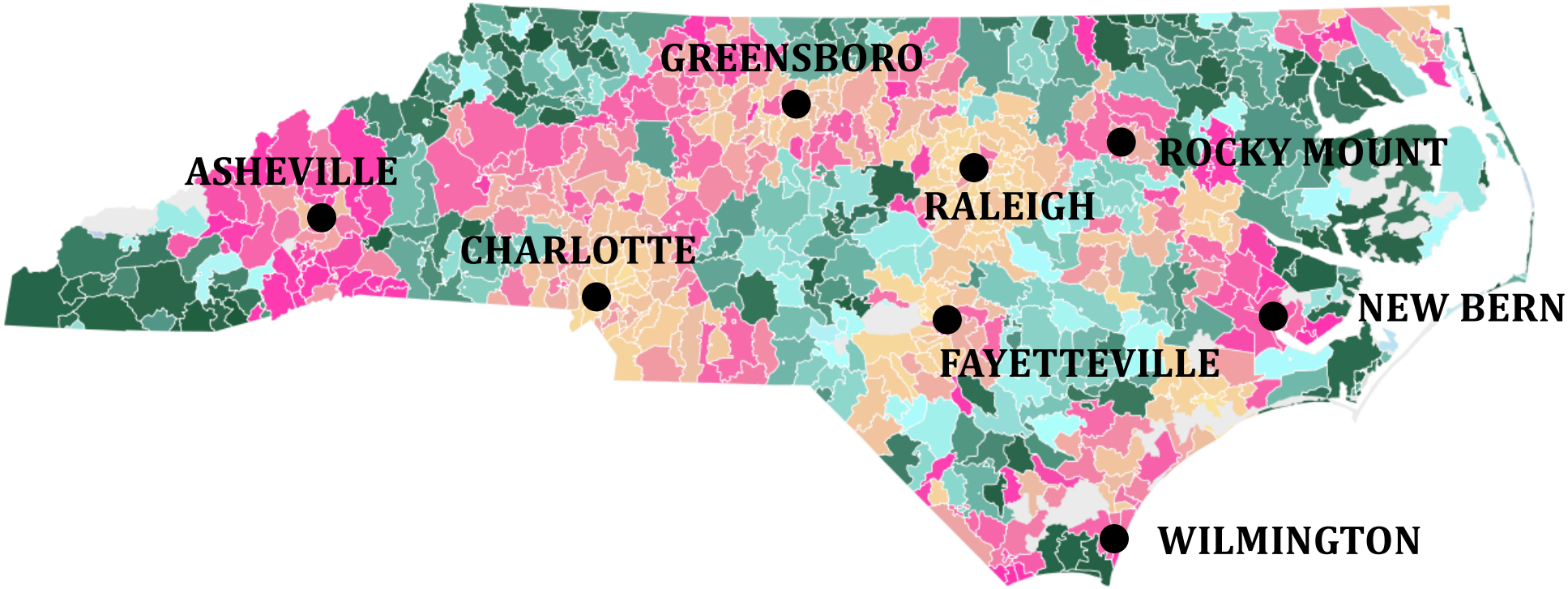


Most "overrepresented" race/ethnicity



Percent Elderly (age>=65) by rural/urban

Green = rural ZIP; Pink = urban ZIP
Darker = higher percent elderly



Percent Elderly (age>=65) – urban ZIPS

Green = rural ZIP; Pink = urban ZIP
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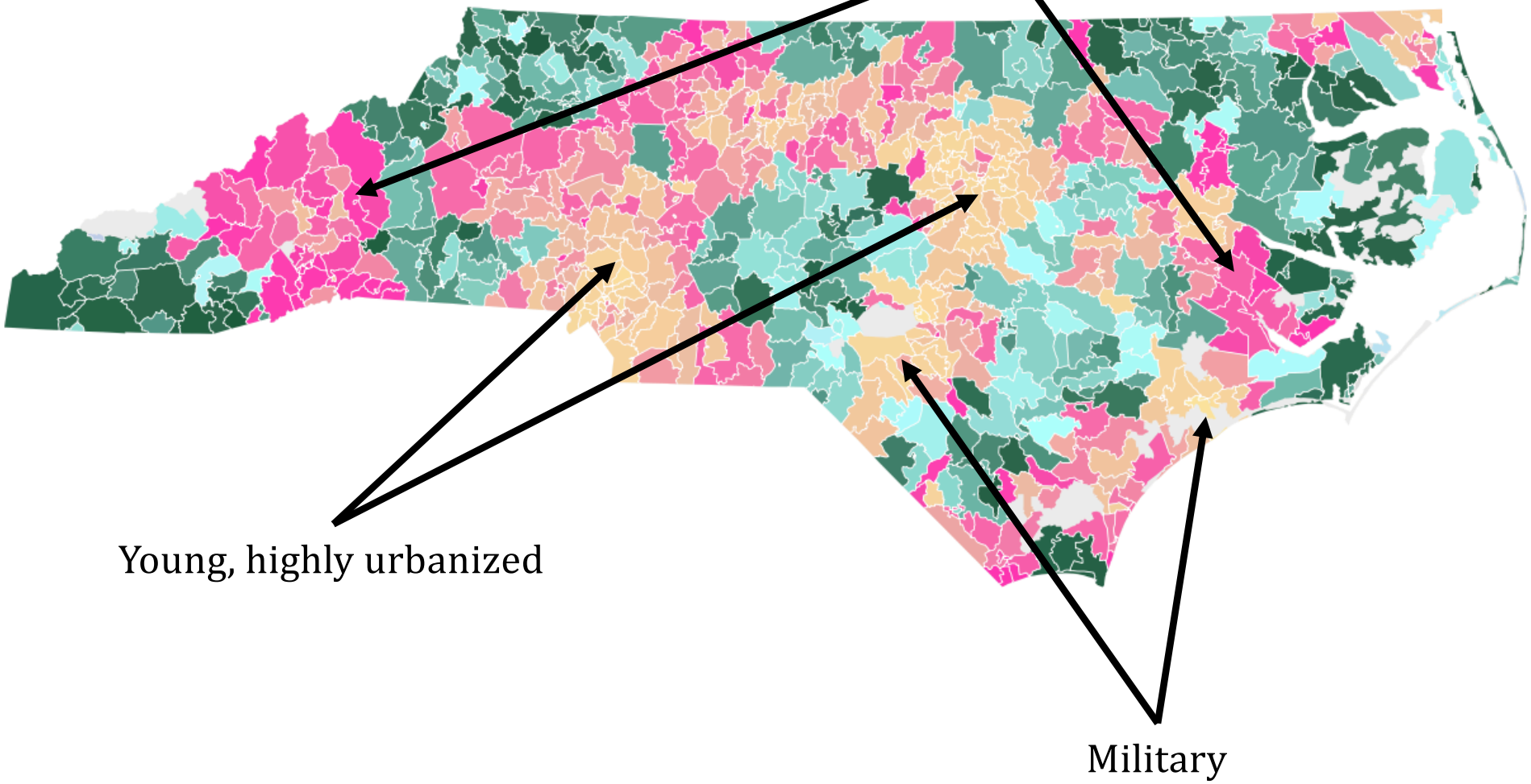

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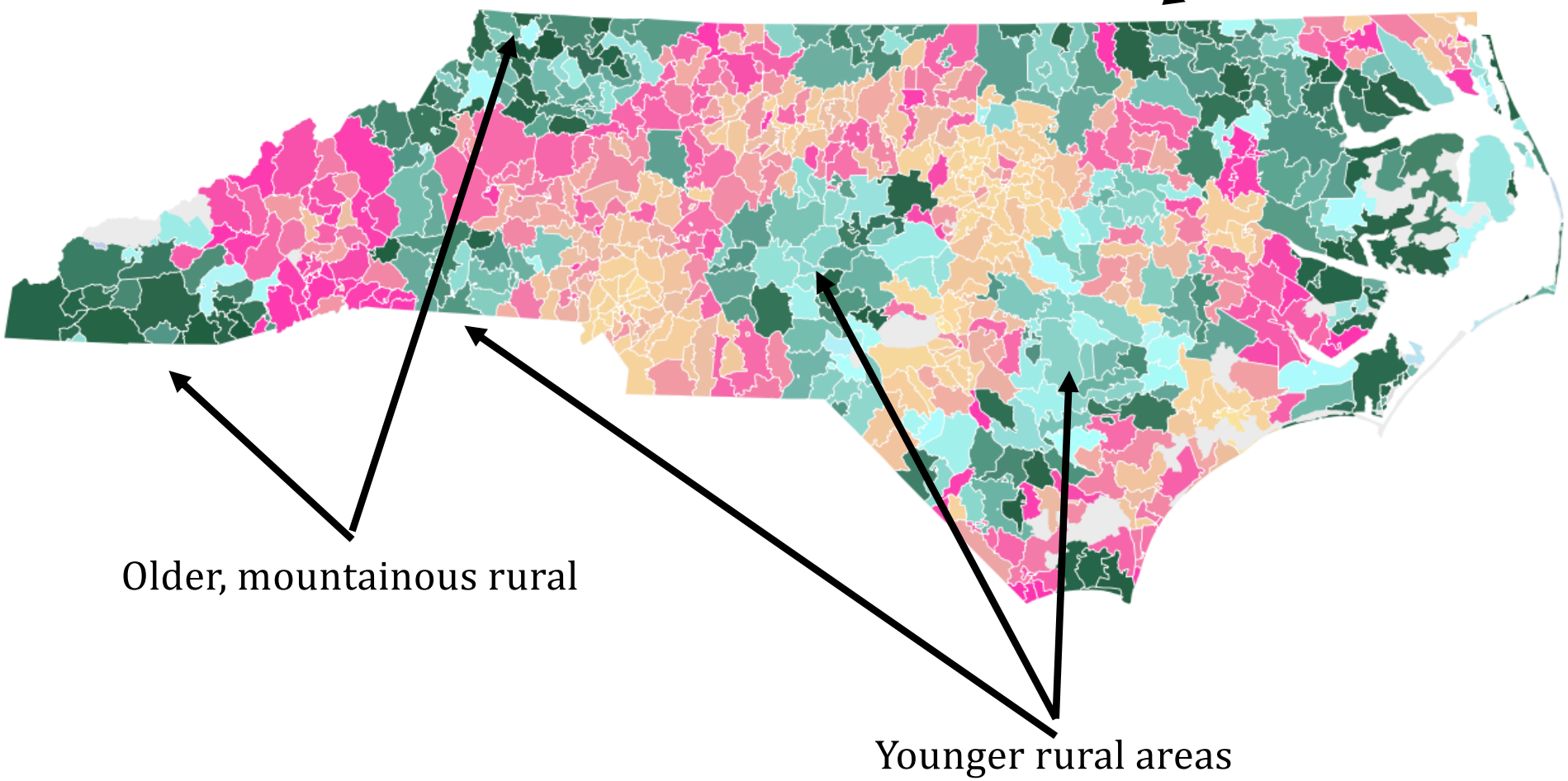


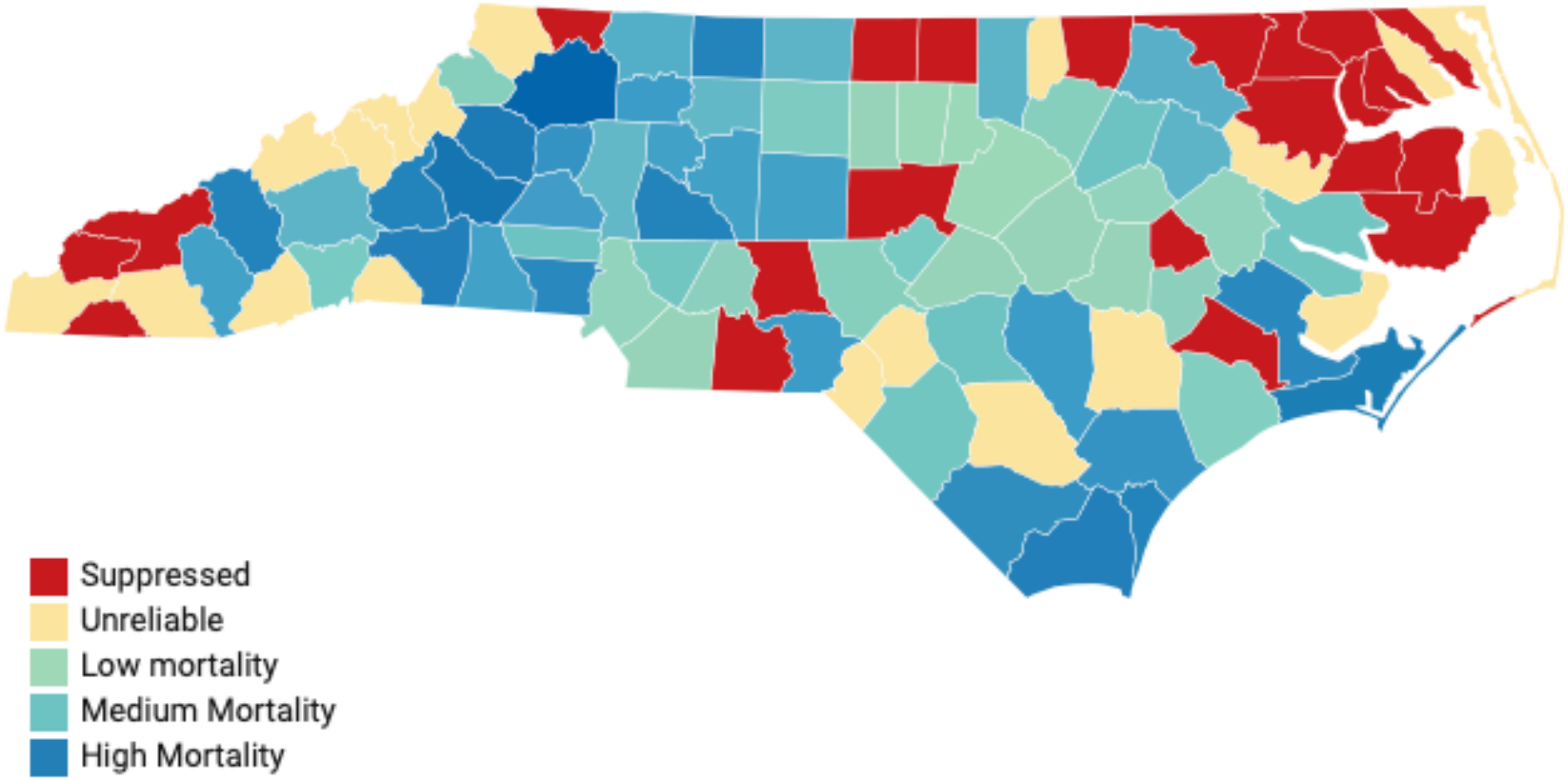
Contextual data in rural settings (Methods)

Three common “gotchas”

- Small numbers are often a problem
- Markets are more complicated
- Deconstruct the rural indicator

Some common issues with data analysis in rural settings

- Small numbers problem
  - Rural areas and providers often have insufficient numbers (suppression, precision)
  - Example: Mortality rates (CDC WONDER Poisoning, 3-year).



Some common issues with data analysis in rural settings

- Small numbers problem
  - Has implications for policy and practice
    - And analysis – imprecision of small denominators
  - Fixed costs, “windshield time”
  - Exclusion from programs and policies (ACO, Star rating)

HEALTH AFFAIRS > VOL. 38, NO. 12: RURAL HEALTH

OVERVIEW

Structural Urbanism Contributes To Poorer Health Outcomes For Rural America

Janice Probst, Jan Marie Eberth, and Elizabeth Crouch

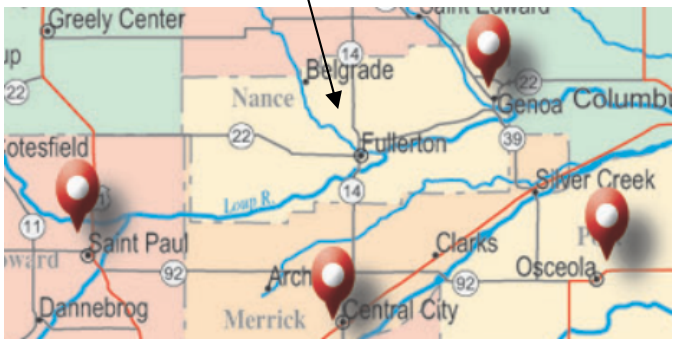
Some common issues with data analysis in rural settings

- Defining the "market" (examples)
  - Acute Care
    - In urban settings, the MSA may serve as a useful measure of the market for some services
    - More challenging assumption in rural areas
    - Split counties
    - Overlapping markets
    - Often weak market share among rural hospitals
  - Home Health / FQHC
    - AHRF (and similar) often list the home office / grantee
    - How to deal with satellite site, HH who drive by the town on the way to work?

Why 1(county has hospital) not always great

What we think hospitals look like in rural counties

Which county – the green or the yellow – has better access to acute care hospitals?

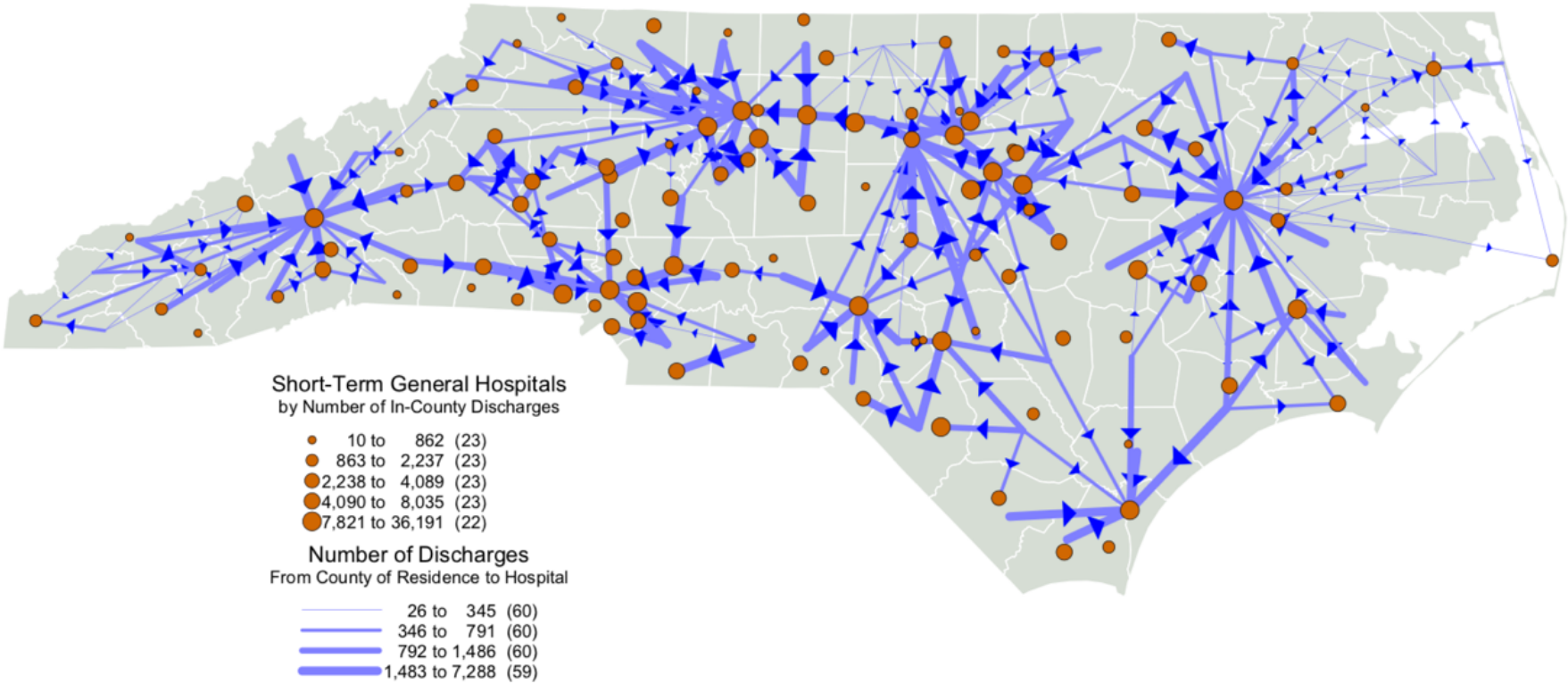


Discharge patterns of care

Patient Origin for North Carolina Residents

Inpatient Discharges by County of Residence and Hospital

Residents Discharged from North Carolina Hospitals: October 1, 2016 to September 30, 2017

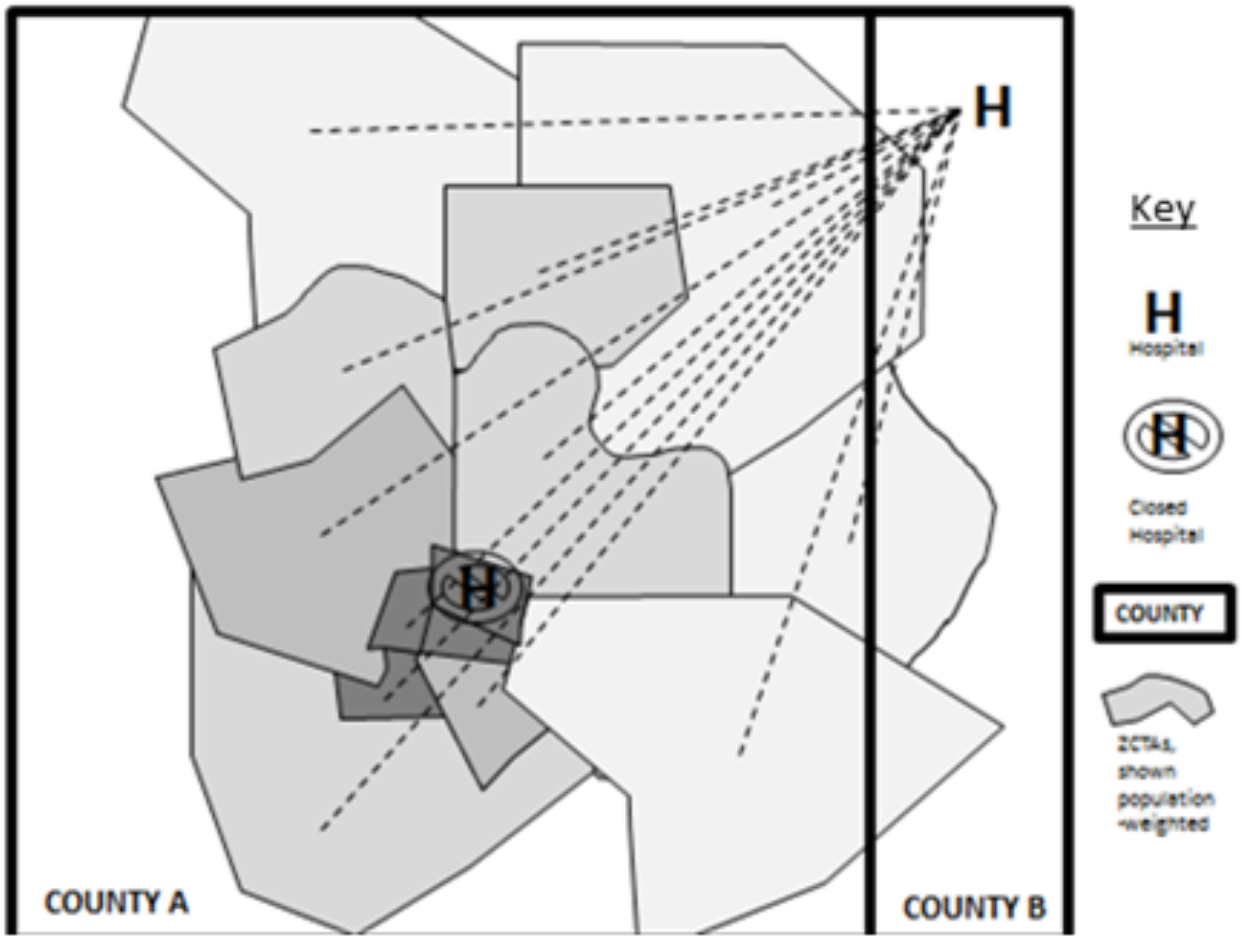


Note: For any county vectors are only drawn for hospitals receiving at least five percent of the county's Discharges.
Discharges from Psychiatric, Rehabilitation, Long Term Care, and Substance Abuse Treatment Facilities are not included.
Normal newborn discharges (DRG 795) excluded.

Source: IBM Watson Health, Fiscal Year 2017.

Produced By: Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.

Defining Markets: think structural



The impact of a closing hospital is probably better conceptualized as "differential distance" than as a county-wide effect.

Here, the closing hospital in A will have bigger effects near the middle but small in the Northeast.

"Percent of population in a county living within 15 miles of a hospital" might be better (eg. Holmes et al 2006)

What do you think `rural` is measuring?

- Think carefully about why you are measuring rurality:
  - Lower population (critical mass)
  - More distant from certain health resource
    - (e.g. specialty care)
  - Culture
  - Socio-demographics
  - Environment (e.g. SDOH)
- To the extent possible, try to think structurally
  - e.g. “distance to nearest rad onc facility”
  - Challenge your assumptions! Interpretation of b_{rural} is sometimes lazy and prejudiced

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Current (and perennial!) issues in rural health

Current hot(?) topics – a partial list (Feb 2020)

- Access
  - Hospital closures, service erosion (e.g. specialty care)
  - Provider supply (local: Rural Residency Planning and Development)
- Outcomes
  - Maternal health (local: Chatham)
  - SUD (although the media often get this wrong)
- Policy
  - Financing (e.g. global budgets) (CHART!)
  - APMs – will there ever be the volume?
  - Systems view – economic development and health

Hot Topic: COVID-19

- How is COVID-19 affecting rural North Carolina?
  - Risk differences?
  - Positive testing rate, mortality?

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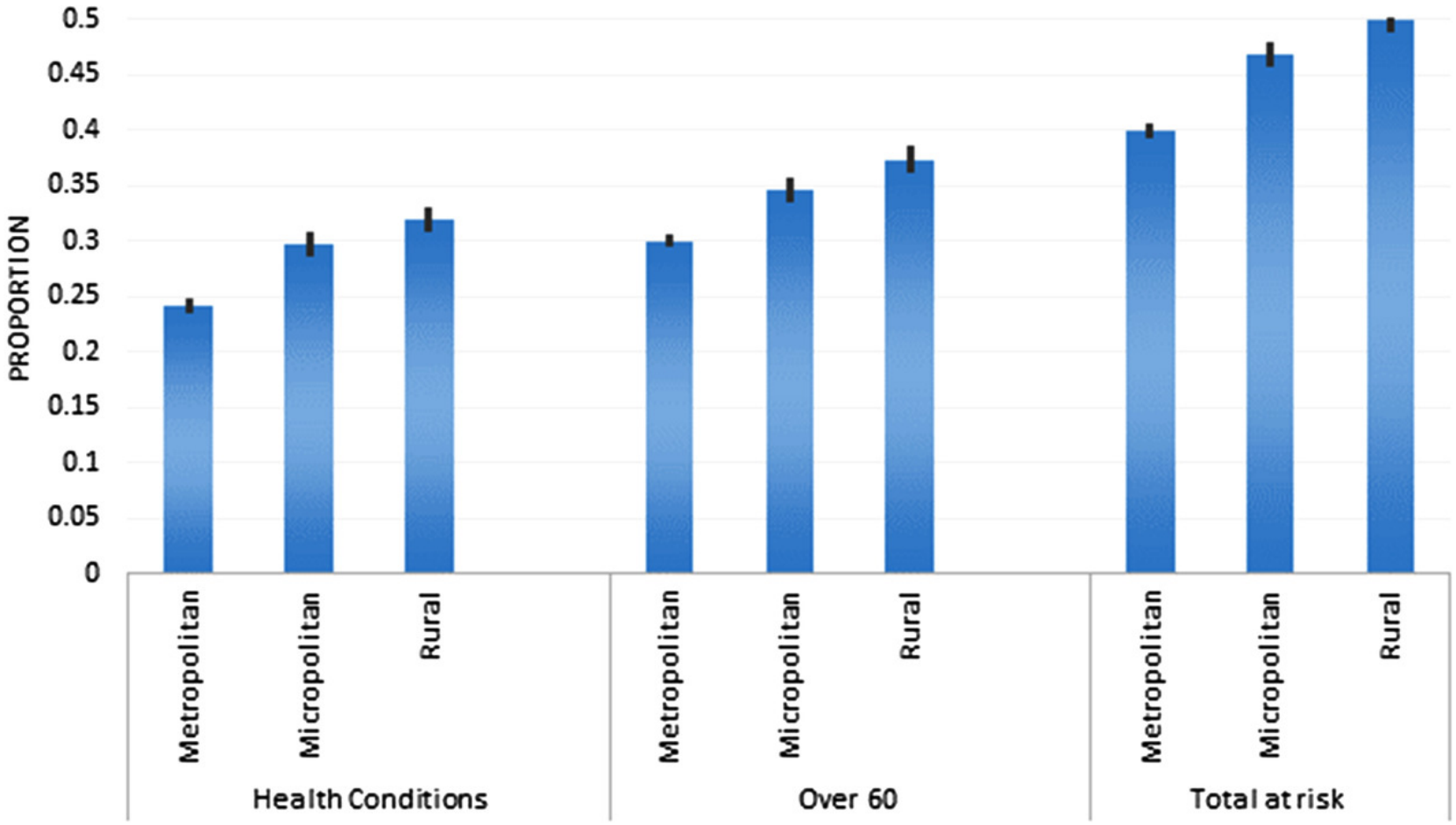
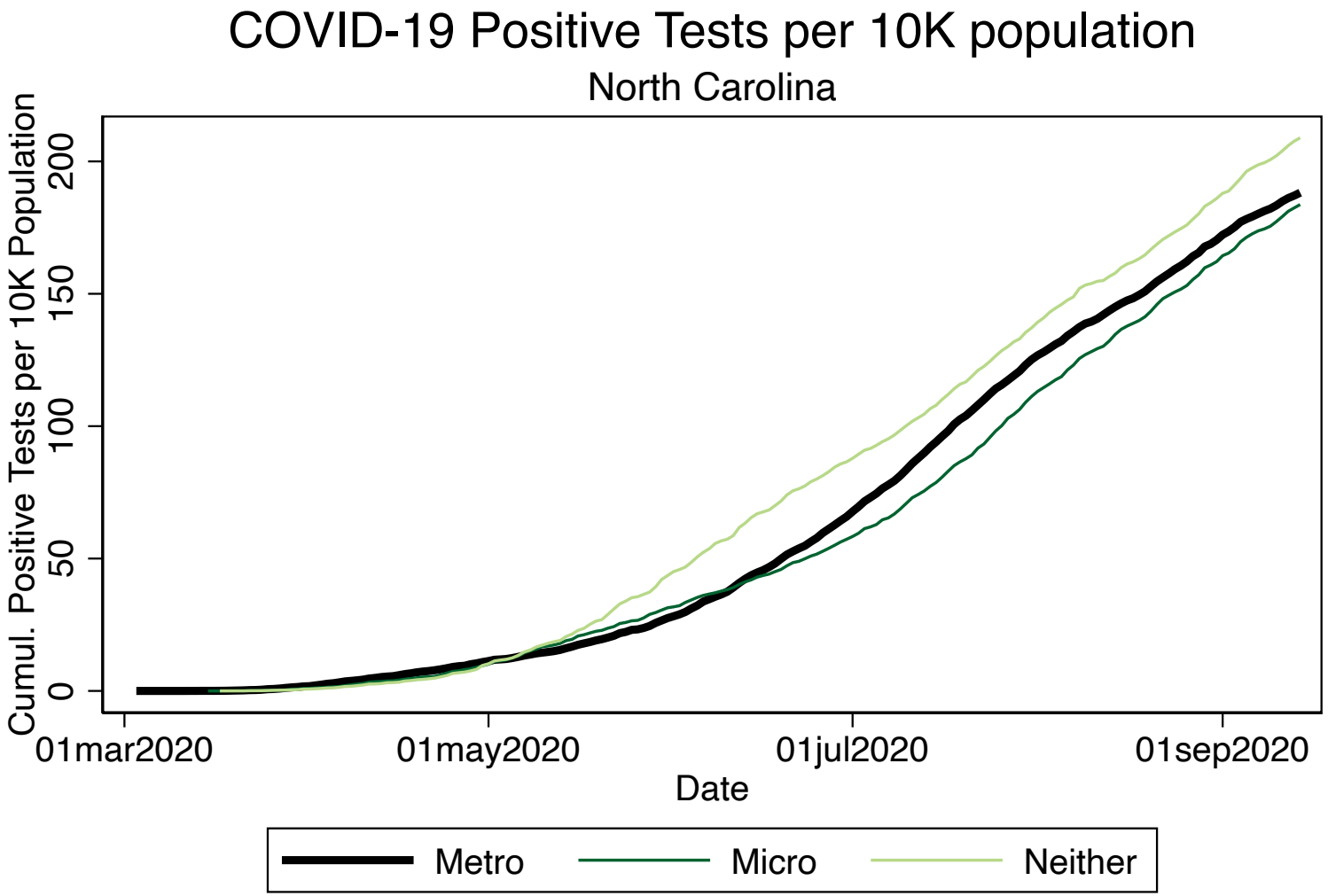
Half of Rural Residents at High Risk of Serious Illness Due to COVID-19, Creating Stress on Rural Hospitals



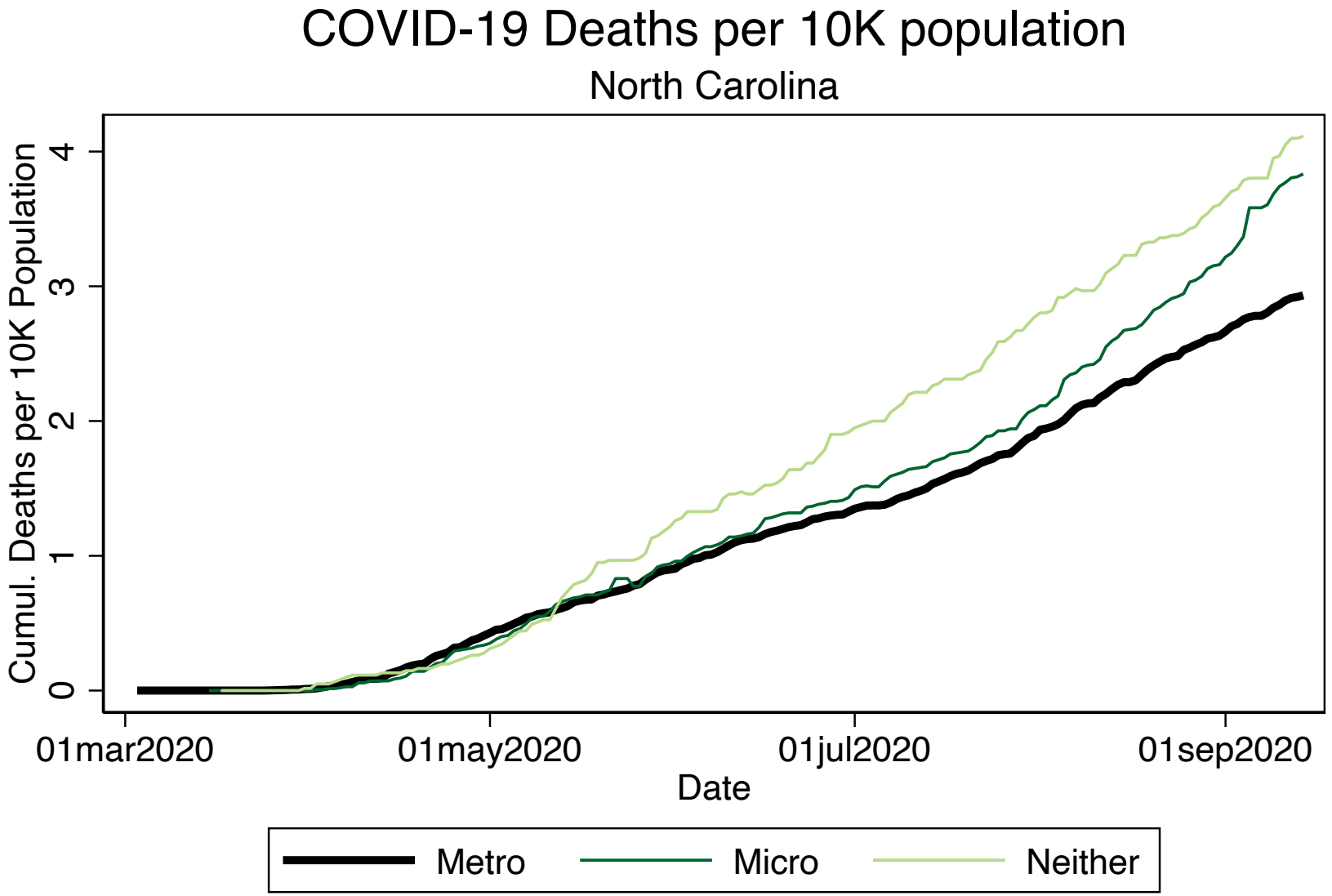
The Journal of Rural Health, First published: 30 June 2020, DOI: (10.1111/jrh.12481)

In North Carolina, Noncore have highest rate of positive tests



Source: New York Times GitHub

In North Carolina, rural counties have a higher rate of death (per capita)



Source: New York Times GitHub

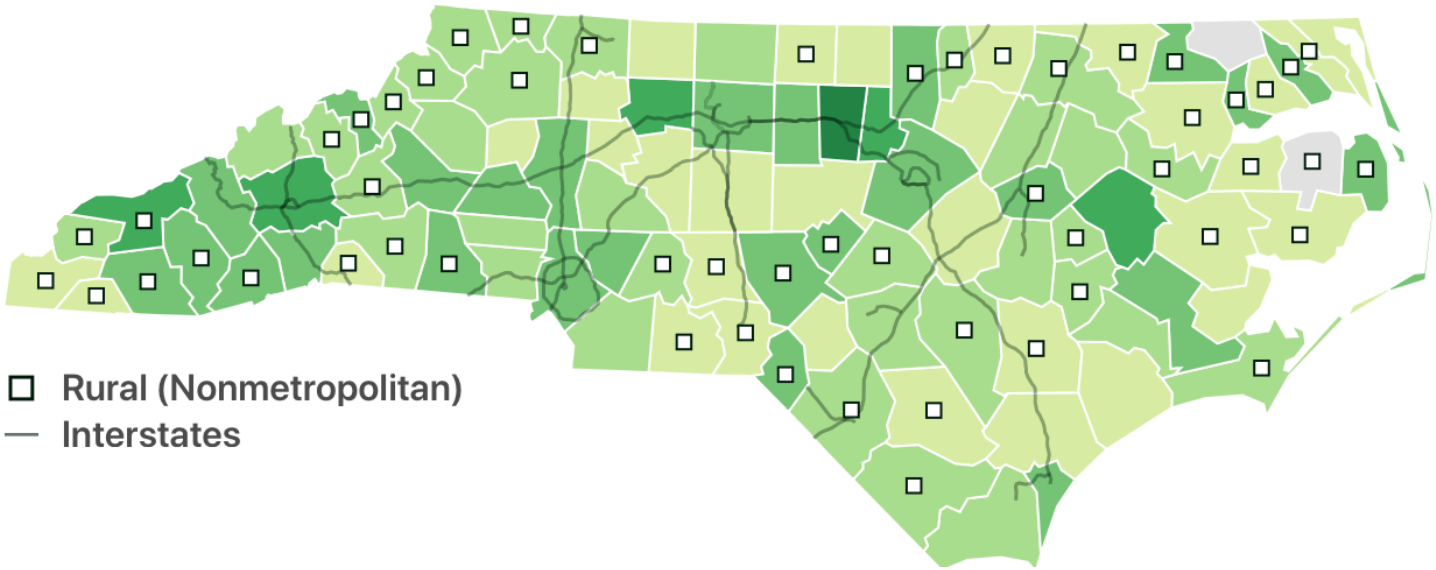
Workforce Supply

Our rural health workforce is getting older, and our existing methods of recruitment continue fall short. (plus, highly relevant for COVID-19)

Choose a profession: Physician

and a specialty: Primary Care

Physicians with a Primary Area of Practice of Primary Care per 10,000 Population by County, North Carolina, 2019



Profession Demographics for North Carolina

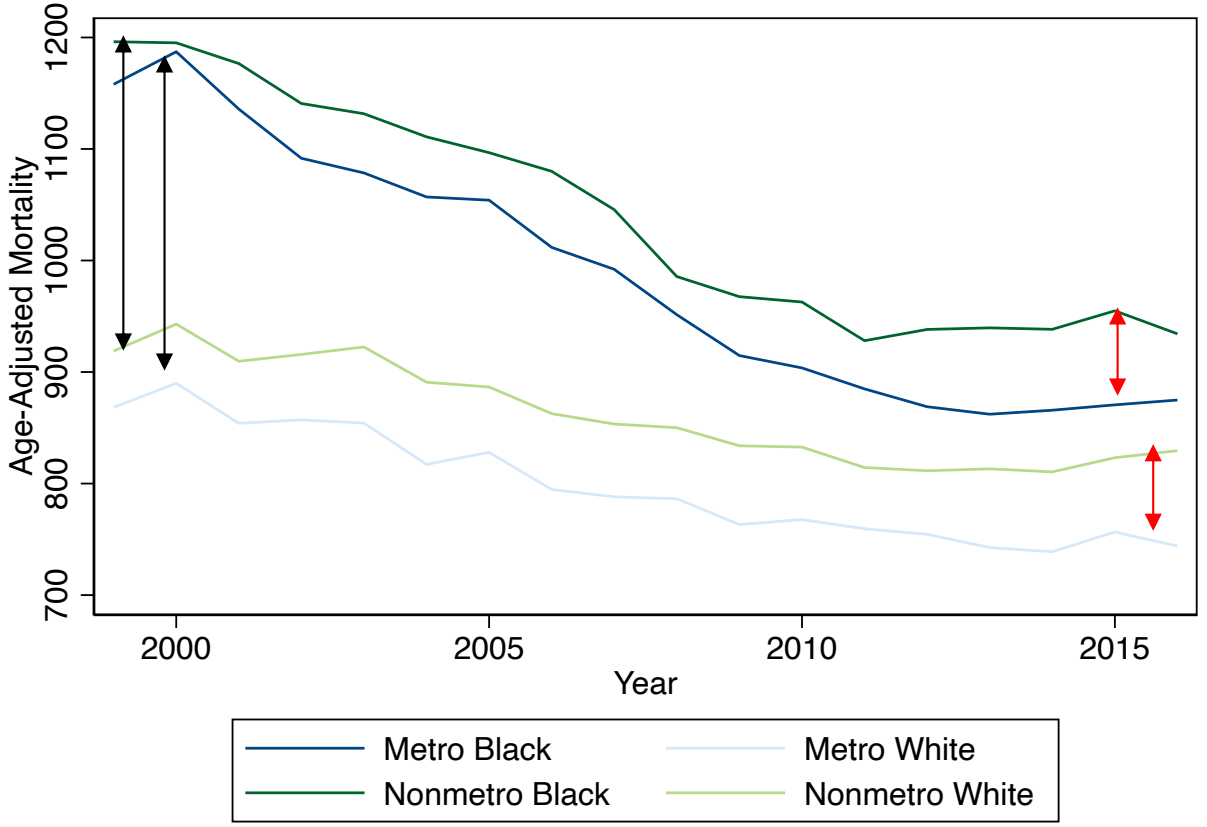
Rate per 10,000 Population

Total

https://nchealthworkforce.unc.edu/interactive/supply/

Mortality trends, by rurality/race

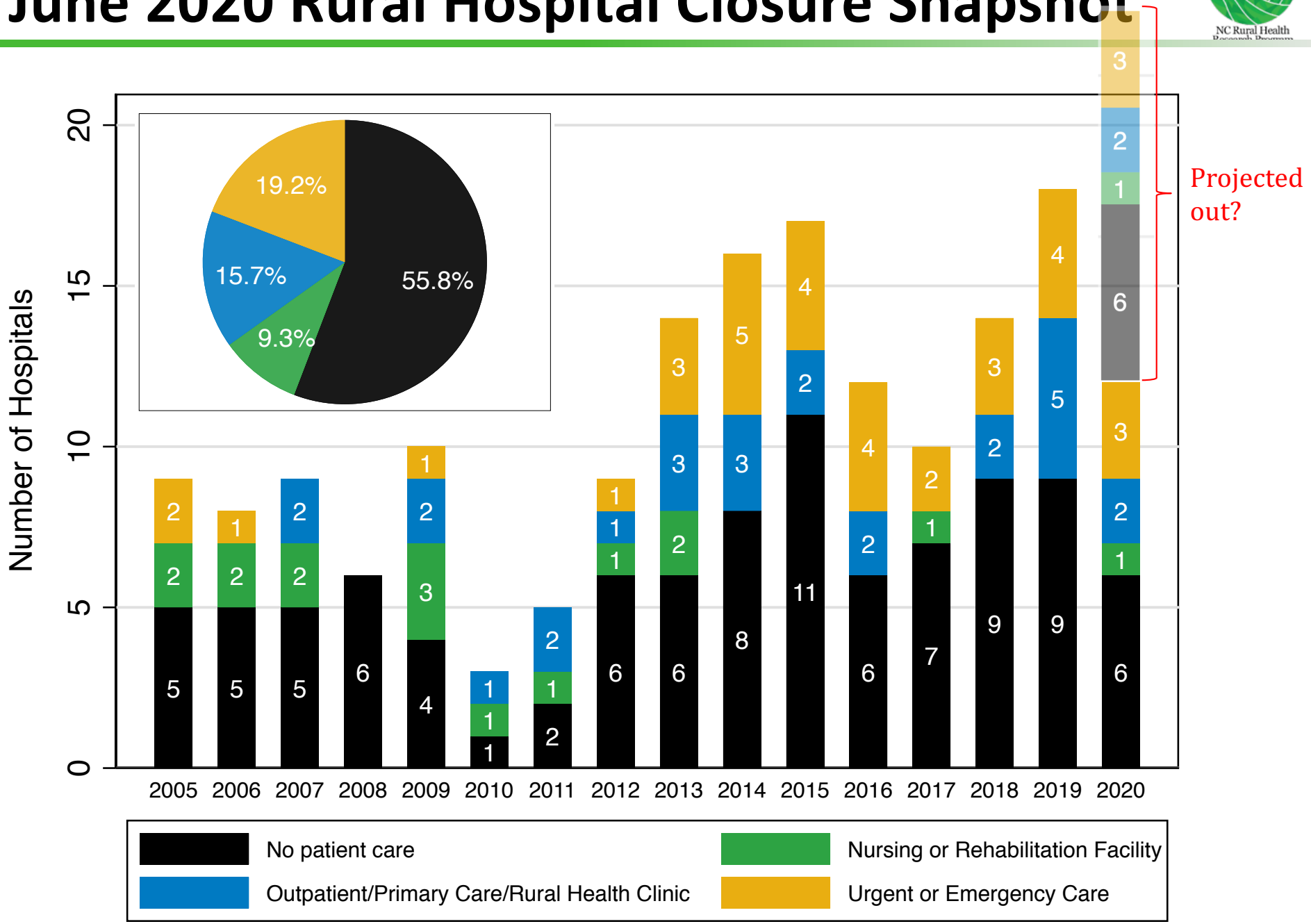
Racial disparities, within rurality, have halved.



Source: CDC Wonder Compressed Mortality File

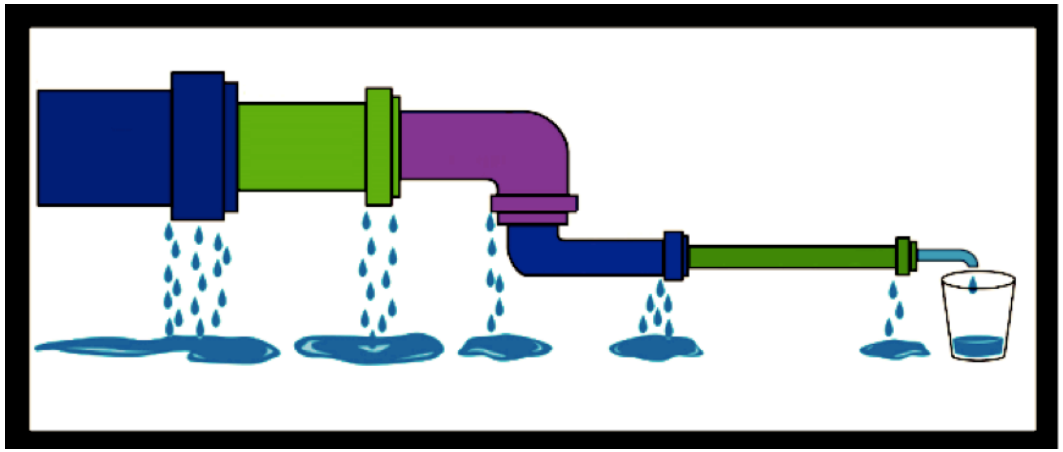
Rurality disparities, within race, have doubled.

June 2020 Rural Hospital Closure Snapshot



Equity Issues in Rural Hospital Closures

- Among all rural hospitals, those serving markets serving more Black populations are more likely to be distressed
- Among financially distressed rural hospitals, those serving markets serving more Black and/or Hispanic populations are more likely to close
- Among rural hospitals that close, those serving markets serving more Black populations are more likely to cease all healthcare services



http://www.techvision21.com/the-bachelors-to-ph-d-pipeline-is-not-leaking-women-and-underrepresented-minorities/

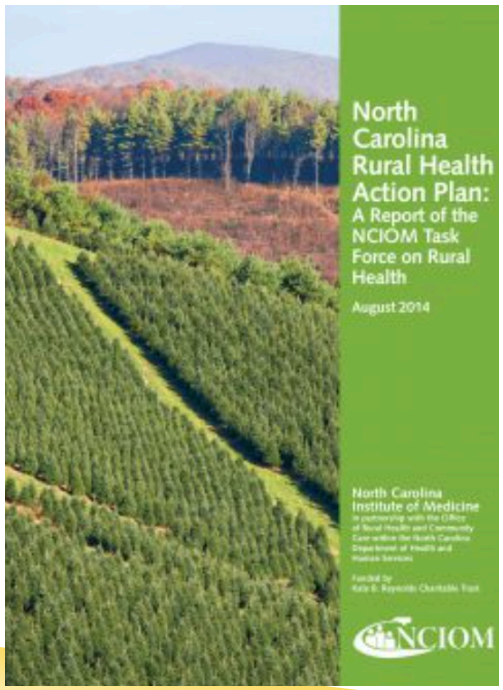
• Thomas SR, Pink GH, Reiter KL. Characteristics of Communities Served by Rural Hospitals Predicted to be at High Risk of Financial Distress in 2019 (April 2019). FB 151.

•Sharita R. Thomas, George M. Holmes, George H. Pink. To What Extent do Community Characteristics Explain Differences in Closure among Financially Distressed Rural Hospitals? *Journal of Health Care for the Poor and Underserved* Nov 2016 Supplement;(27,4):194-203.

• Thomas SR, Kaufman BG, Randolph RK, Thompson KW, Perry JR, Pink GH A Comparison of Closed Rural Hospitals and Perceived Impact (April 2015) . FB123.

Getting to know rural North Carolina players

- History: Jim Bernstein & 1970-ish contemporaries have made NC a rich place for rural health



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ISSUE DEDICATION

The Work of James D. Bernstein of North Carolina

Donald L. Madison, MD

It is fairly common that someone's extraordinary service to the state be commemorated with a named building—commonly a dormitory on a state university campus—a park, a street, a stretch of interstate, even sometimes with a new, man-made lake. But such commemoratives are reserved ordinarily for governors, senators, or other long serving elected politicians. Their service to the state is doubtless deserving of such recognition; but so, often, is that of certain bureaucrats who over an extended period managed to change the face of North Carolina in some significant way—not by votes collected or bills signed, but simply by their vision, creativity, and long, hard work.

That North Carolina has led the nation in production of bright-leaf tobacco for many years is widely known. And the names of some of those responsible for the manufacture of tobacco products—Hill, Duke, Reynolds, Gray—are also well-known, if not by the nation as a whole, then at least by North Carolinians. The same can be said for textiles and furniture and banking, where this state has also been in the lead or threatens to place or show. But rural healthcare, which is neither a product, a highly marketed service, nor even a recognized "field" of labor or keen academic interest, is yet vitally important to the well being of this still predominantly rural state. And it is also linked to North Carolina in the minds of all those who know of it. For North Carolina leads the nation in rural healthcare and has for a good while—at least since the late 1970s.

There are several reasons, but the indisputable main one is the work of the late James D. Bernstein (1942-2005) and that of the superb staff he assembled. For his labors on behalf of the people of North Carolina, Jim Bernstein deserves to have a dam or a bridge named after him, at least a byway that branches off from some blue highway and leads to one of the approximately 85 rural community health centers for which his North Carolina Office of Rural Health is responsible for helping groups of local citizens establish. In addition, that Office collaborated with or followed some other agency—federal, state or philanthropic—or one of the universities in the state, in building, repairing, or helping stabilize several other community health programs. We should also recognize Jim Bernstein's work on the national level, for leading change in both the Medicaid and Medicare legislation to permit more equitable reimbursement for rural health centers and hospitals, and his leadership of national organizations devoted to the interests of rural health. Finally, and as important, historically, is the example that the North Carolina Office of Rural Health set for other states, that example activated by a national grants program of the Robert Wood Johnson Foundation with Bernstein at its helm. These efforts and more are his legacy to the state of North Carolina and the nation, and all were done from a home base in state government in Raleigh.

He was not a native North Carolinian. In fact, Jim Bernstein came to Chapel Hill temporarily; that, at least, was the plan. He had been an officer in the United States Public Health Service in Santa Fe, New Mexico, where he served as administrator of the Santa Fe Indian Hospital and Director of the Indian Health Service for Northern New Mexico.

Jim grew up in Westchester County, just outside New York City. His paternal grandfather was treasurer of Loews, the nation's oldest theater chain, which for a time, before the Justice Department intervened, also owned the lion's share of Metro-Goldwyn-Mayer (the pun is acknowledged and accurate). Jim's father manufactured advertising clocks, including those with the image of a certain grocery chain store pig with the "Piggly Wiggly" legend on the face. His mother, Jacqueline, was the family intellectual as well as the main attraction for most visitors to the Bernstein household—visitors who often included celebrities, especially artists and actors. Once people visited the Bernstein home, says Sue Bernstein, they were glad to return. And that was mainly because of Jackie Bernstein, who during the week regularly drove her Chevy Nova, alone, into northern Manhattan to work with needy children. As a youth, Jim was an athlete: swimmer, football player, hockey player—and later a hockey coach—first a playing "head coach" for the Johns Hopkins club team—"Fightin' Jim Bernstein," the college newspaper called him. Later in North Carolina, not a traditional hotbed of hockey, he served as a coach to youngsters.

After graduating from John Hopkins with a degree in political economy—and where he volunteered some of his time as a teacher of prison inmates—Jim applied for and was accepted

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Getting to know rural North Carolina players (policy-ish, non-UNC, esp. from 2015)

- This is a no-win situation for me, but ¯_(ツ)_/¯…
- NC Office of Rural Health
- NC AHEC
- Foundation for Health Leadership & Innovation
  - Bernstein Dinner Oct 8, https://foundationhli.org/event/join-us/
  - NC RHLA: https://foundationhli.org/nc-rural-health-leadership-alliance/
- Community Care of North Carolina
- Provider societies: NCPS, NCAFP, NCHA, NCMS,…
- NC Rural Center – not health *per se*
  - n.b. I am with the NC Rural HEALTH RESEARCH Center
- State foundations: The Duke Endowment, Kate B. Reynolds Foundation, BCBSNC Foundation, Golden Leaf

North Carolina Rural Health Research Program

Location:

Cecil G. Sheps Center for Health Services Research
University of North Carolina at Chapel Hill
Website: http://www.shepscenter.unc.edu/programs-projects/rural-health/
or http://go.unc.edu/ncrhrc
Email: ncrural@unc.edu
Twitter : @NCRural

Colleagues:

Mark Holmes, PhD
George Pink, PhD
Kristin Reiter, PhD
Erin Kent, PhD
Tyler Malone
Kathleen Knocke
Arranna Planey, PhD
Ann Howard
Sharita Thomas, MPP
Randy Randolph, MRP
Denise Kirk, MS
Kristie Thompson, MA
Julie Perry
Hannah Friedman*

NC RHRP
NC Rural Health Research Program

Resources

North Carolina Rural Health Research Program
http://www.shepscenter.unc.edu/programs-projects/rural-health/

Rural Health Research Gateway
www.ruralhealthresearch.org

Rural Health Information Hub
www.ruralhealthinfo.org/

National Rural Health Association
www.ruralhealthweb.org

National Organization of State Offices of Rural Health
www.nosorh.org

NC RHRP
NC Rural Health Research Program

The Rural Health Research Gateway provides access to all publications and projects from the Rural Health Research Centers, funded by the Federal Office of Rural Health Policy.

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