

Filling in the Gaps: Integrating APRNs and PAs into the Rural Healthcare Workforce

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Overview

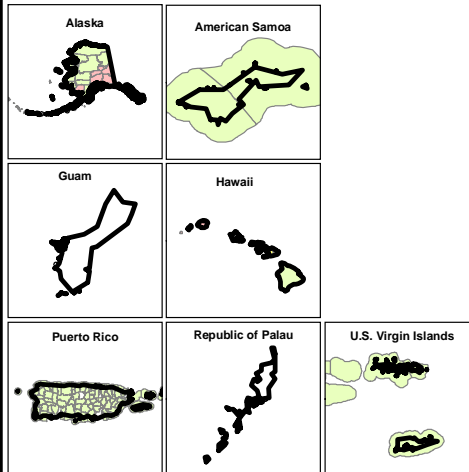
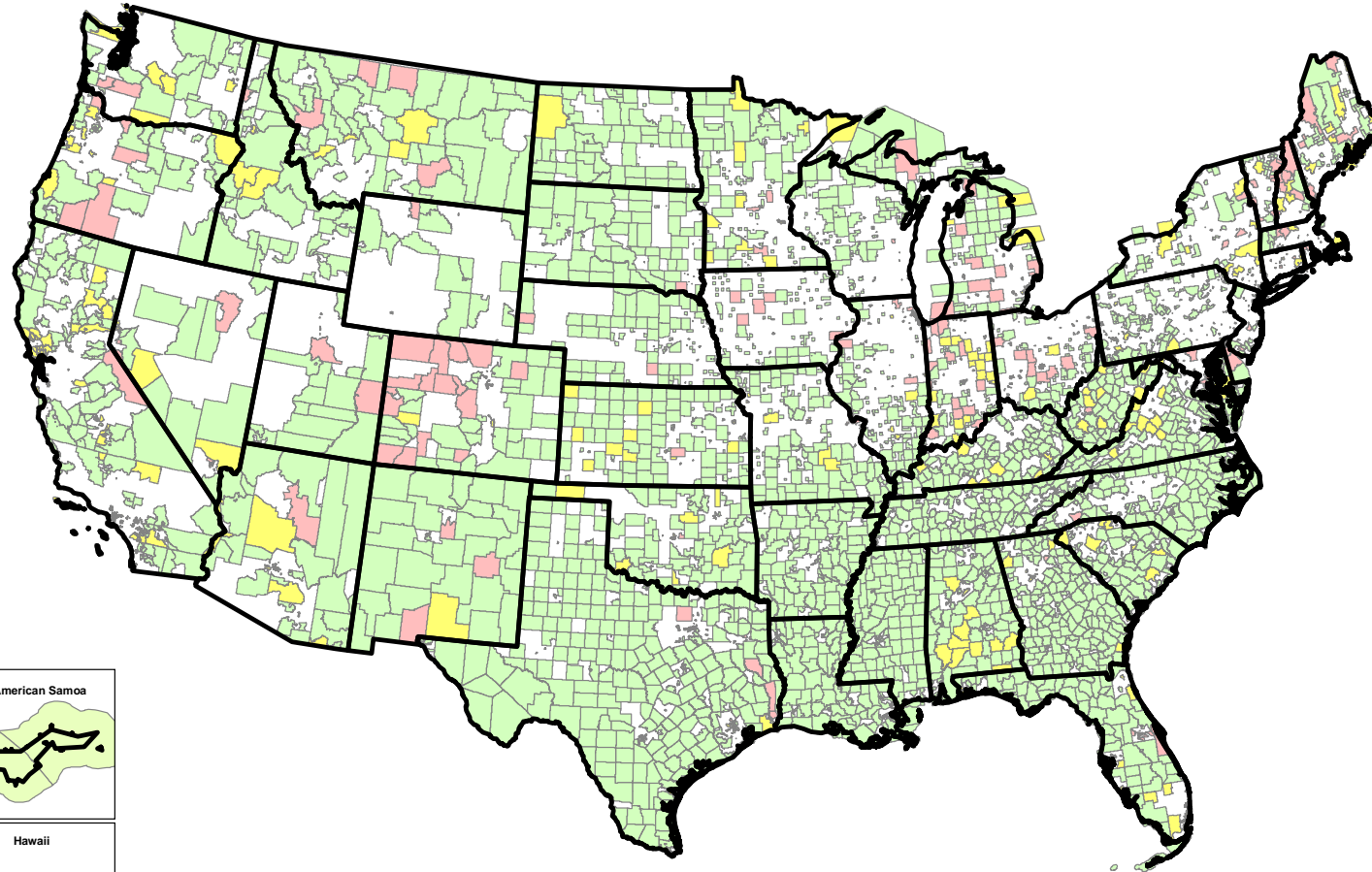
- Problem
- Impact
- Analysis
 - Supply Ratio Mapping
 - Cluster Mapping
 - Dasymetric Mapping
- Discussion

Problem

Differential access to care between urban and rural areas

Problem

- Healthy People 2020: improve access to care
 - Access to services
 - Lower utilization/costs
 - Greater patient satisfaction
- Physicians shortage/maldistribution
- Exacerbated by:
 - PPACA
 - Growing population
 - Aging of baby boomers
- Integrate other providers



Legend
Medically Underserved Areas/Populations

-  Governor
-  Medically Underserved Areas
-  Medically Underserved Populations

Prepared by: HRSA, Office of Information Technology
from the HRSA Data Warehouse,
datawarehouse.hrsa.gov



Texas Providers

- Texas population:
 - Urban counties: 24,027,285 people
 - Rural counties: 3,134,657 people
- Texas healthcare workforce:
 - Urban counties: 63,323 providers (379.4 population per provider)
 - Rural counties: 4,220 providers (742.8 population per provider)
- In order for the provider ratio in rural counties to equal that of urban counties, rural counties need 4,040 more providers.

Texas Providers

- Recruitment and retention
 - Nurses
 - Doctors
- Providers in rural areas are older
 - Percentage of providers aged 60+

	Urban	Rural
Physicians	24.2%	38.3%
APRNS	14.2%	22.4%
PAs	6.6%	18.8%

Texas Population

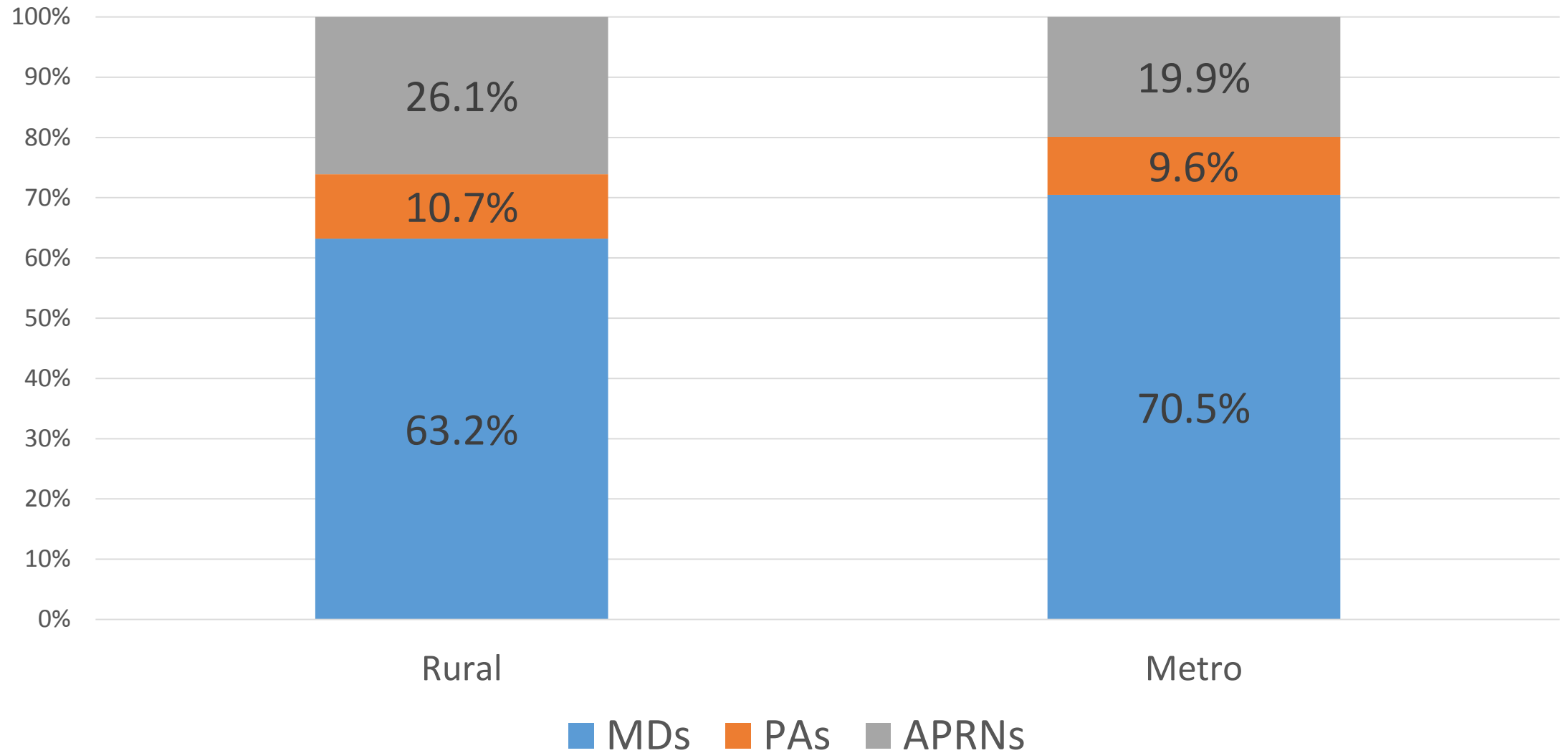
- Vulnerable populations
- Rural population is older
 - Urban counties: 15.4% over 60 years old
 - Rural counties: 23.6% over 60 years old

Impact: Differential Health Outcomes

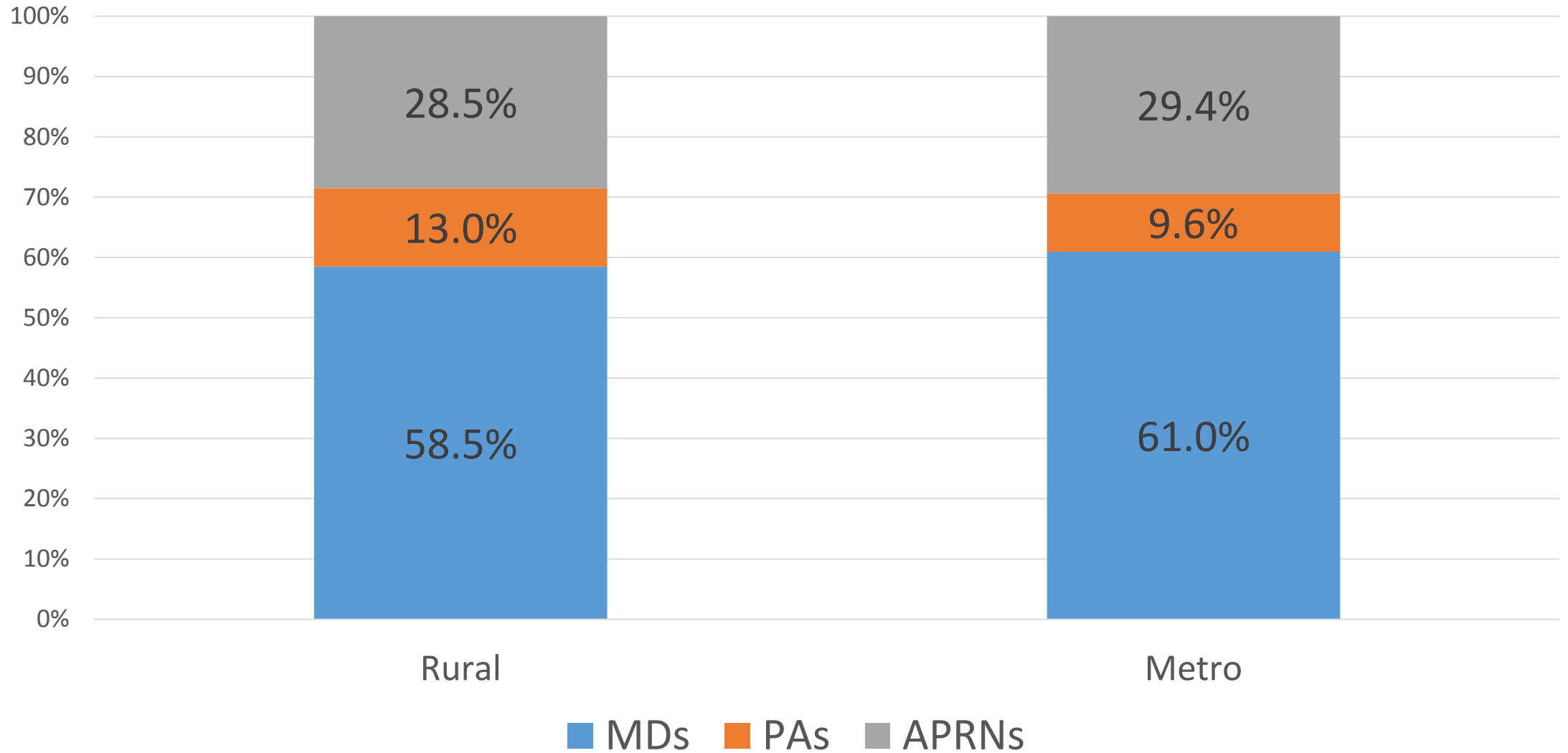
Risk Factor	MSA	Non-MSA
General Health – Fair to Poor	16.4%	23.3%
Cardiovascular Disease	8.0%	11.2%
Diabetes	9.6%	11.0%
No Mammogram within 2 Years, women \geq 40 years	28.6%	38.4%
Never had pneumonia shot, 65+ years	29.9%	37.7%
No leisure time physical activity	25.4%	34.1%

Source: Center for Health Statistics (CHS). *Texas Behavioral Risk Factor Surveillance System Survey Data*. Austin, Texas: Texas Department of State Health Services, 2010.

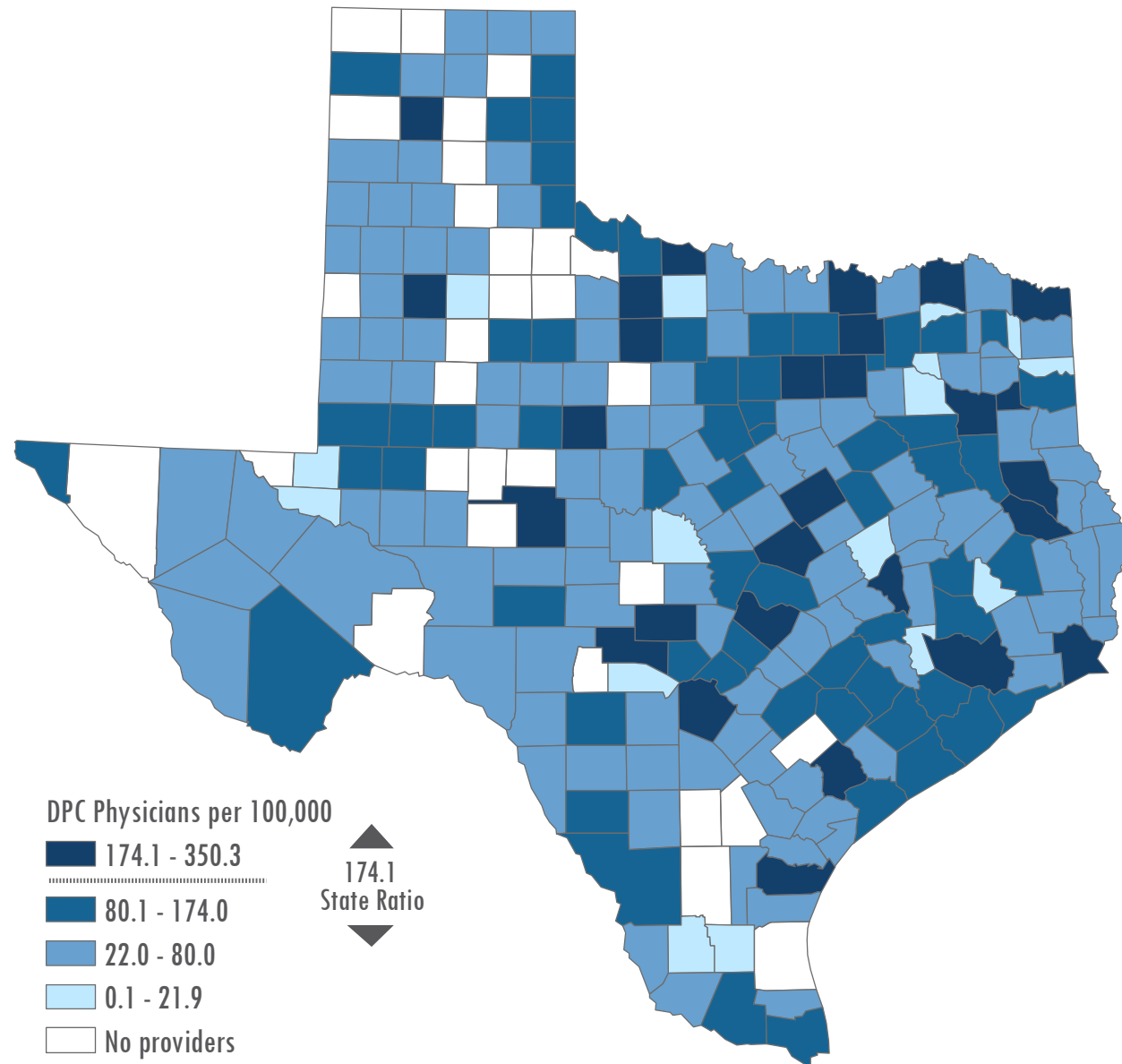
All Providers



Primary Care Providers

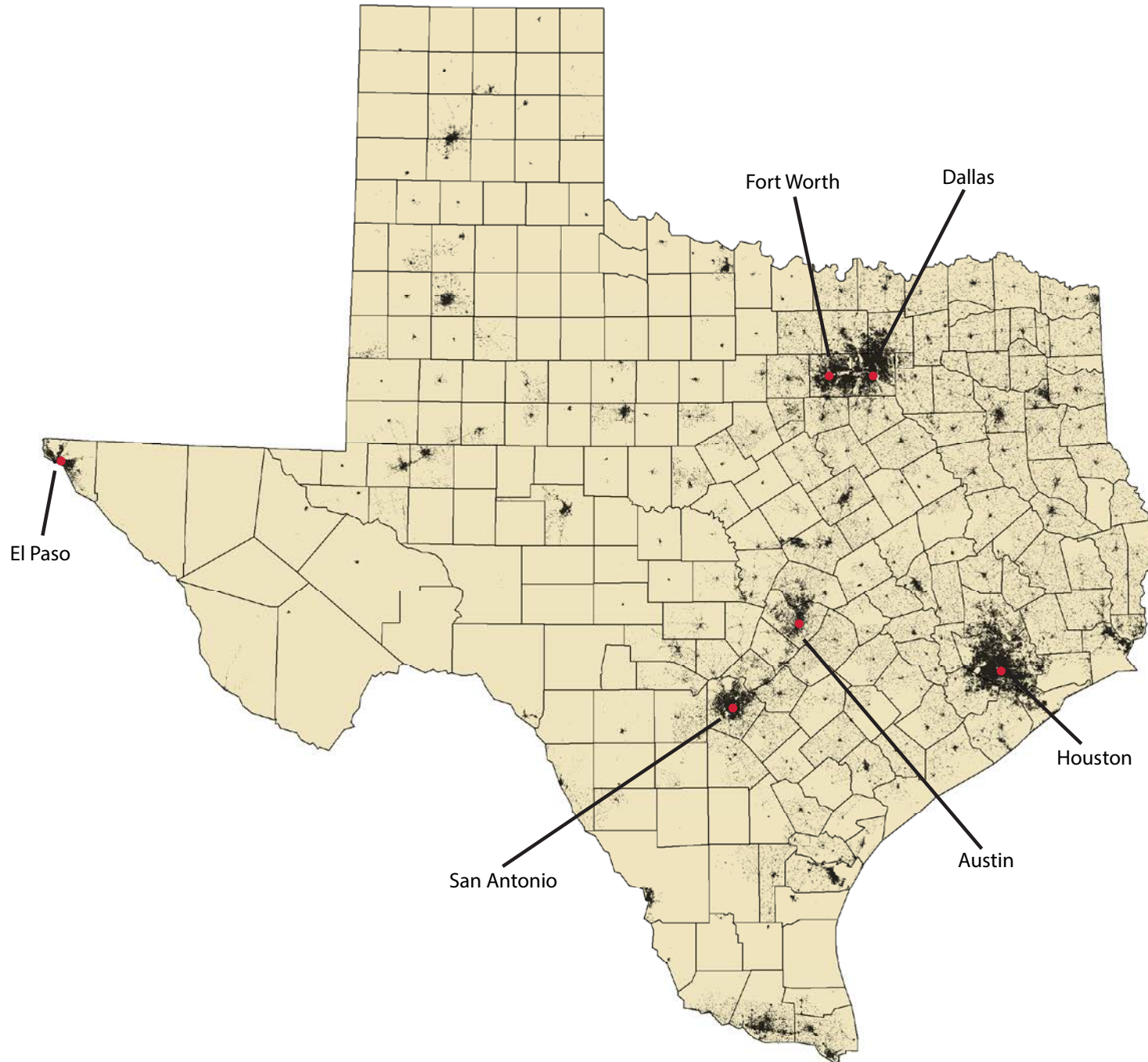


County Supply Maps

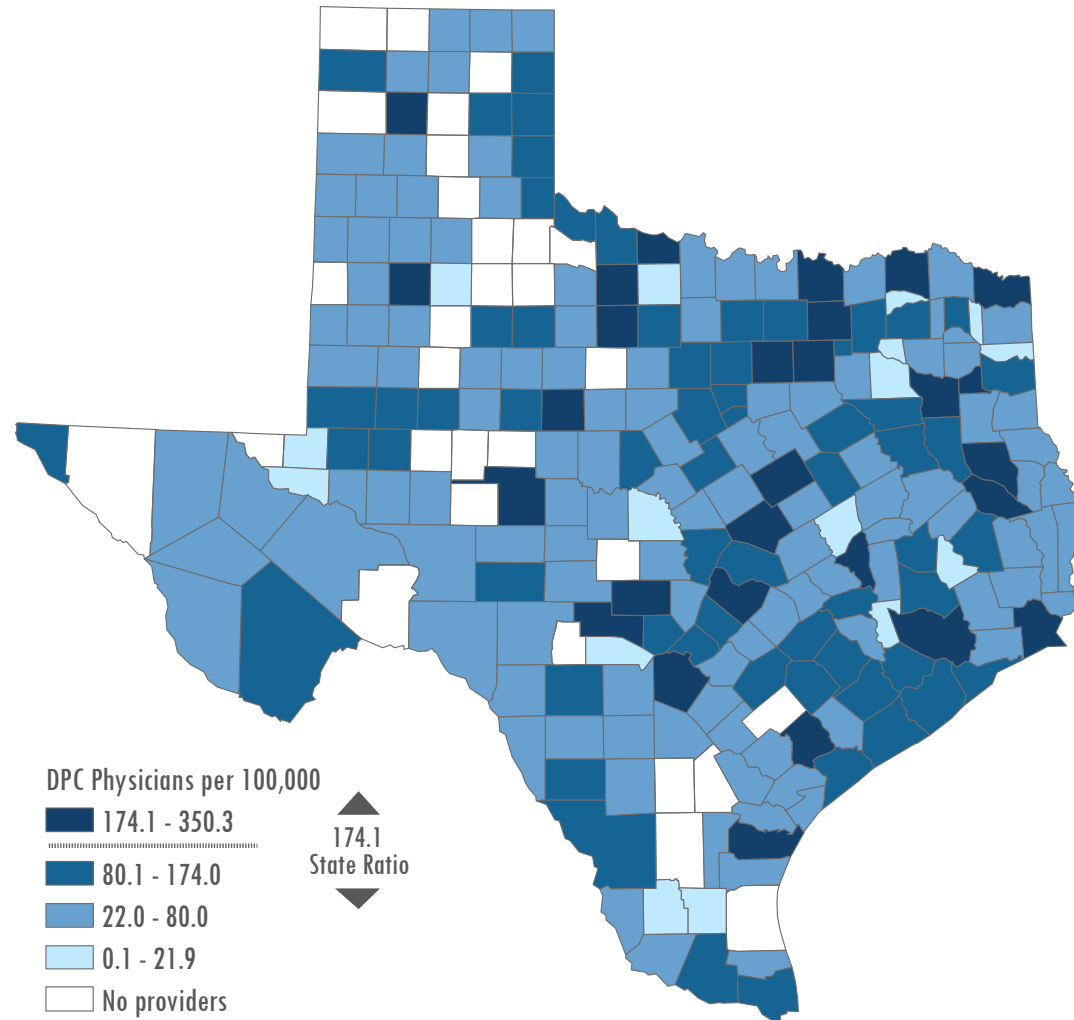


Where do numbers come from

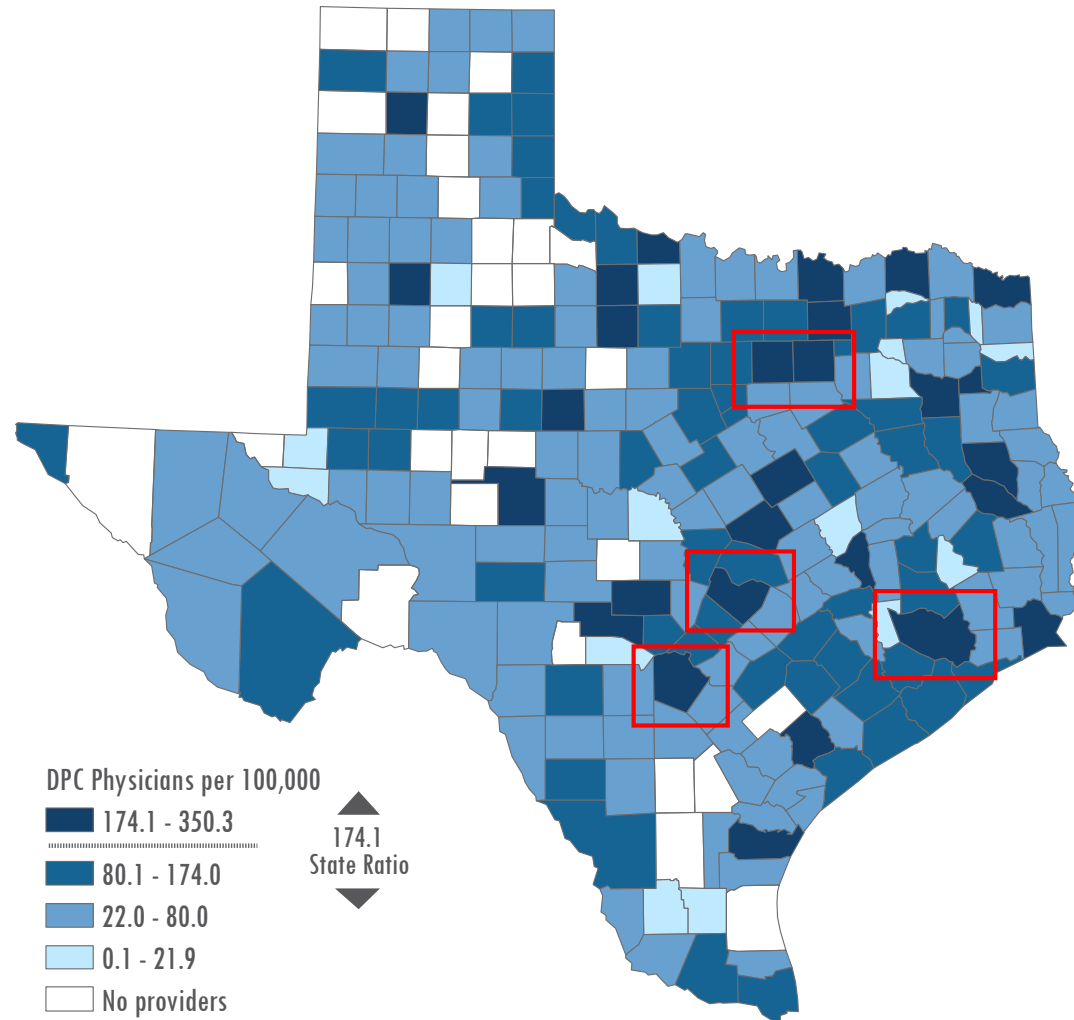
- Re-licensure and certification data
 - Texas Board of Nursing (for nurses)
 - Texas Medical Board (for physicians and physician assistants)
- Active, practicing professionals
- Primary Care Providers
 - Classified using “primary specialty” field



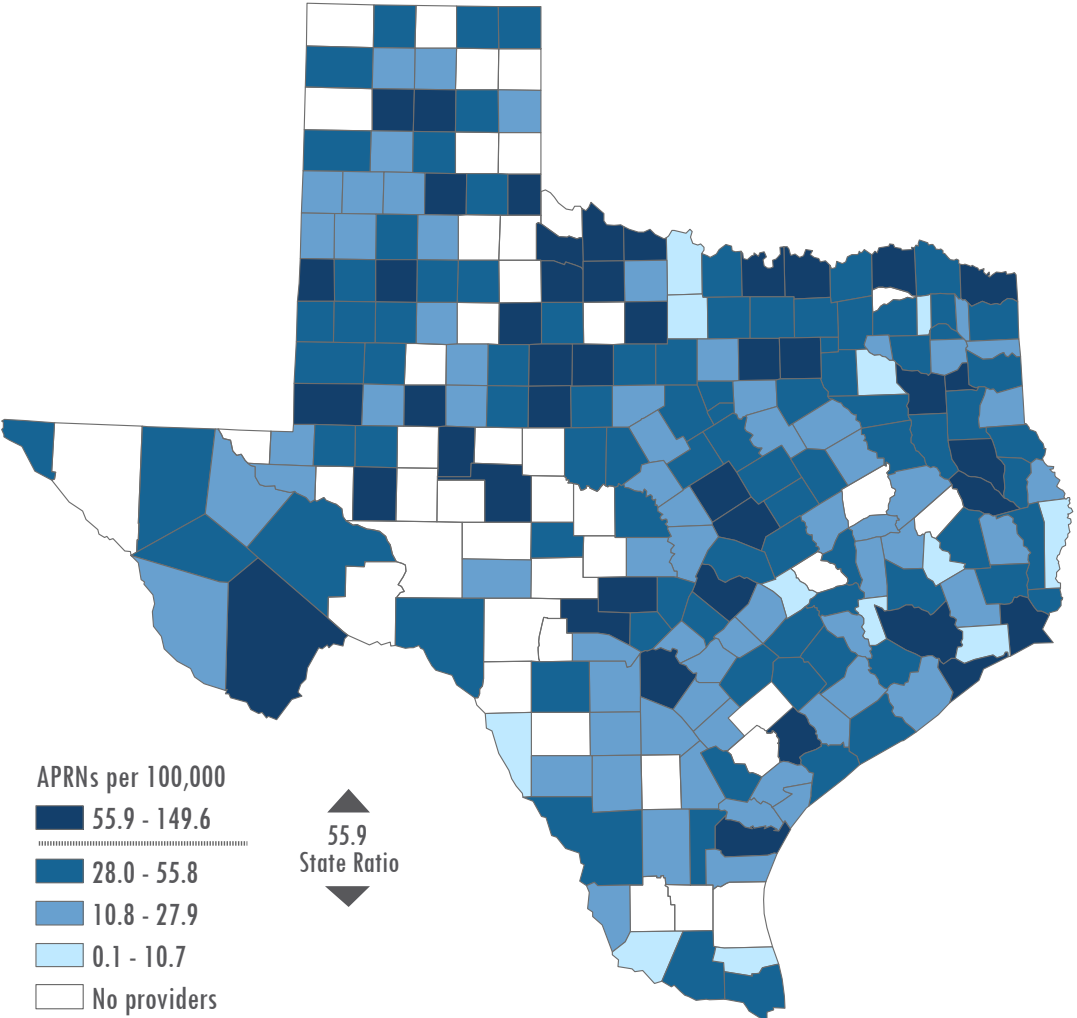
Physicians



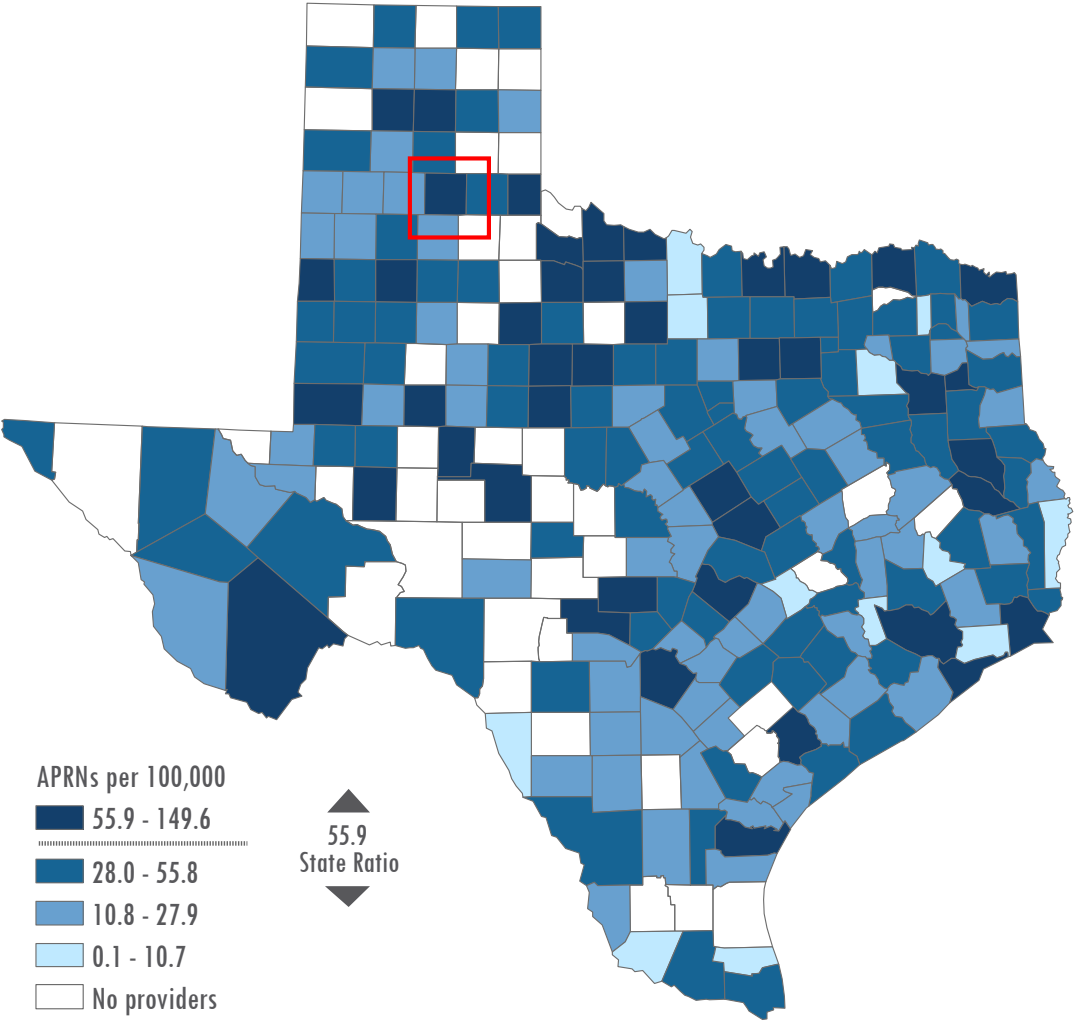
Physicians



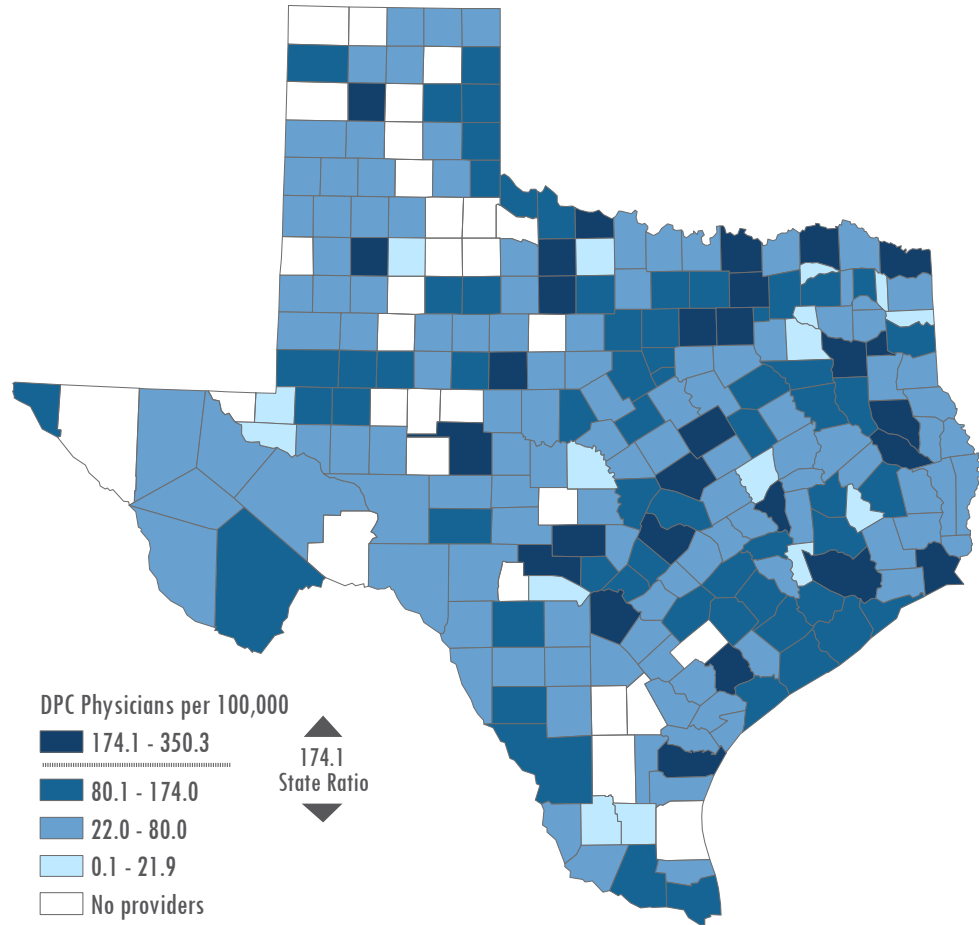
Advanced Practice Registered Nurses



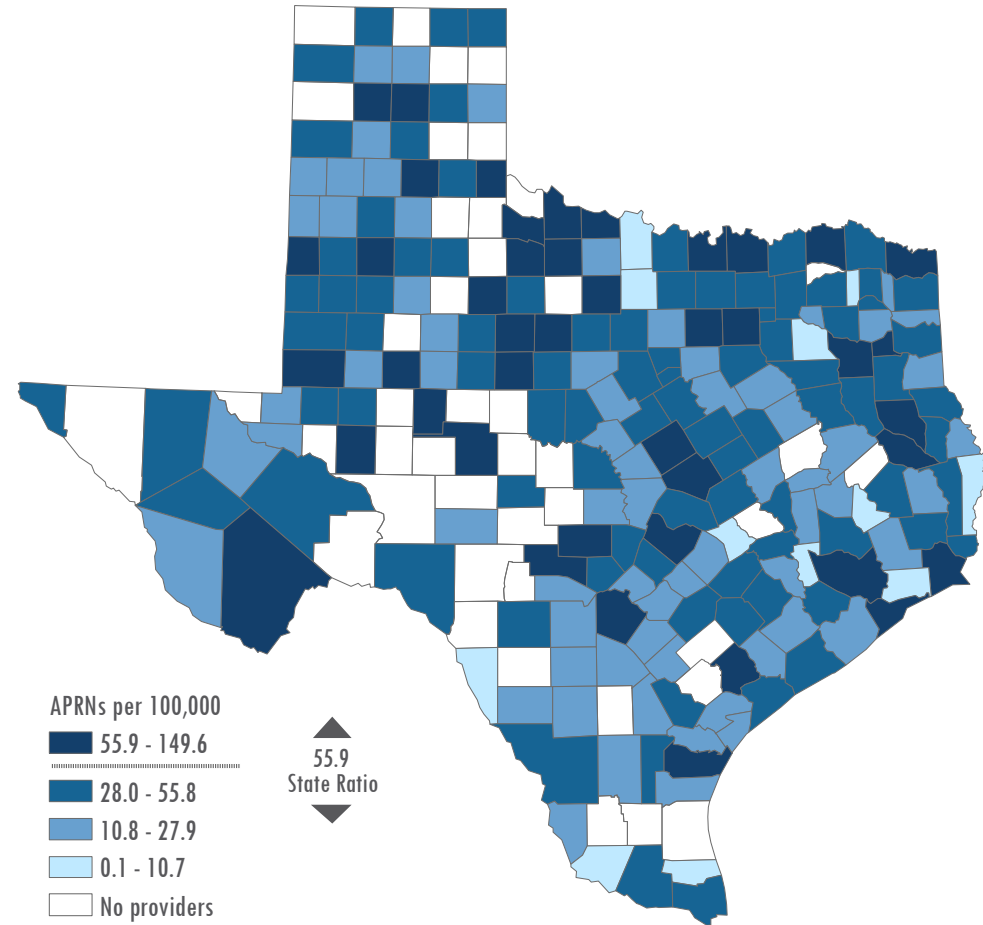
Advanced Practice Registered Nurses



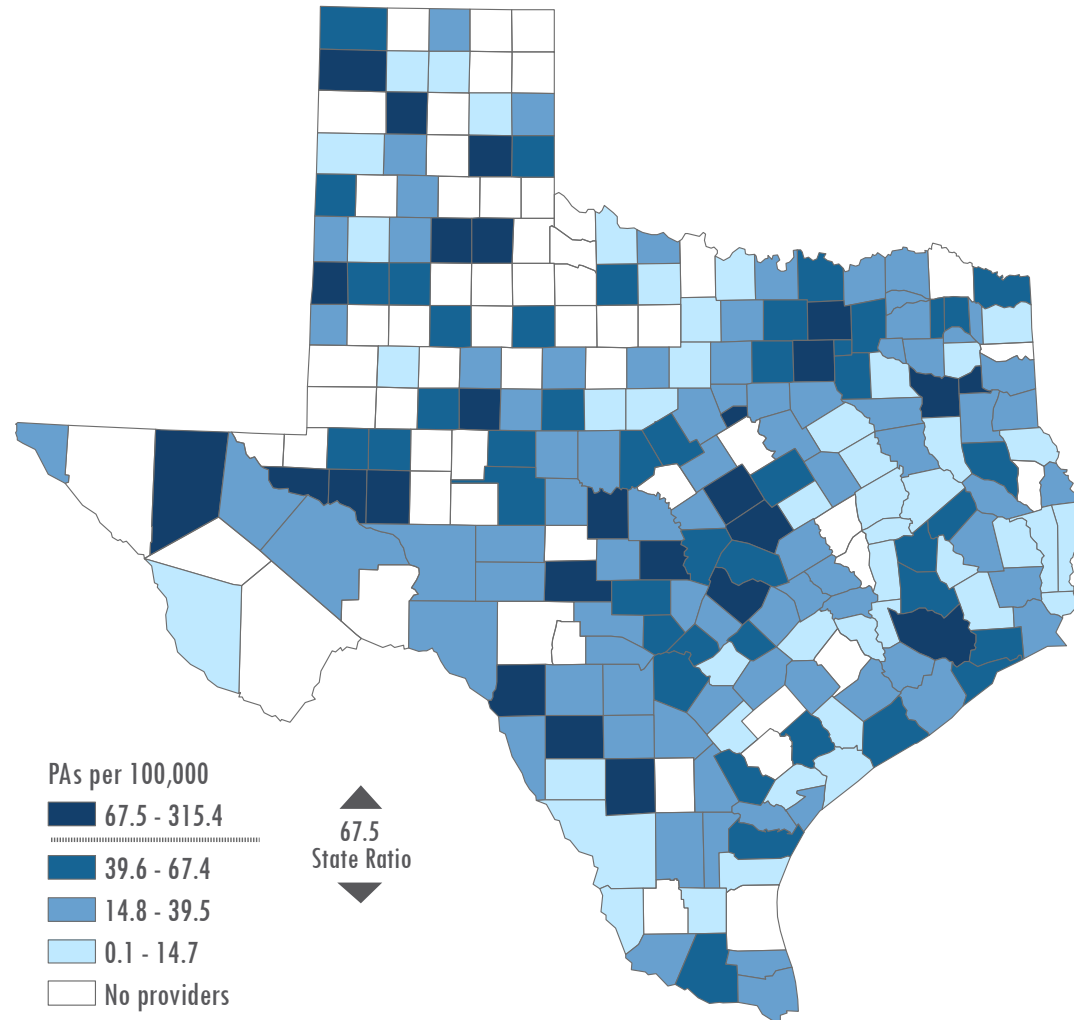
Physicians



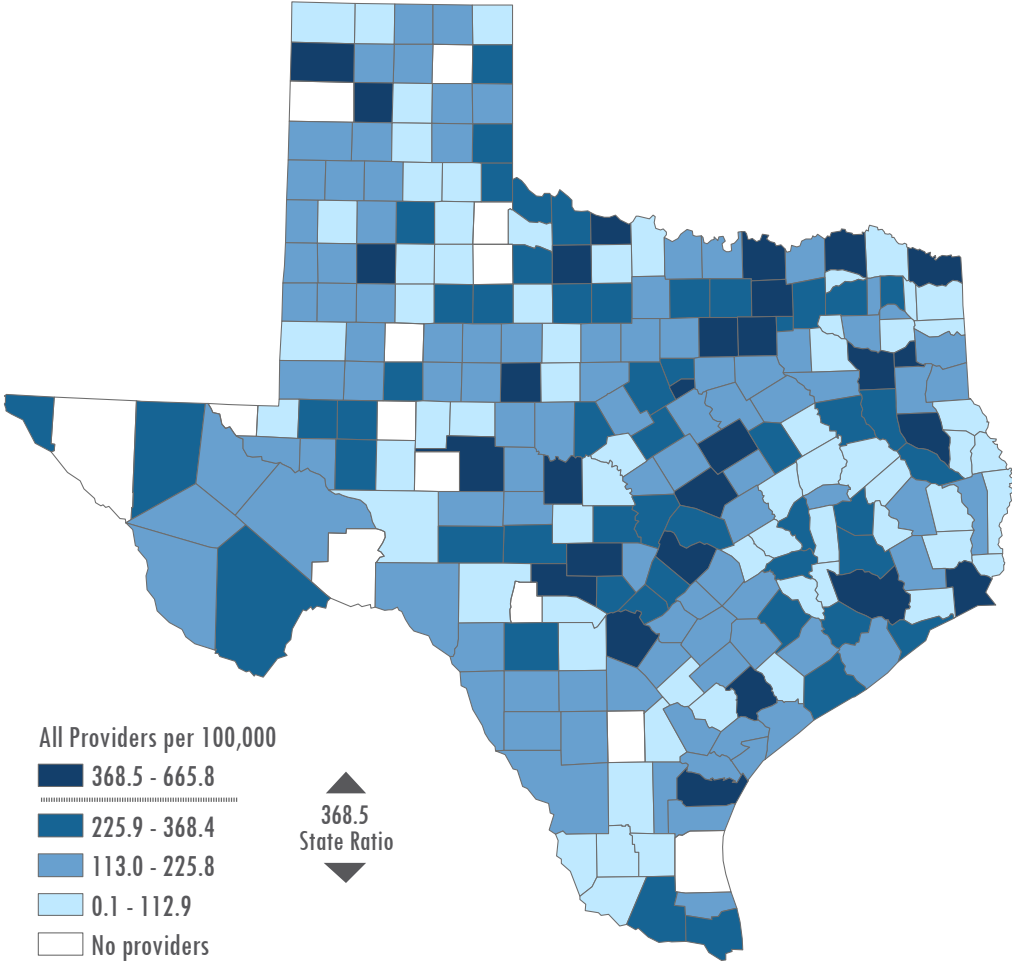
APRNs



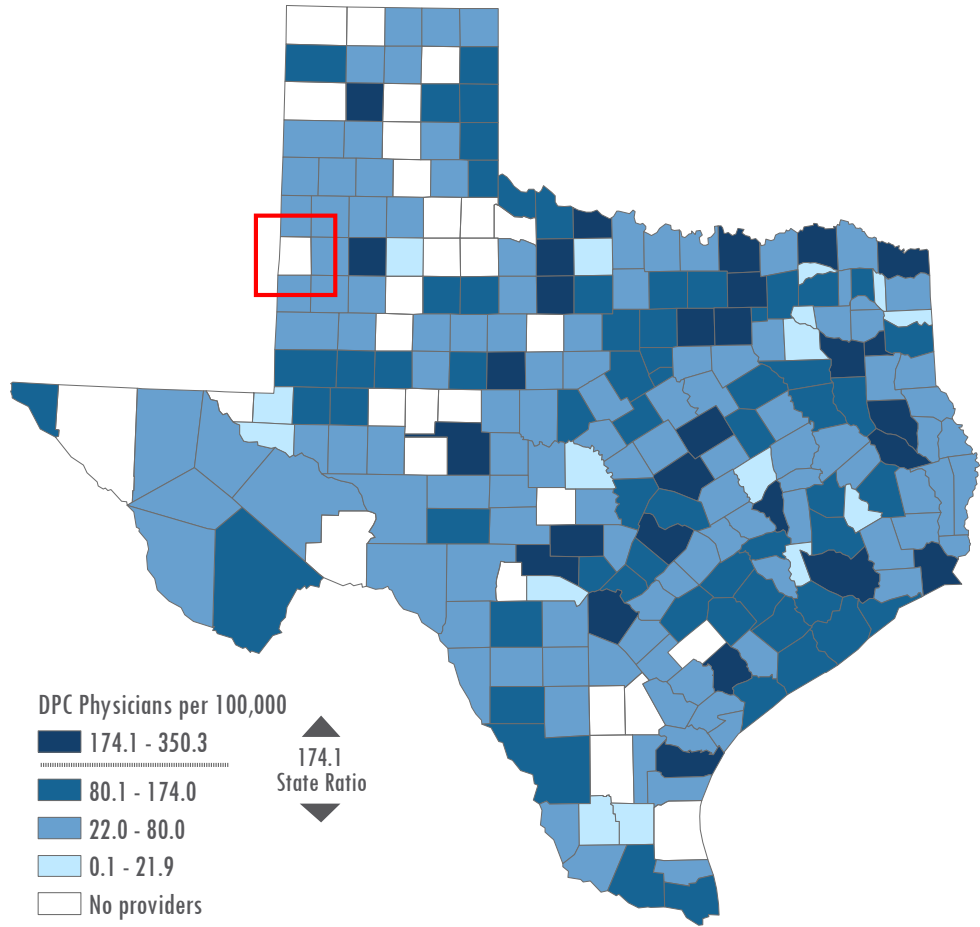
Physician Assistants



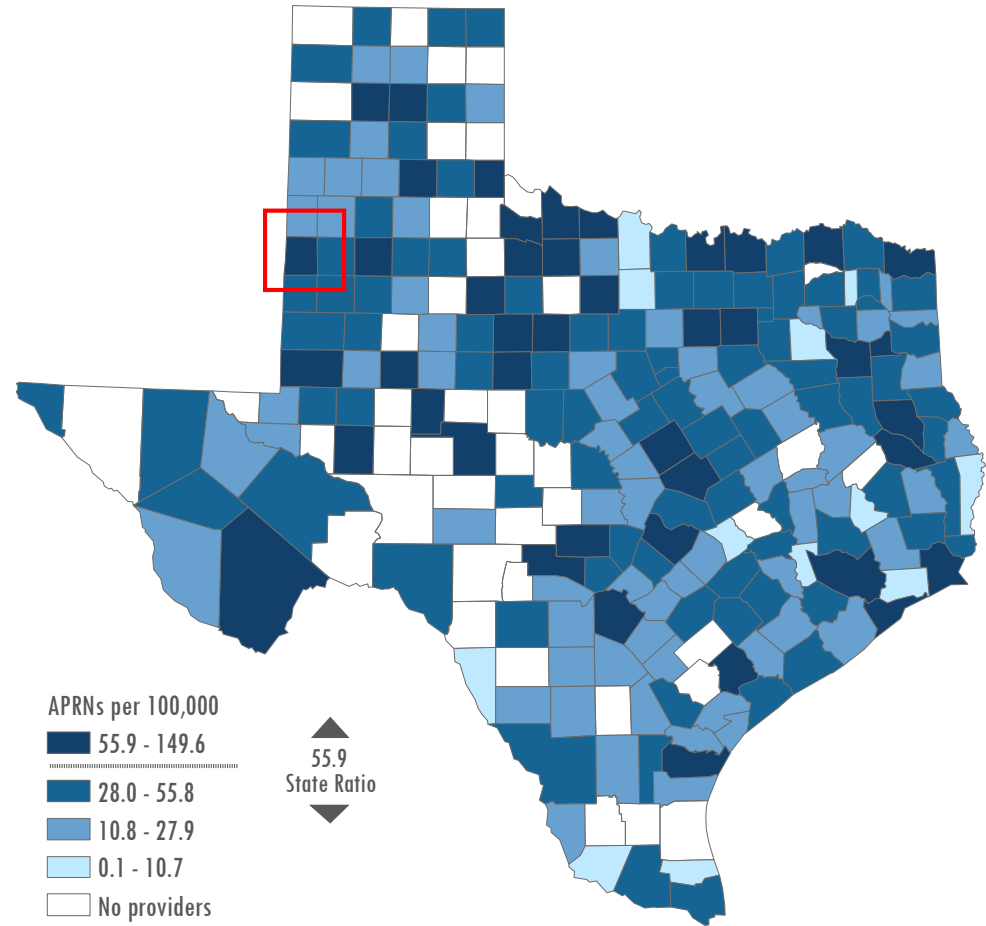
All Providers



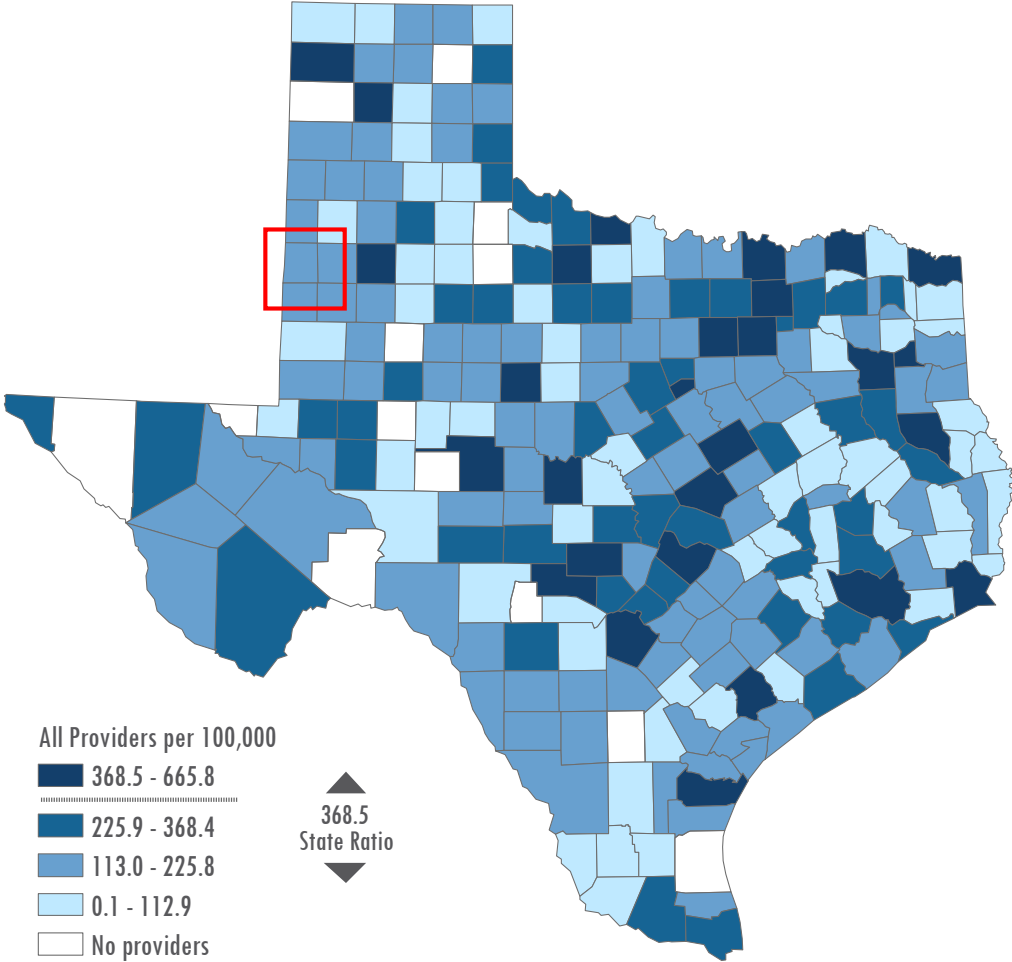
Physicians



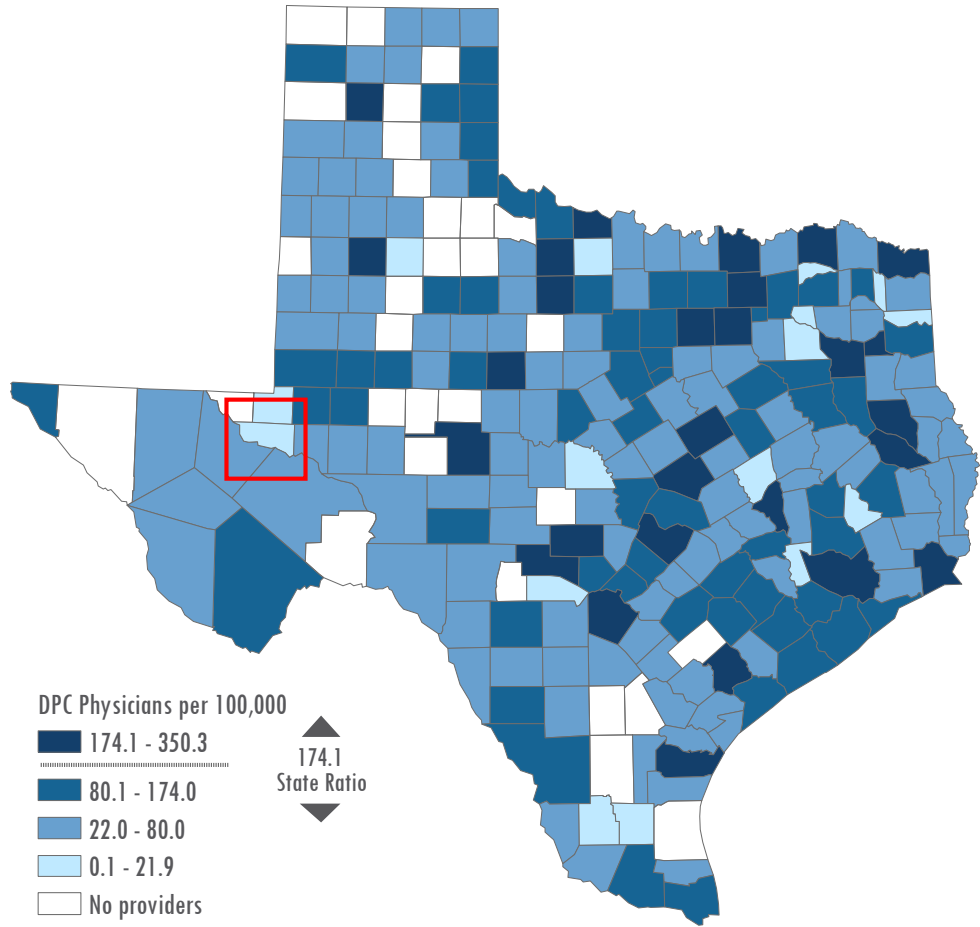
APRNs



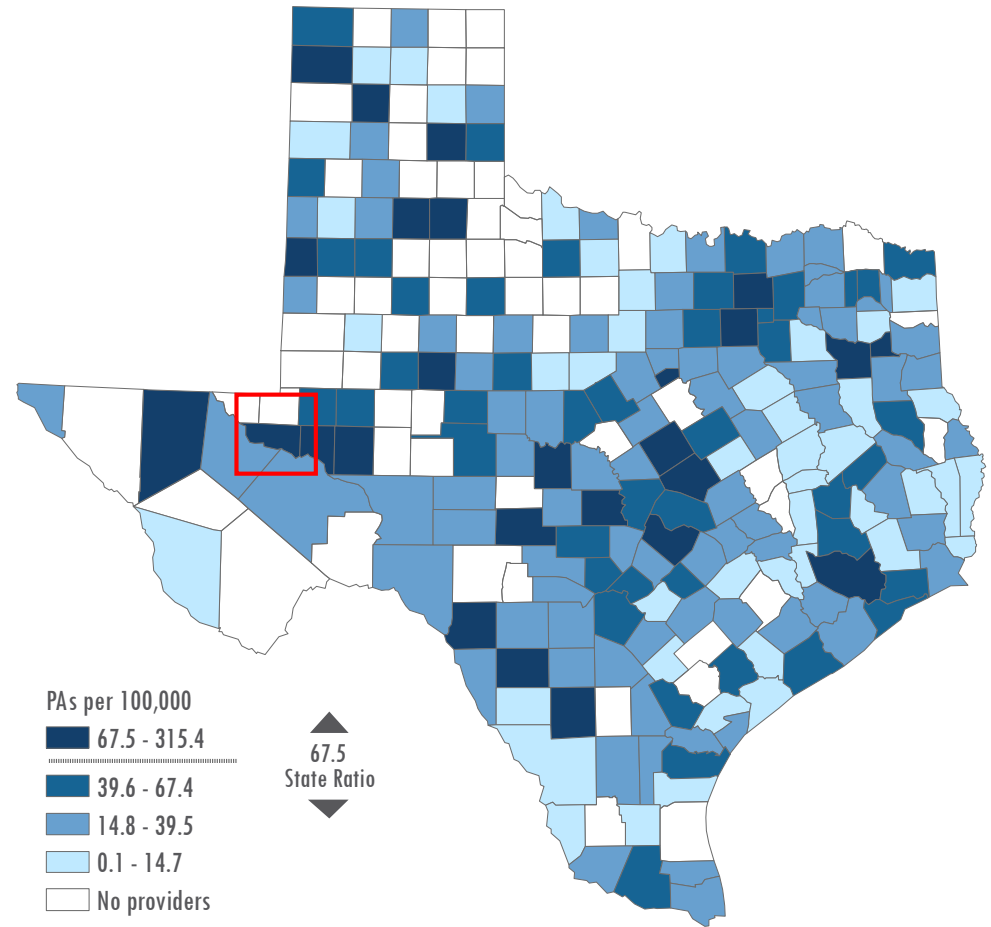
All Providers



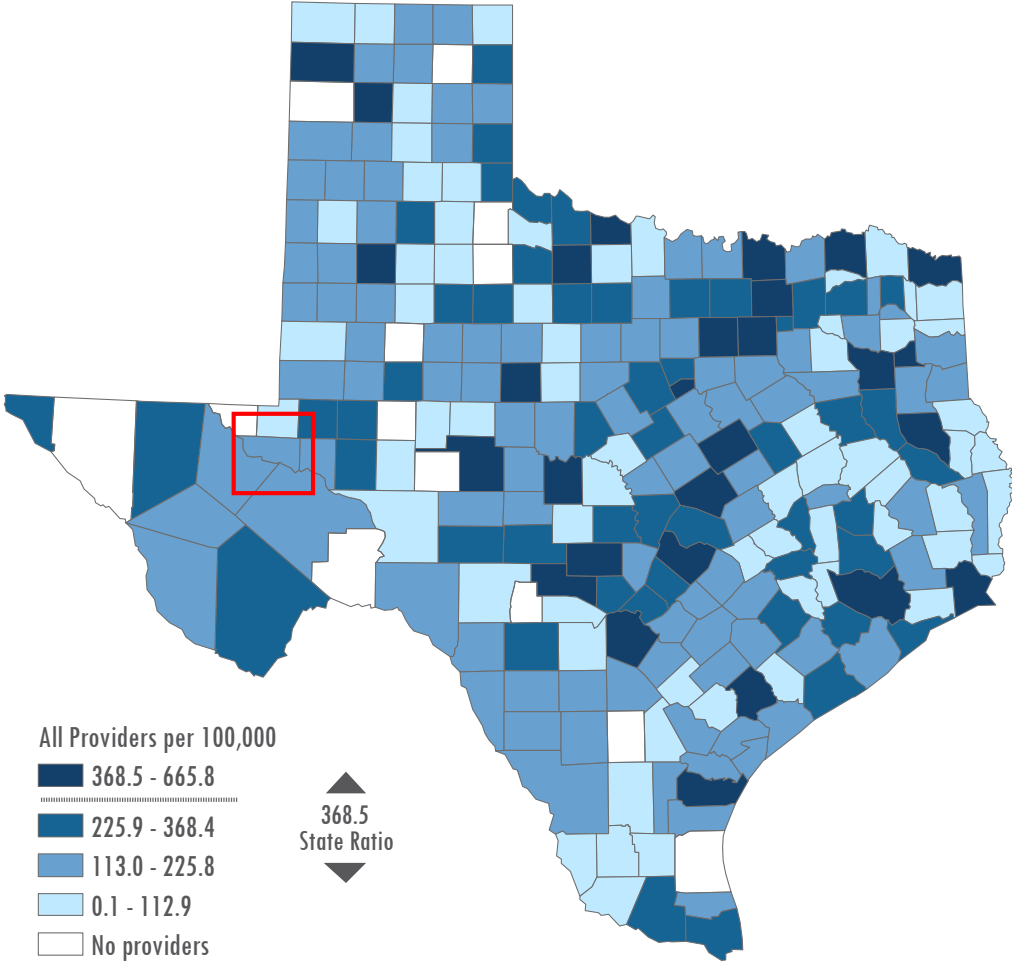
Physicians



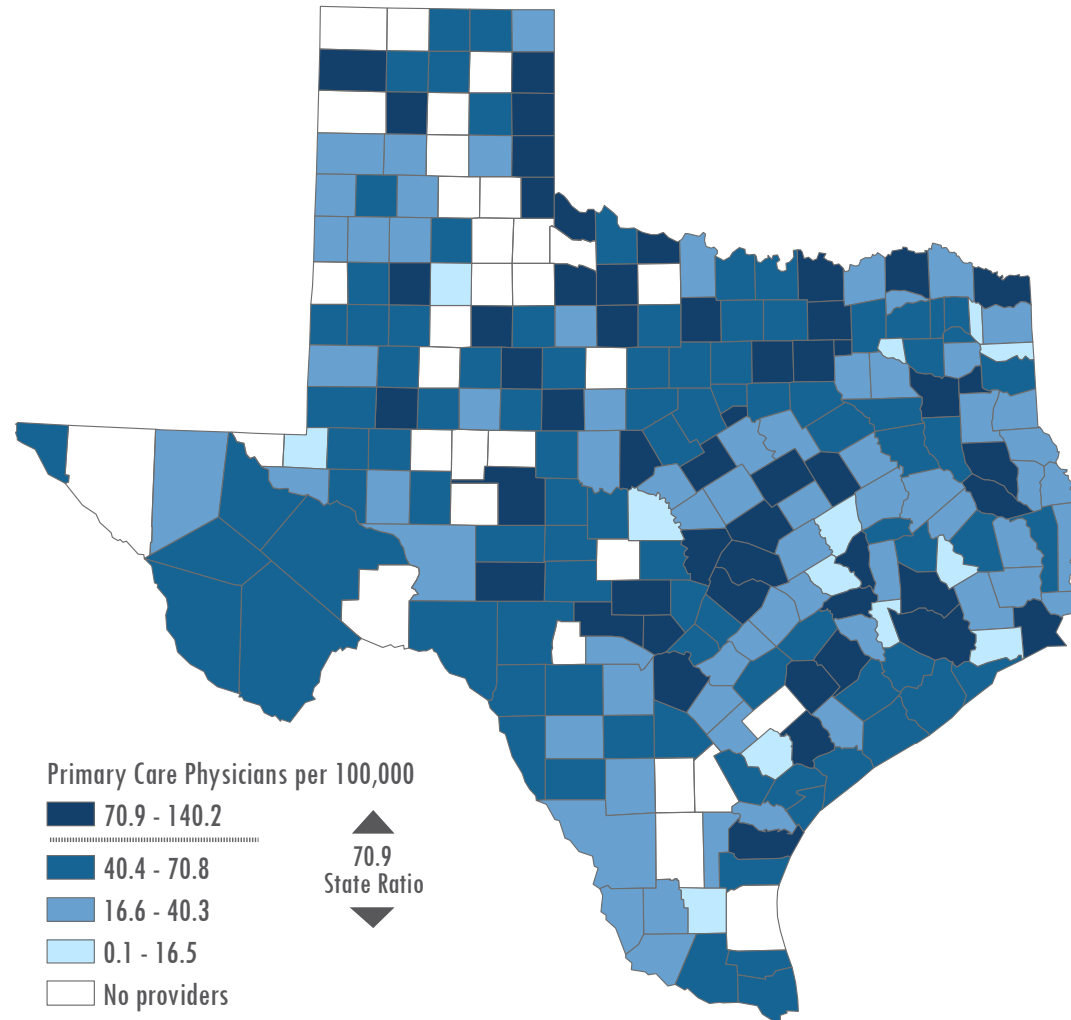
PAs



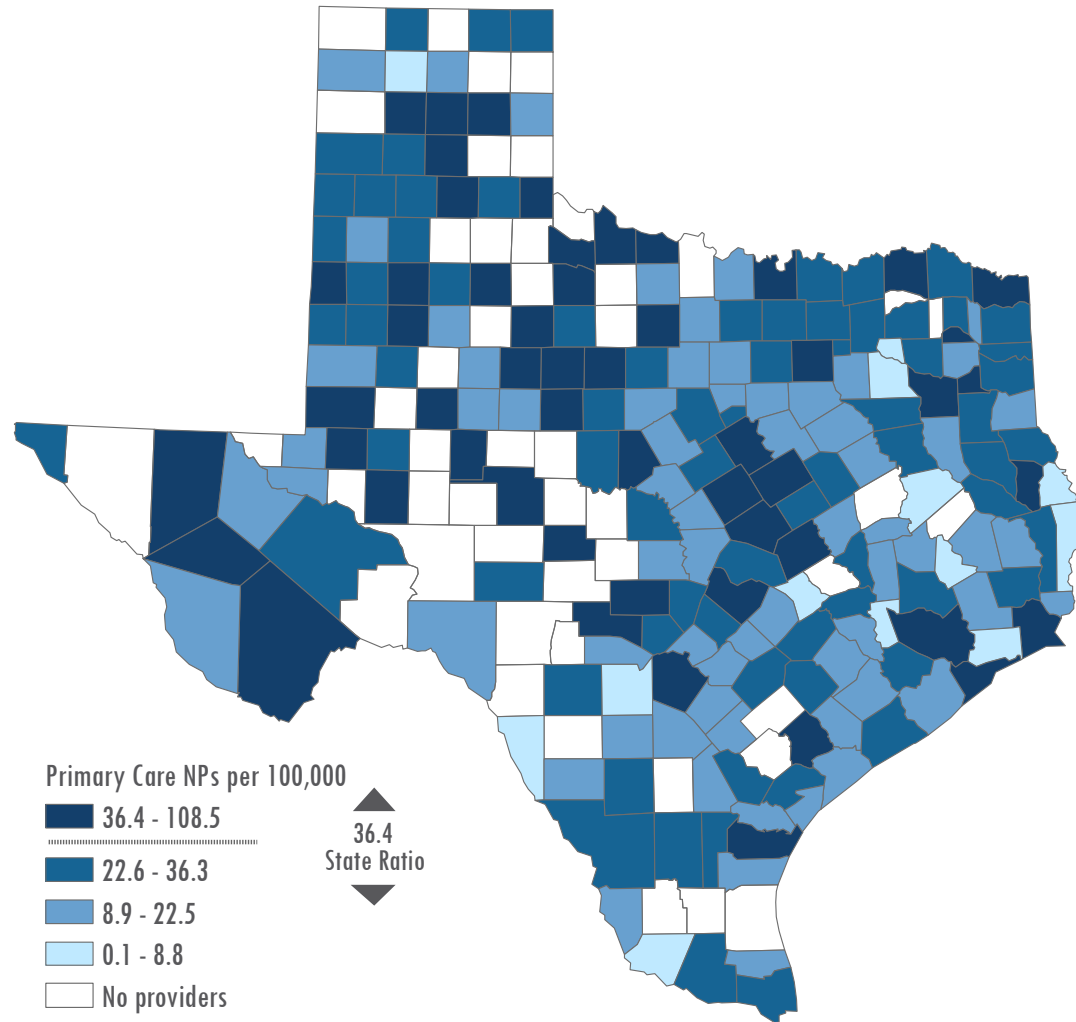
All Providers



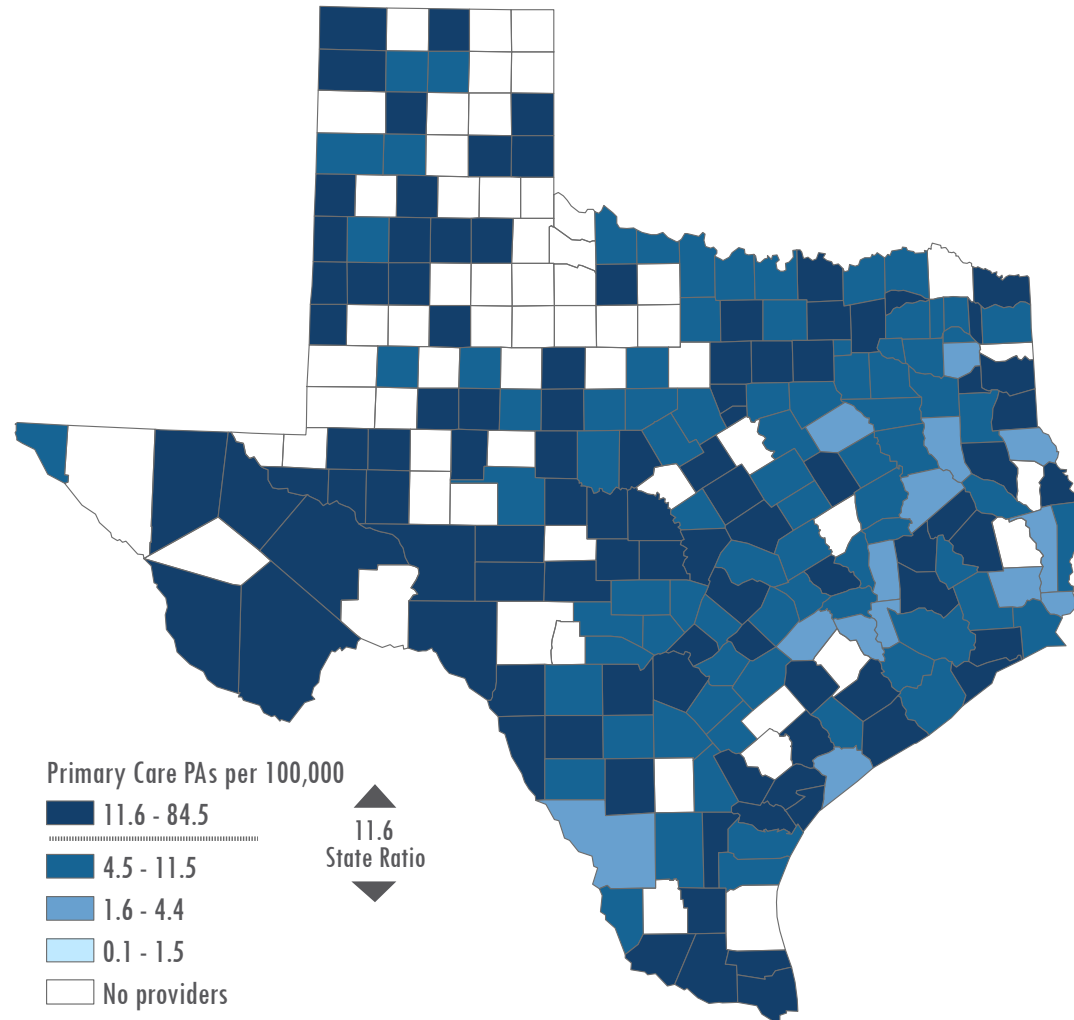
Primary Care Physicians



Primary Care Nurse Practitioners

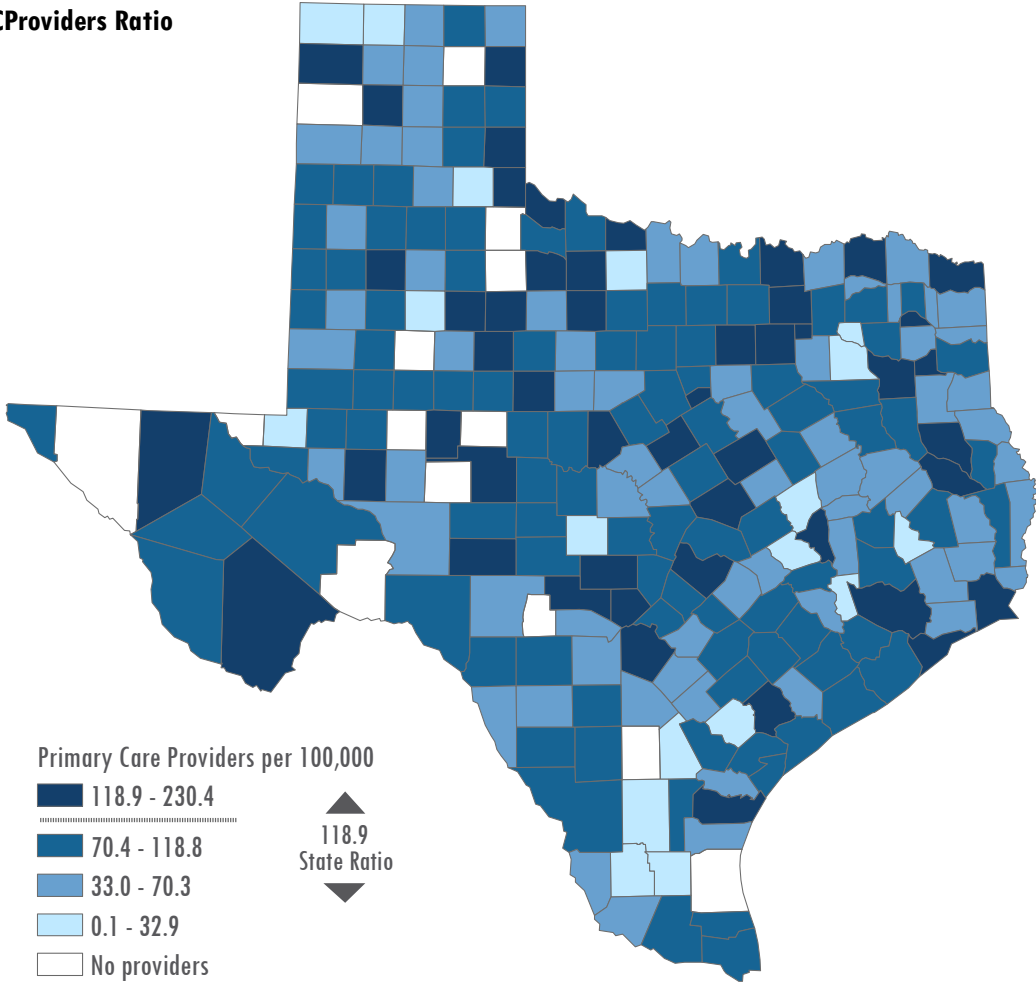


Primary Care PAs

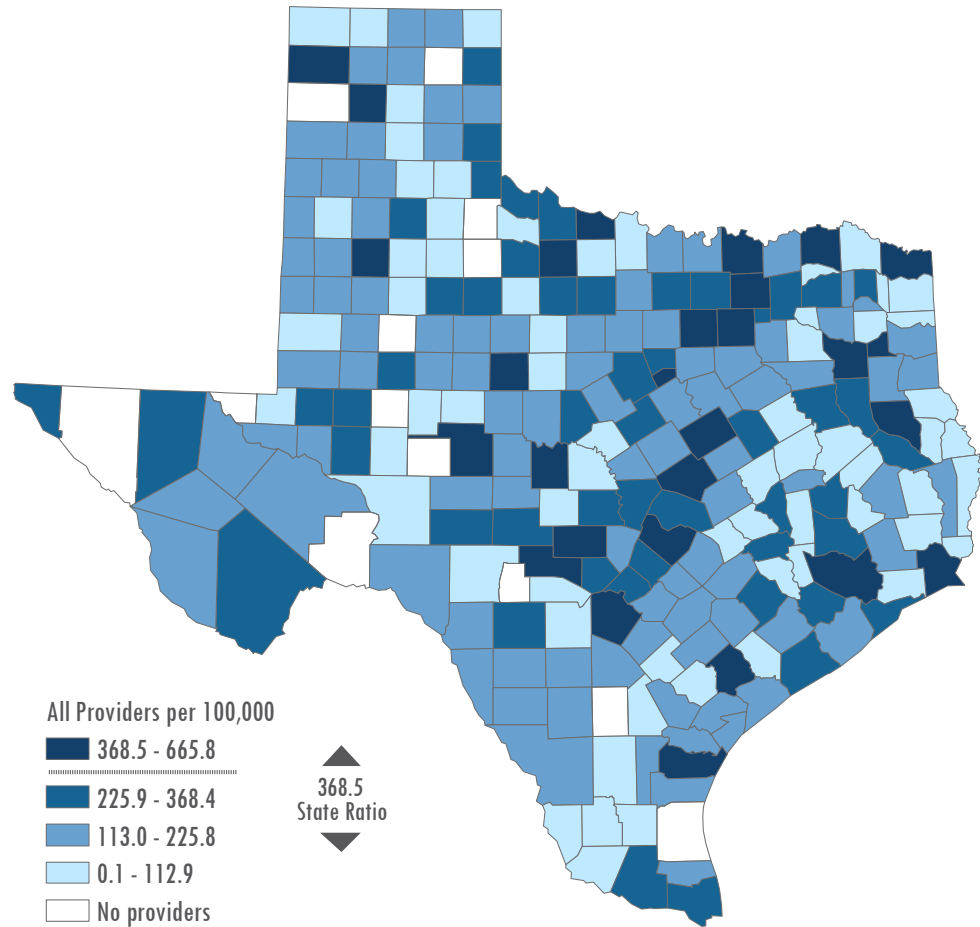


All Primary Care Providers

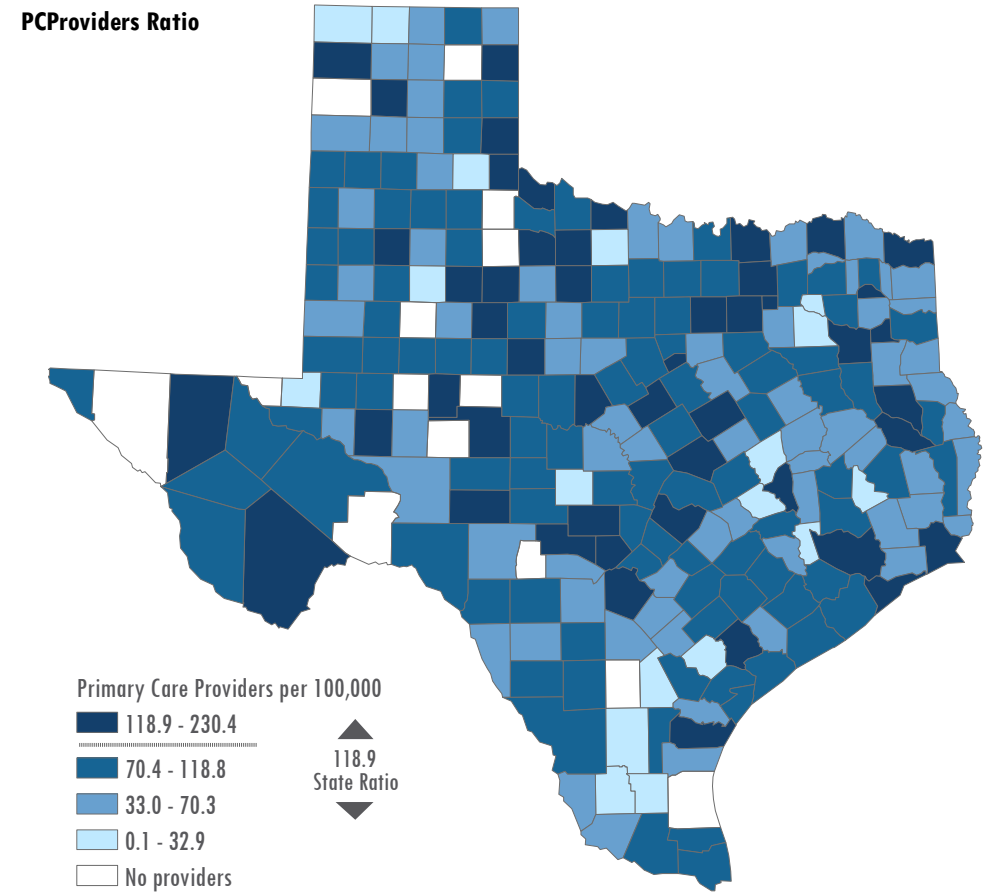
PCProviders Ratio



All Providers



All Primary Care Providers

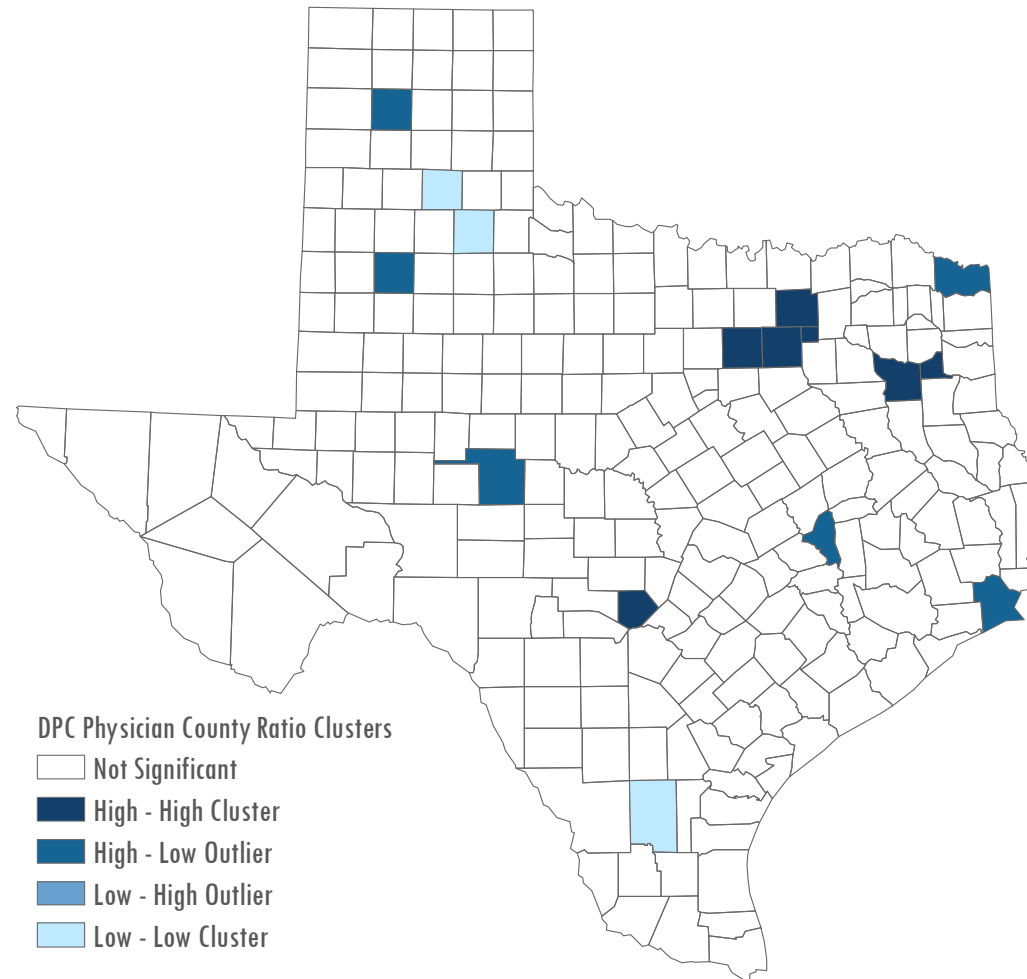


Cluster Maps

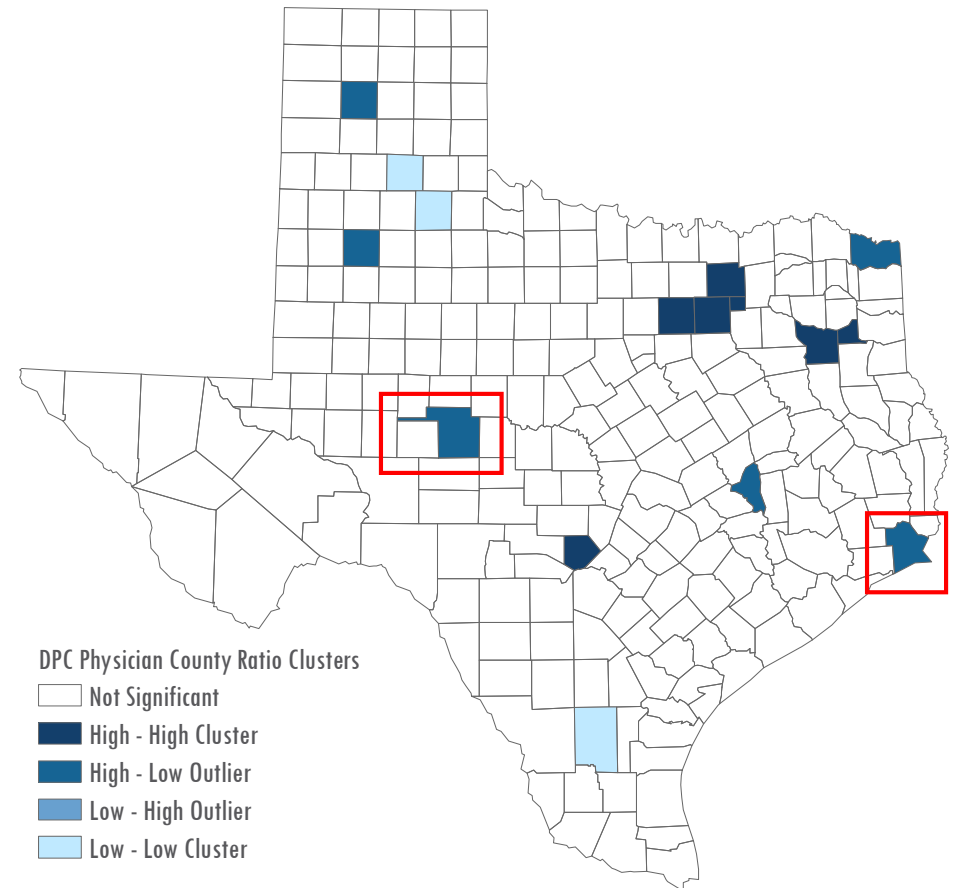
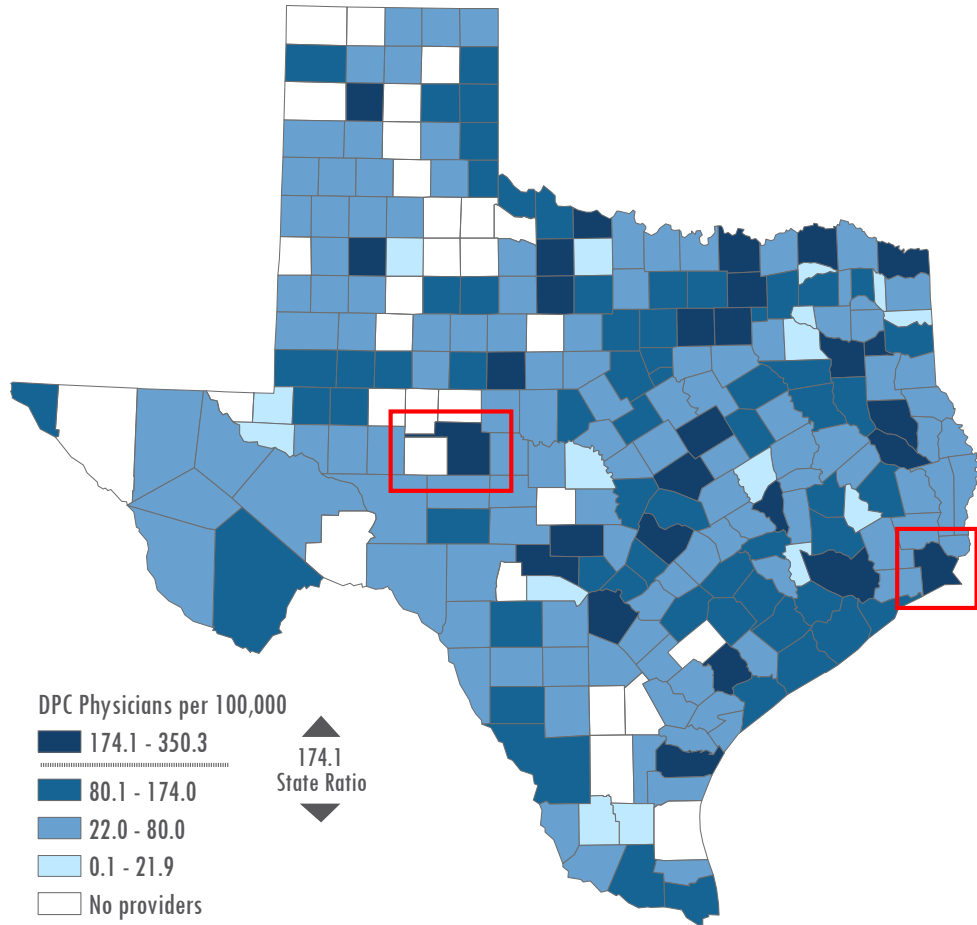
Spatial Autocorrelation

- Measures the degree to which data are clustered or dispersed
- Moran's I
 - High – high cluster: cluster of high values
 - High – low outlier: high value surrounded by low values
 - Low – high outliers: low value surrounded by high values
 - Low – low cluster: cluster of low values

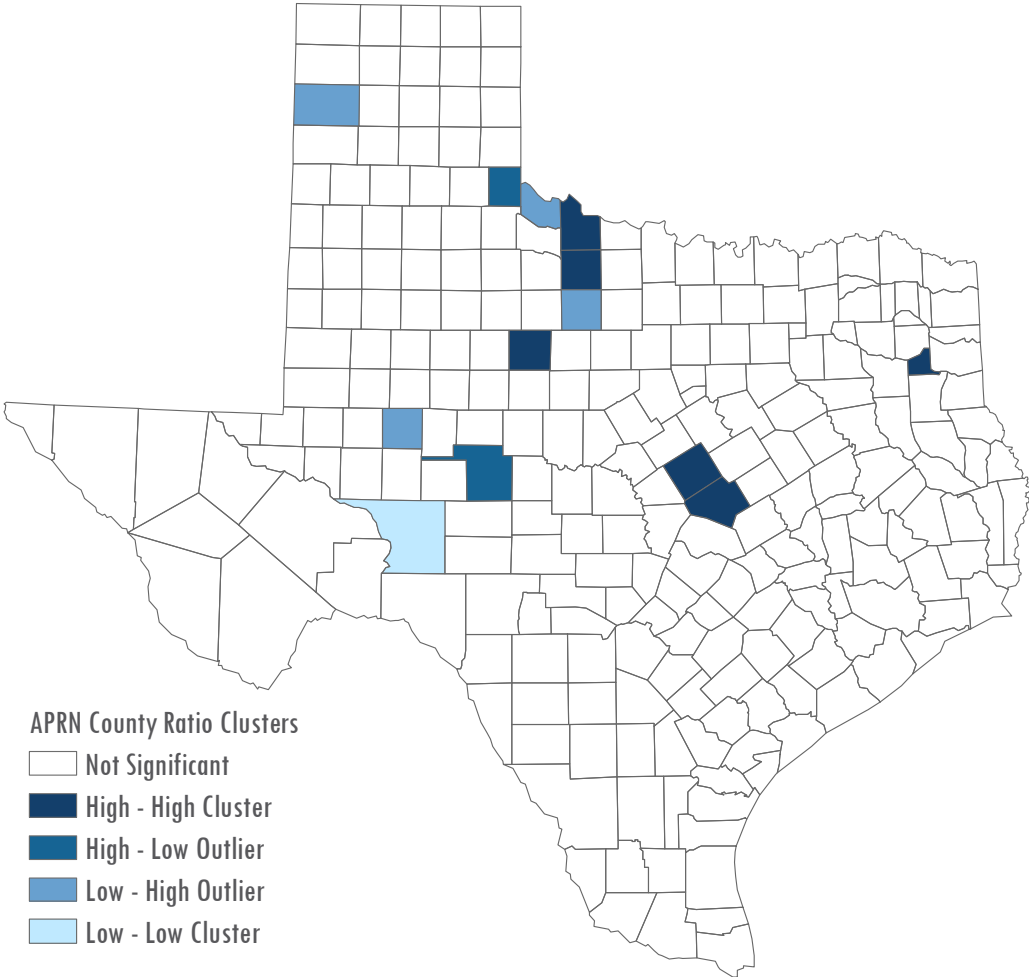
Physicians



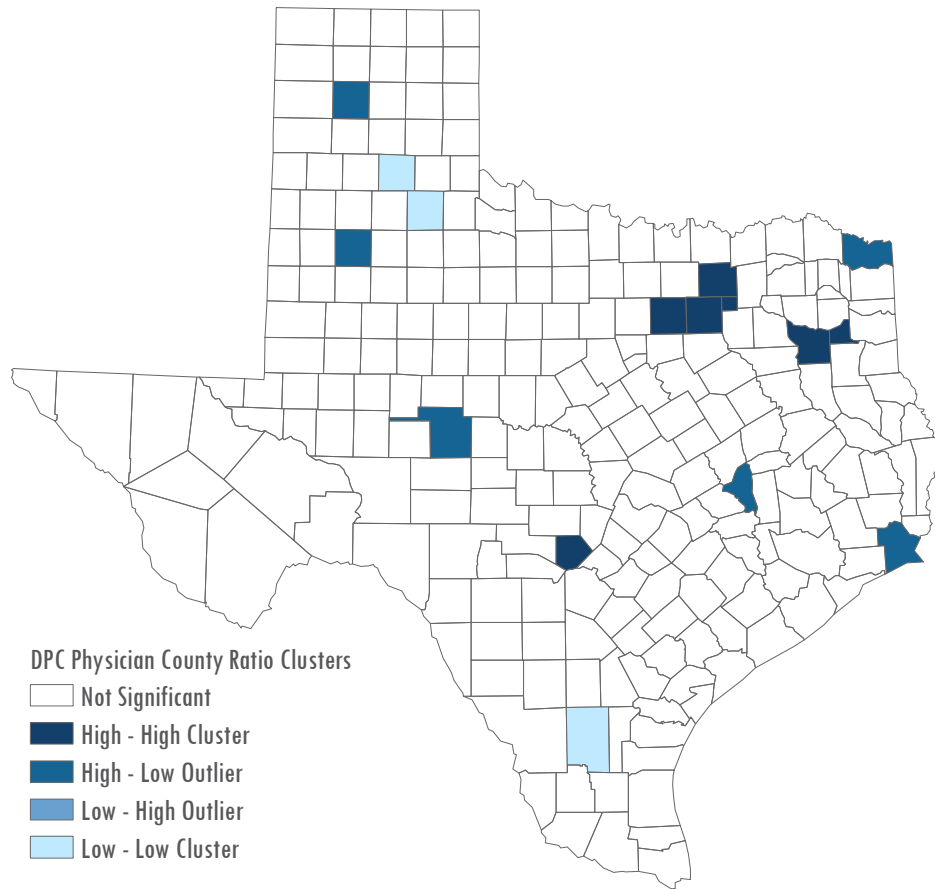
Physicians



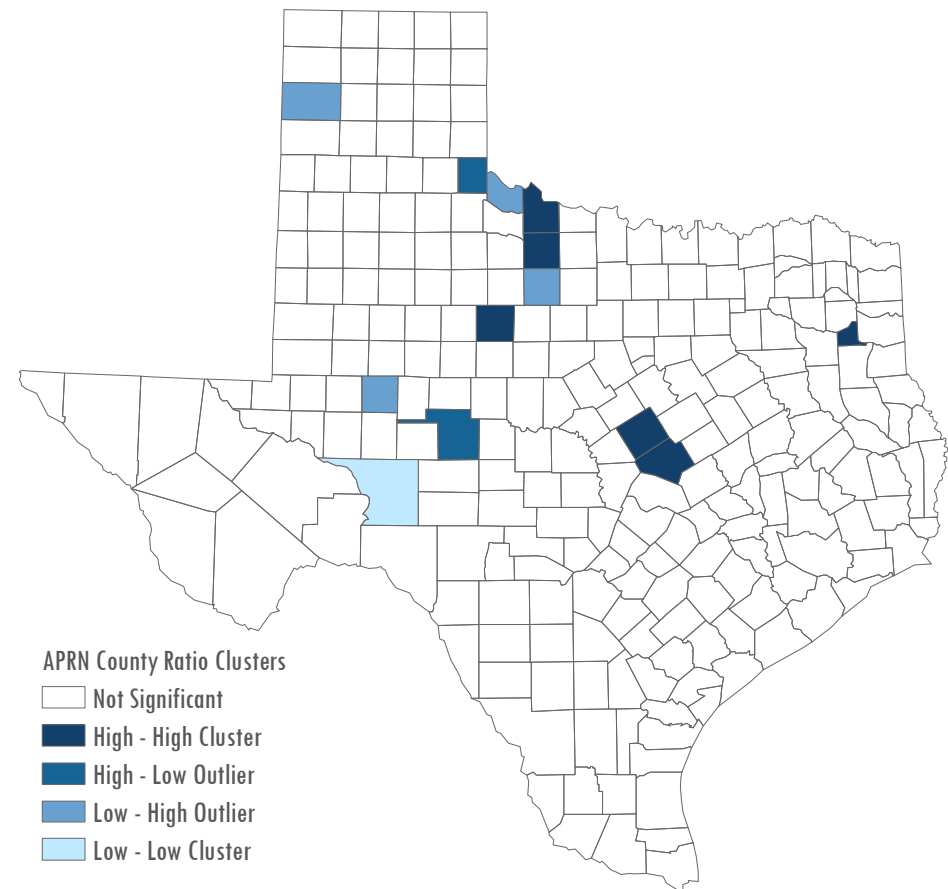
APRNs



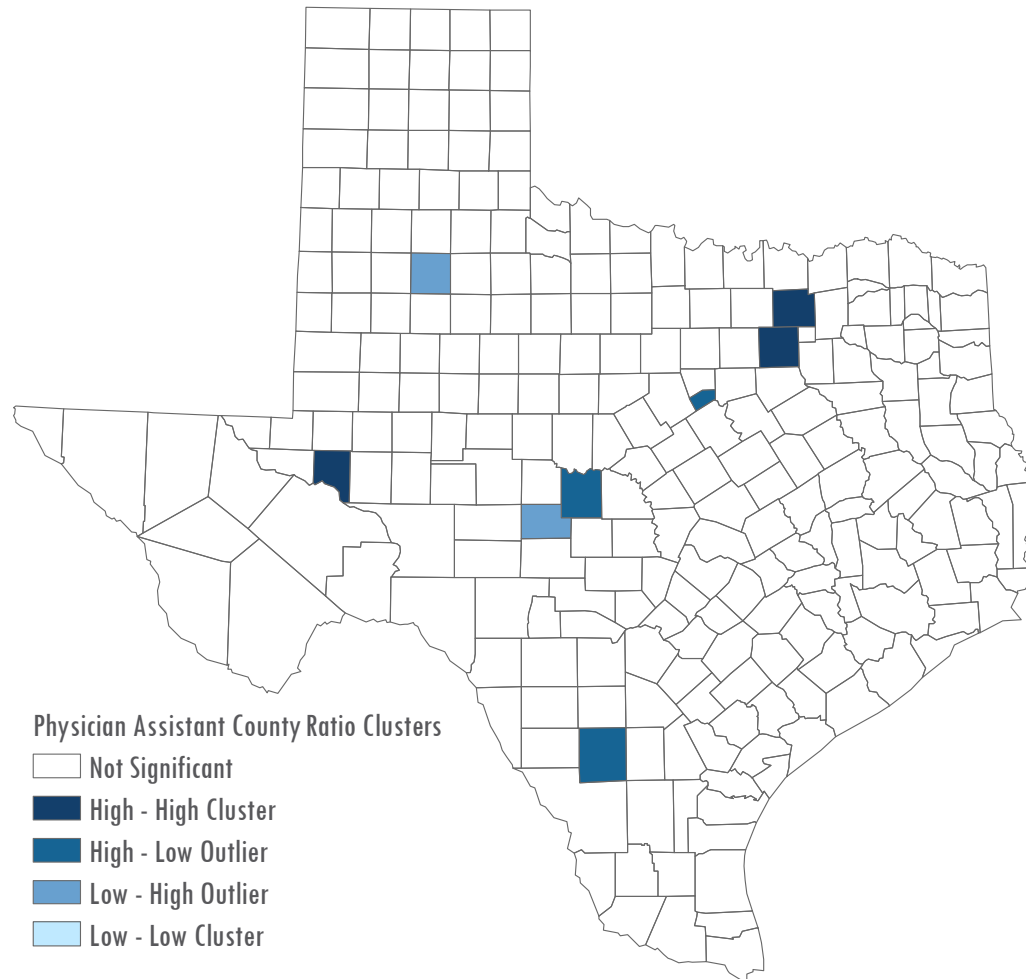
Physicians



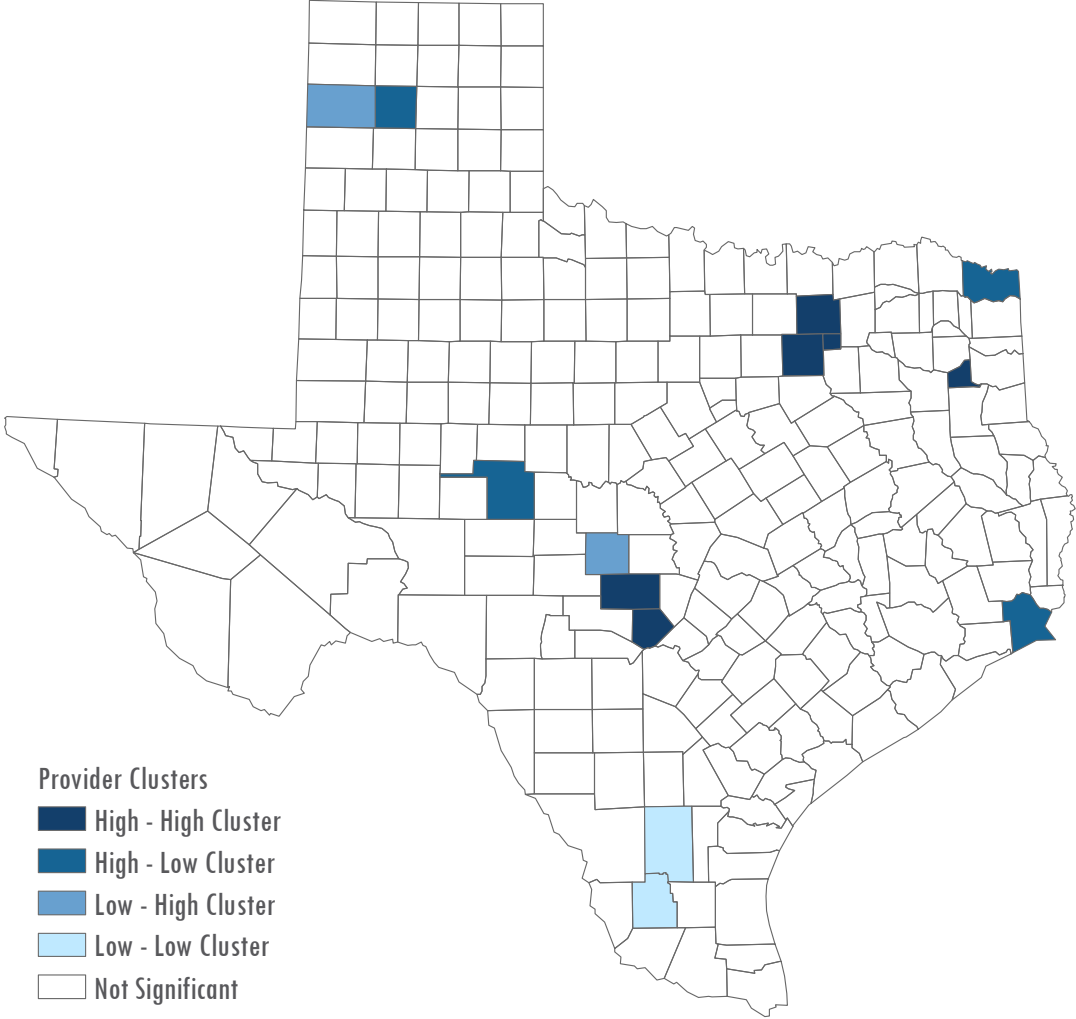
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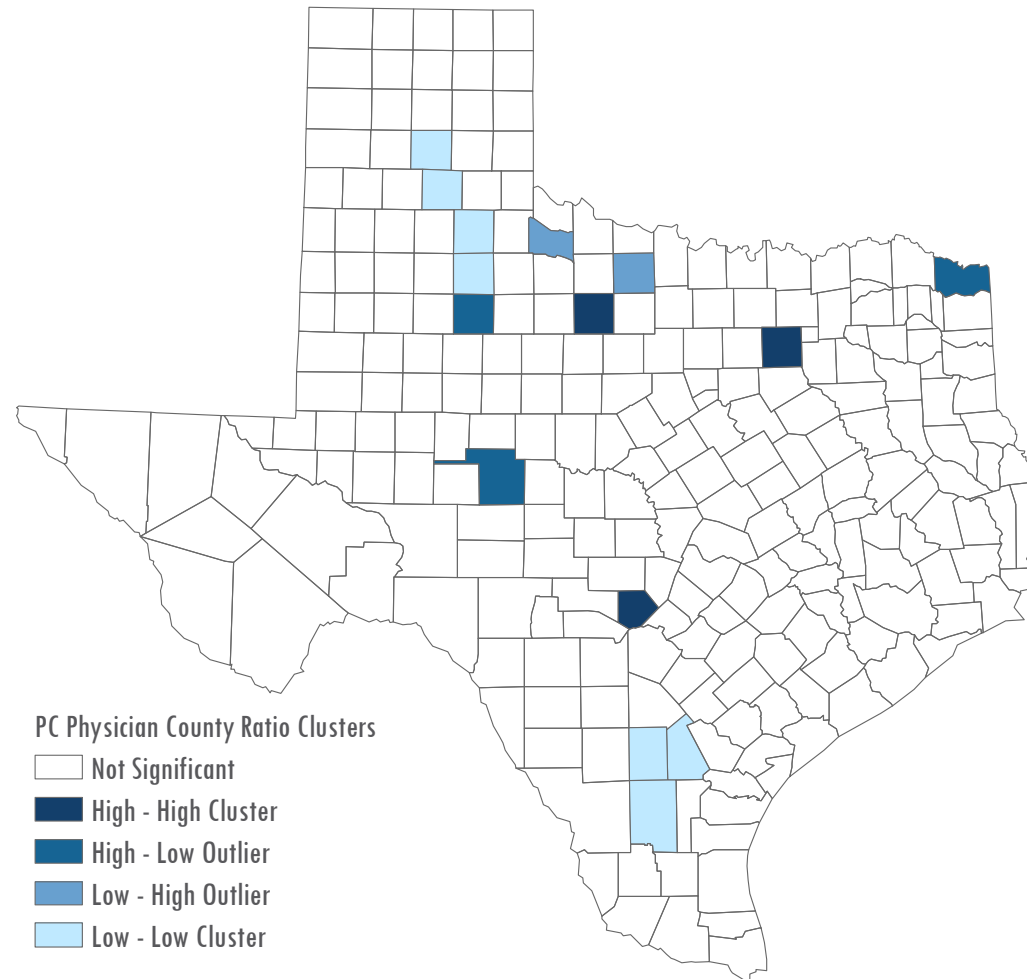
PAs



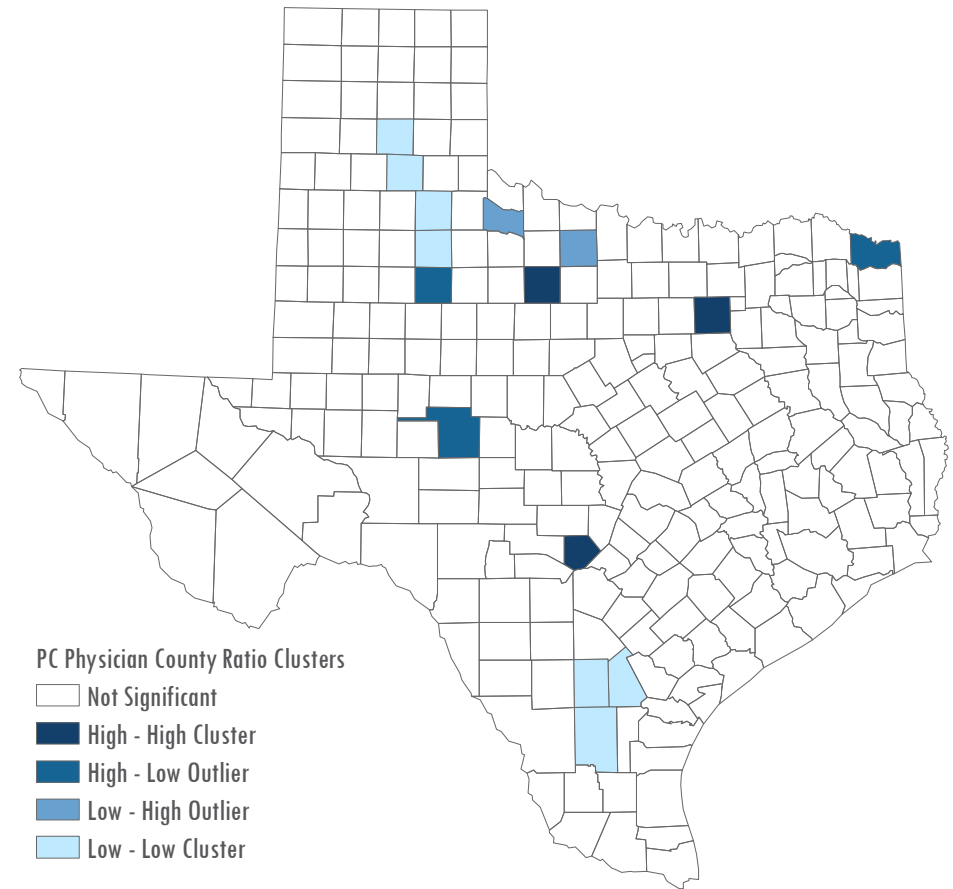
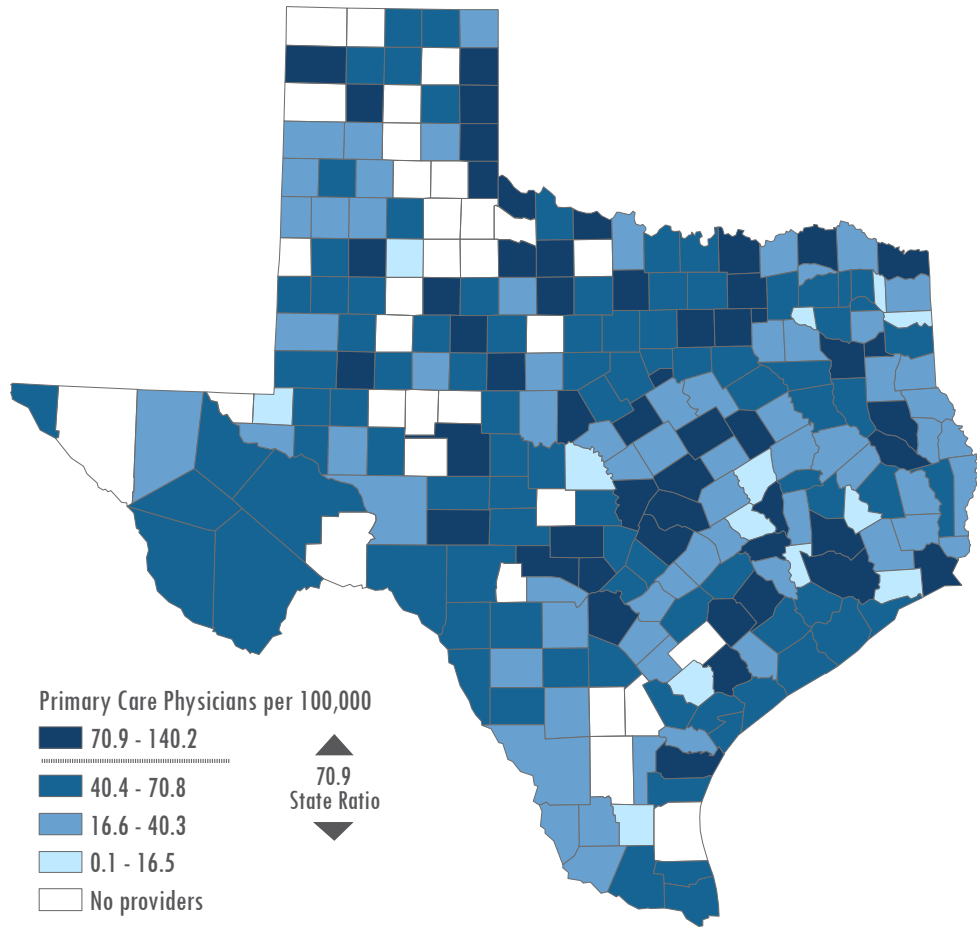
All Providers



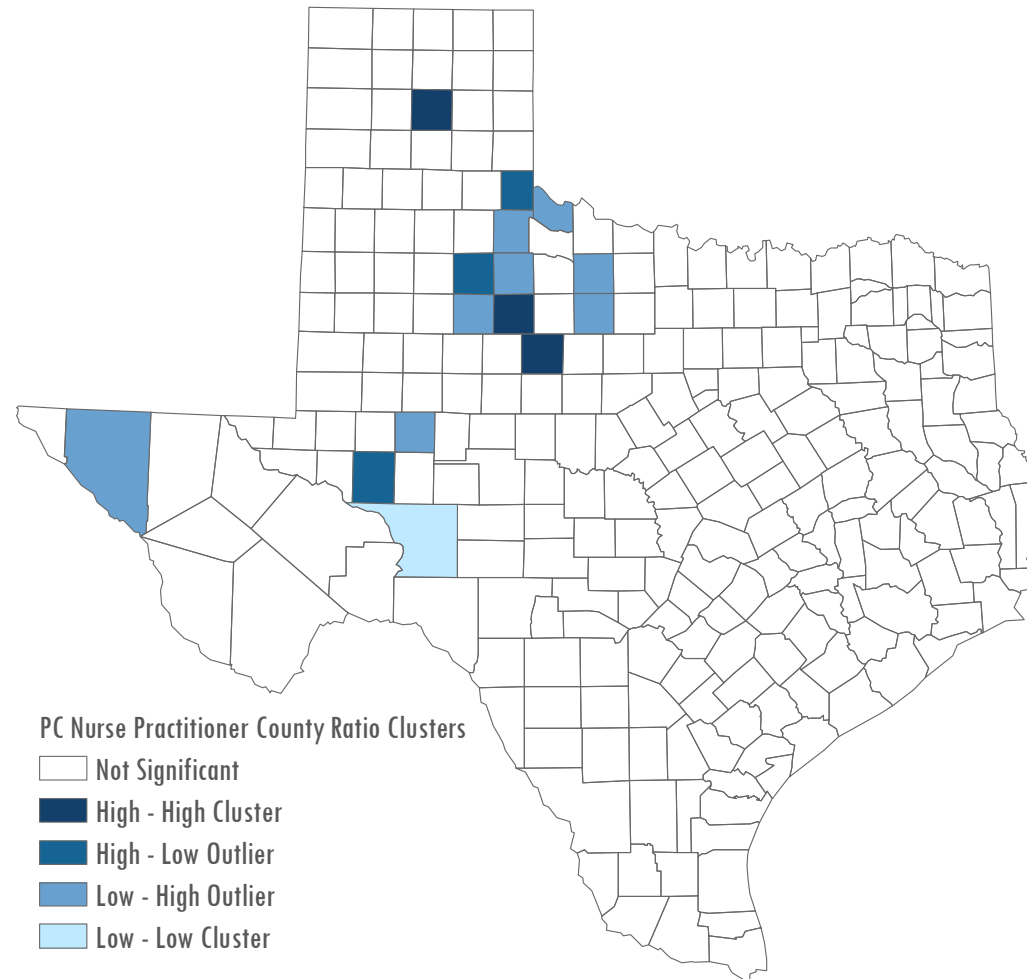
Primary Care Physicians



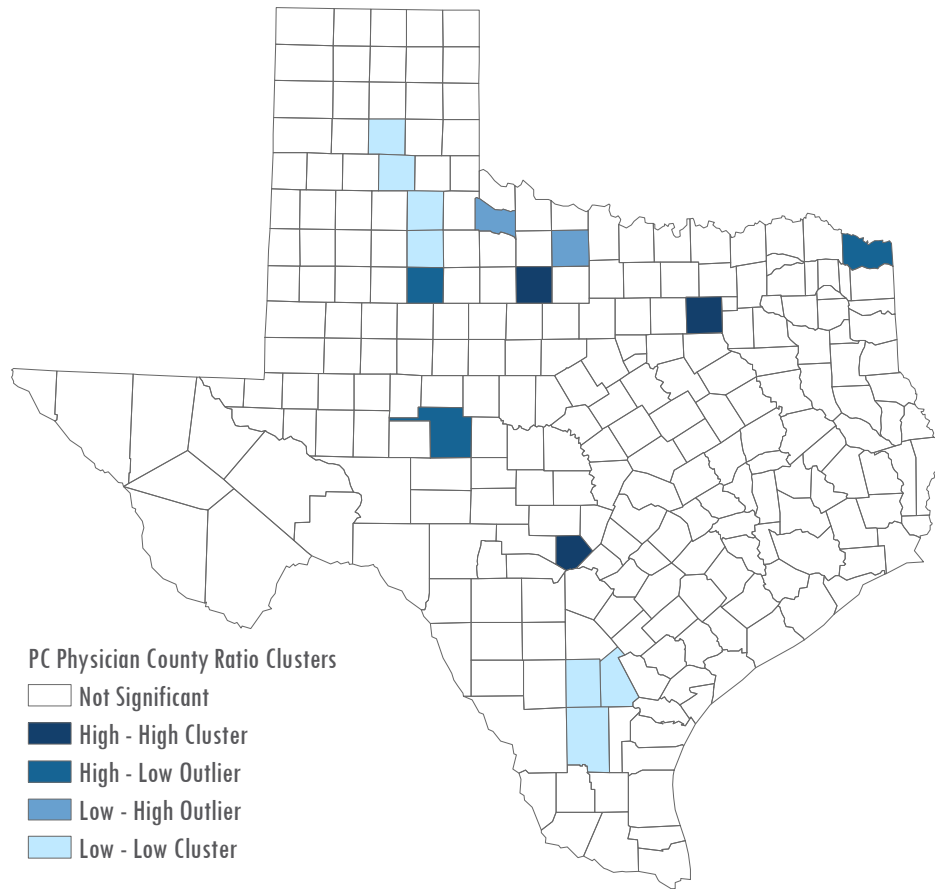
Primary Care Physicians



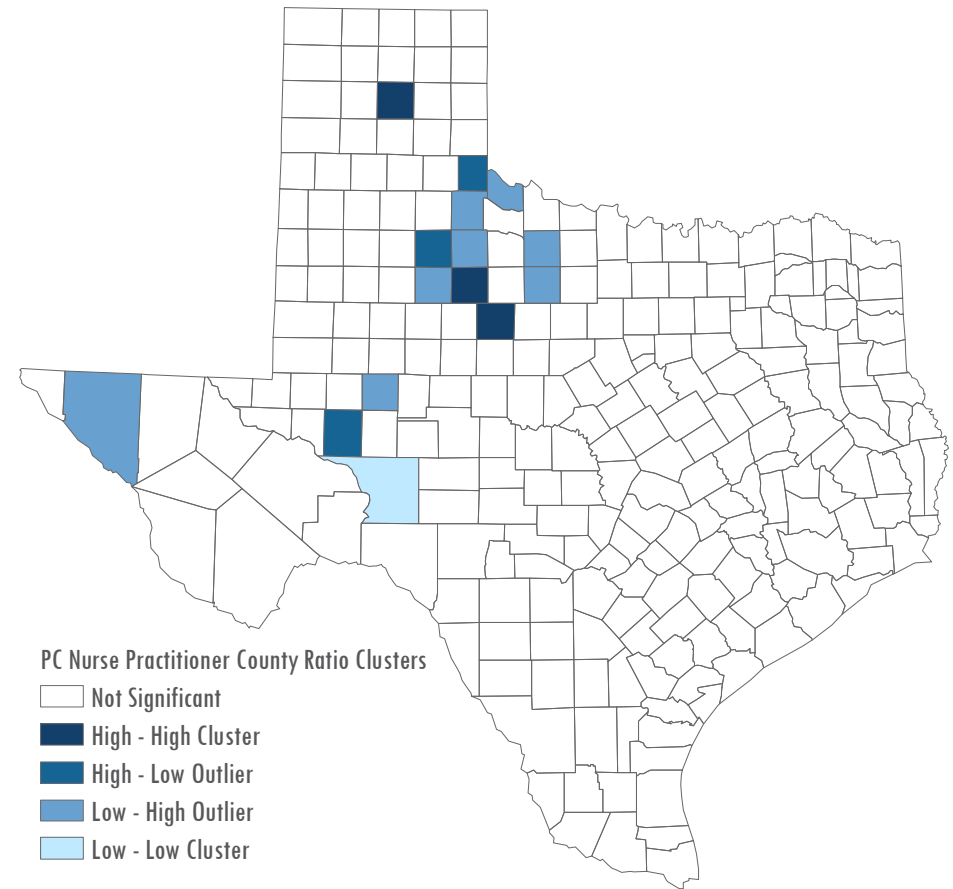
Primary Care NPs



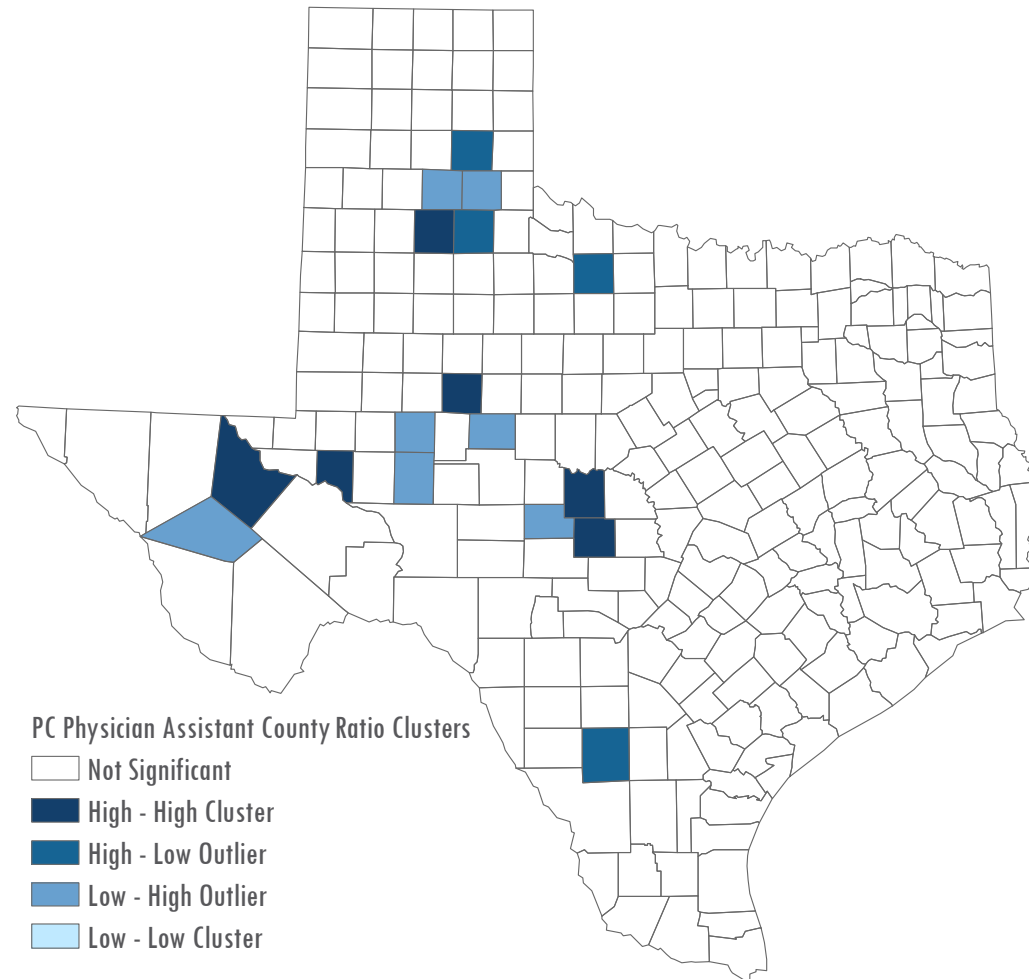
Primary Care Physicians



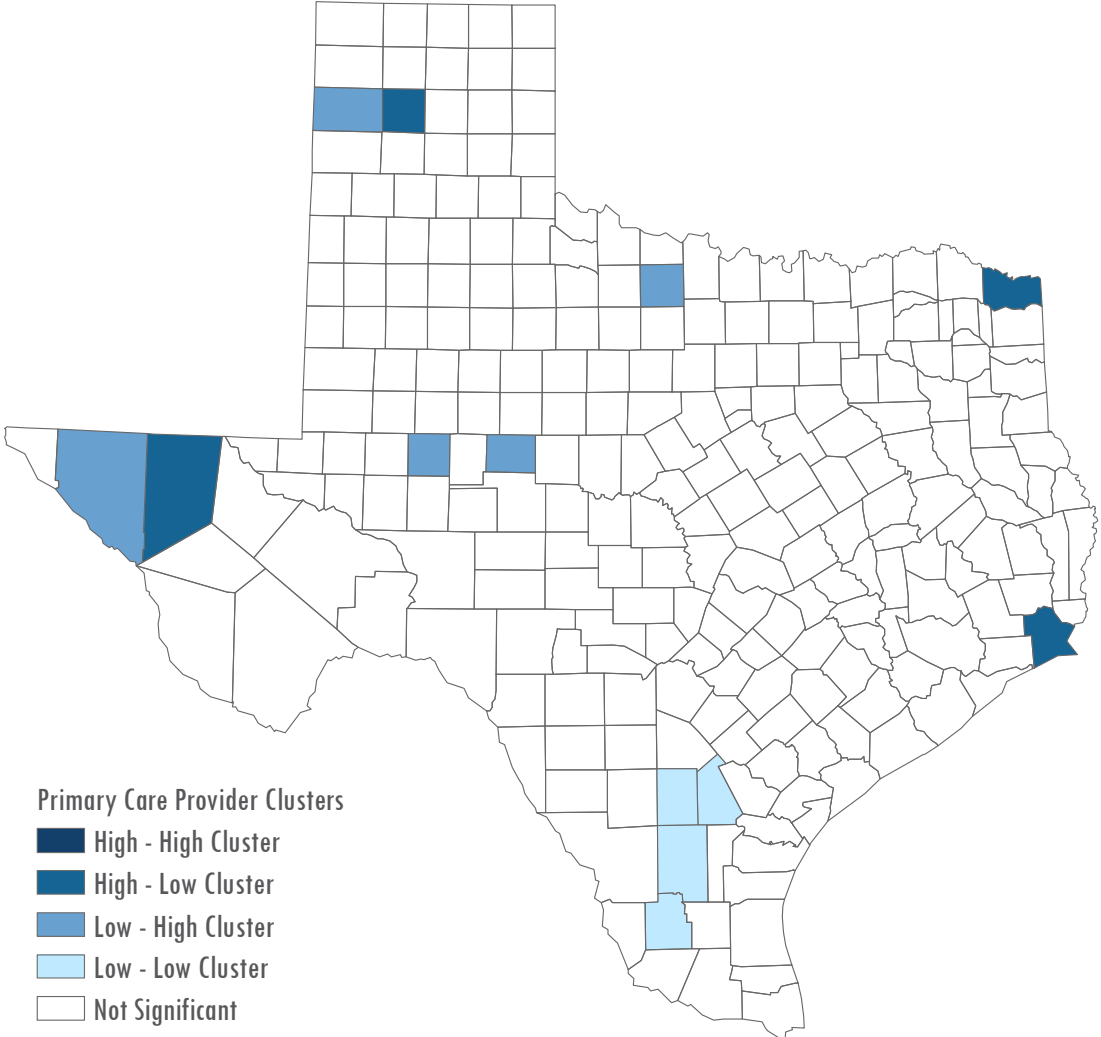
Primary Care NPs



Primary Care PAs



All Primary Care Providers



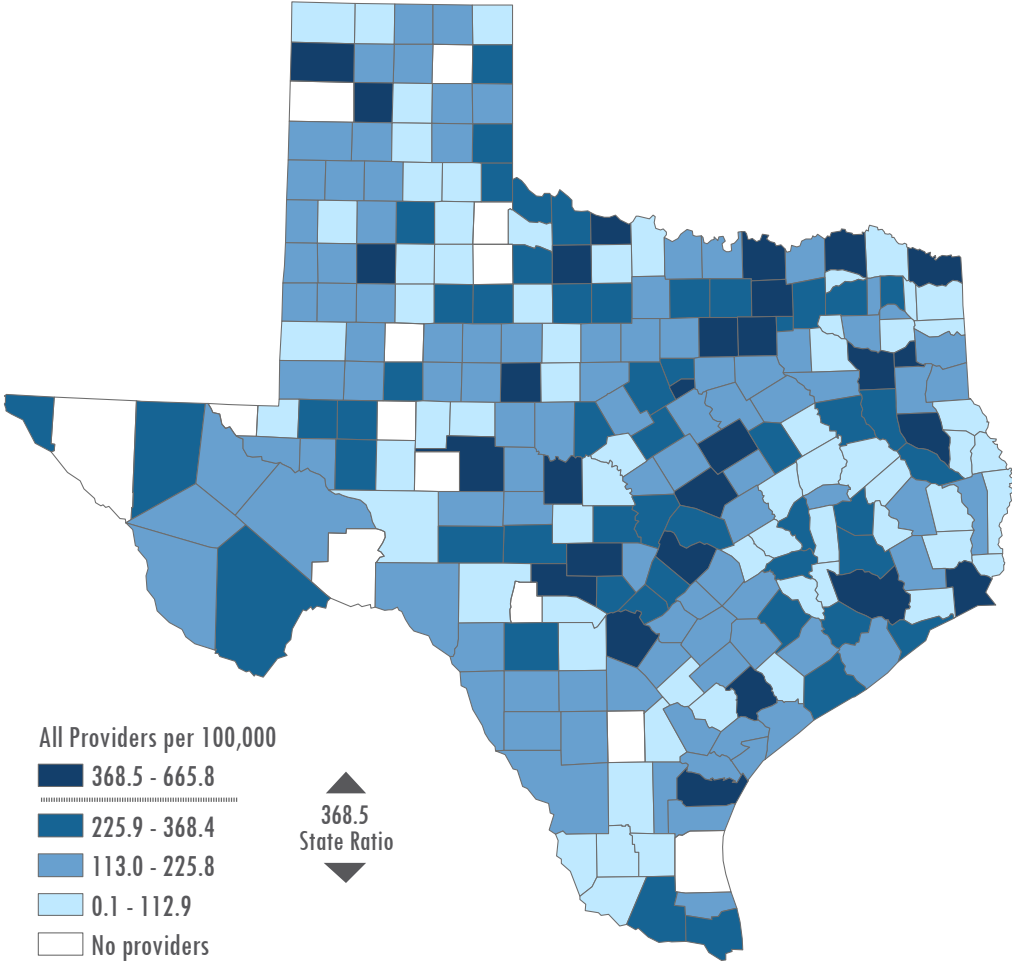
Primary Care Provider Clusters

- High - High Cluster
- High - Low Cluster
- Low - High Cluster
- Low - Low Cluster
- Not Significant

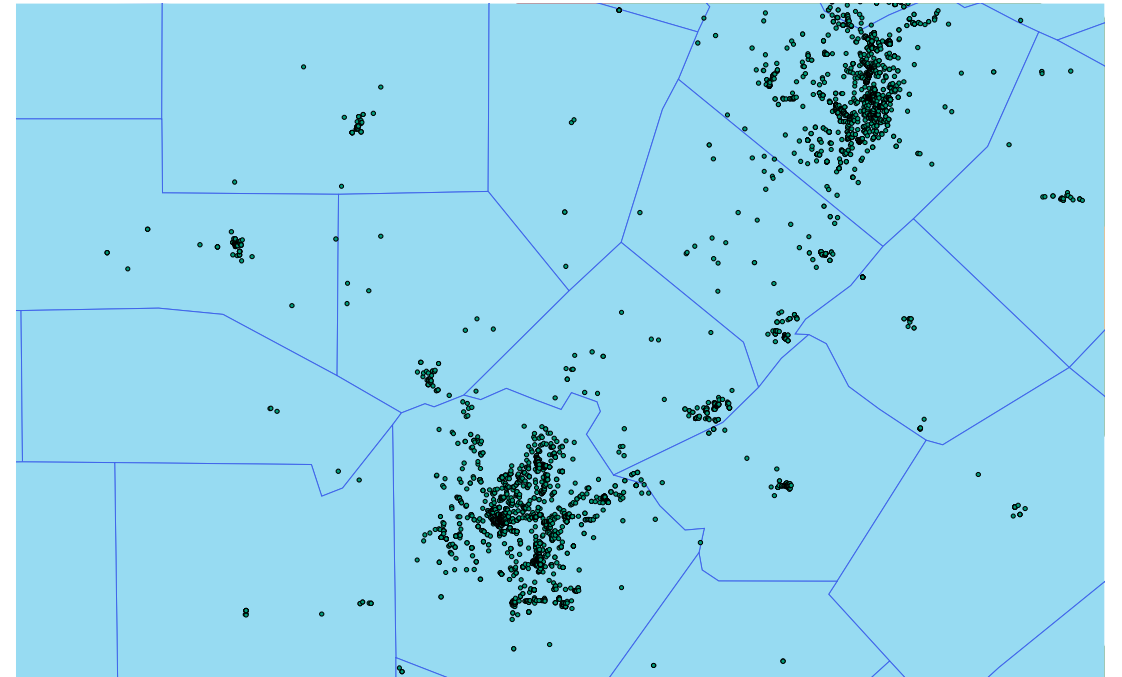
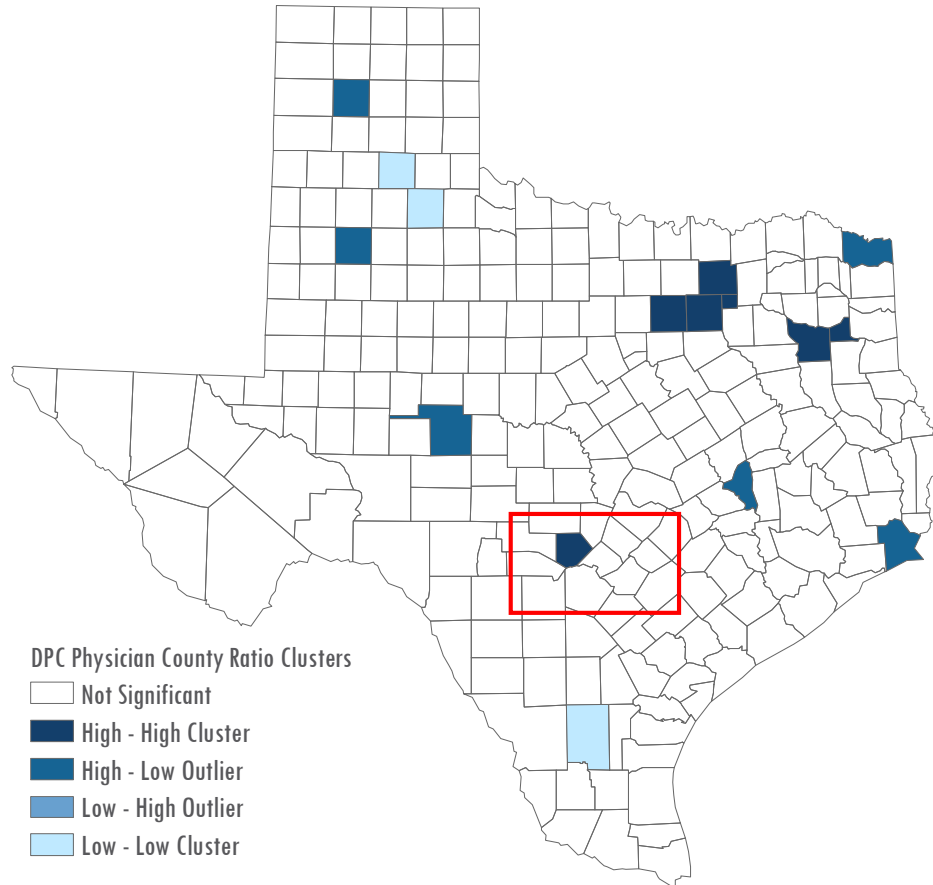
Problems with County Maps

- Providers aren't evenly distributed across counties
- County lines are arbitrary

All Providers



Example: Kendall County



Dasymetric Maps

Dasymetric Methodology

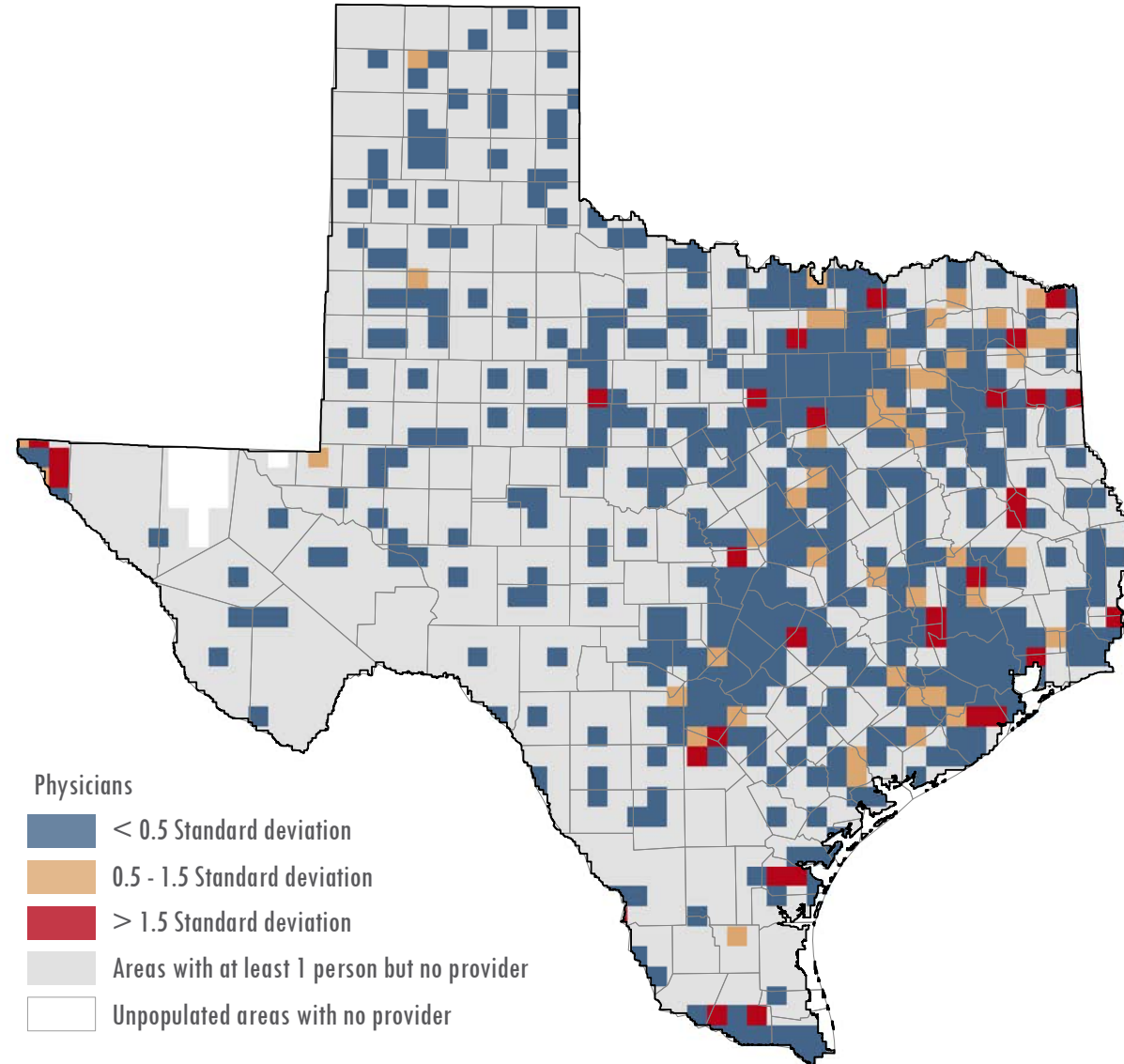
- Data

- Texas data – geocoded provider addresses from HPRC
- Gridded US population count from the Center of International Earth Science Information Network (CIESIN)
 - Grid pixels sized approximately 4.4 x 4.4 km

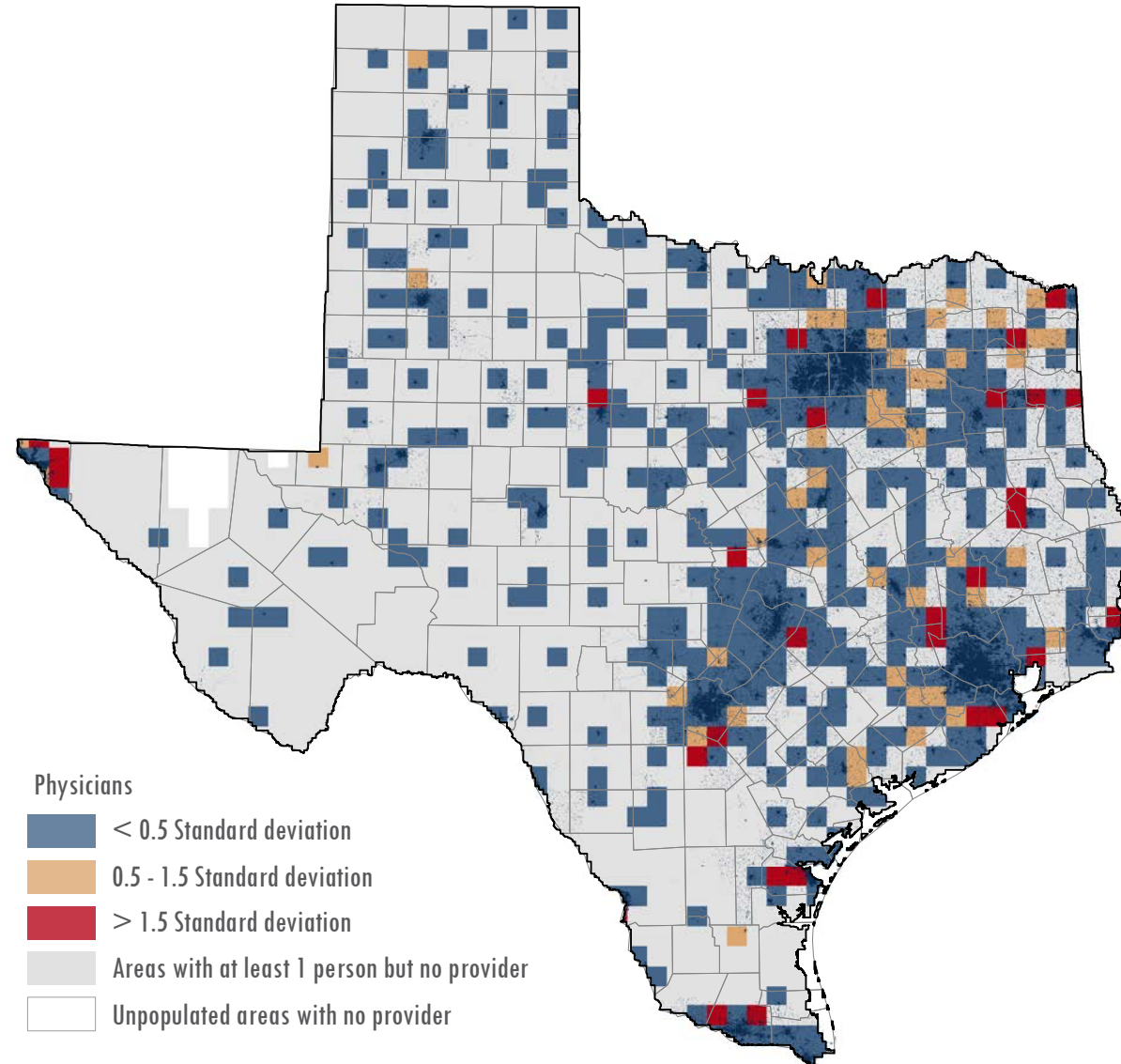
- Methods

- Aggregated 4.4 x 4.4 km gridded pixels to units of 22 x 22 km
- Joined population polygon grid with geocoded provider addresses
- Calculated ratio of population per provider for each grid square

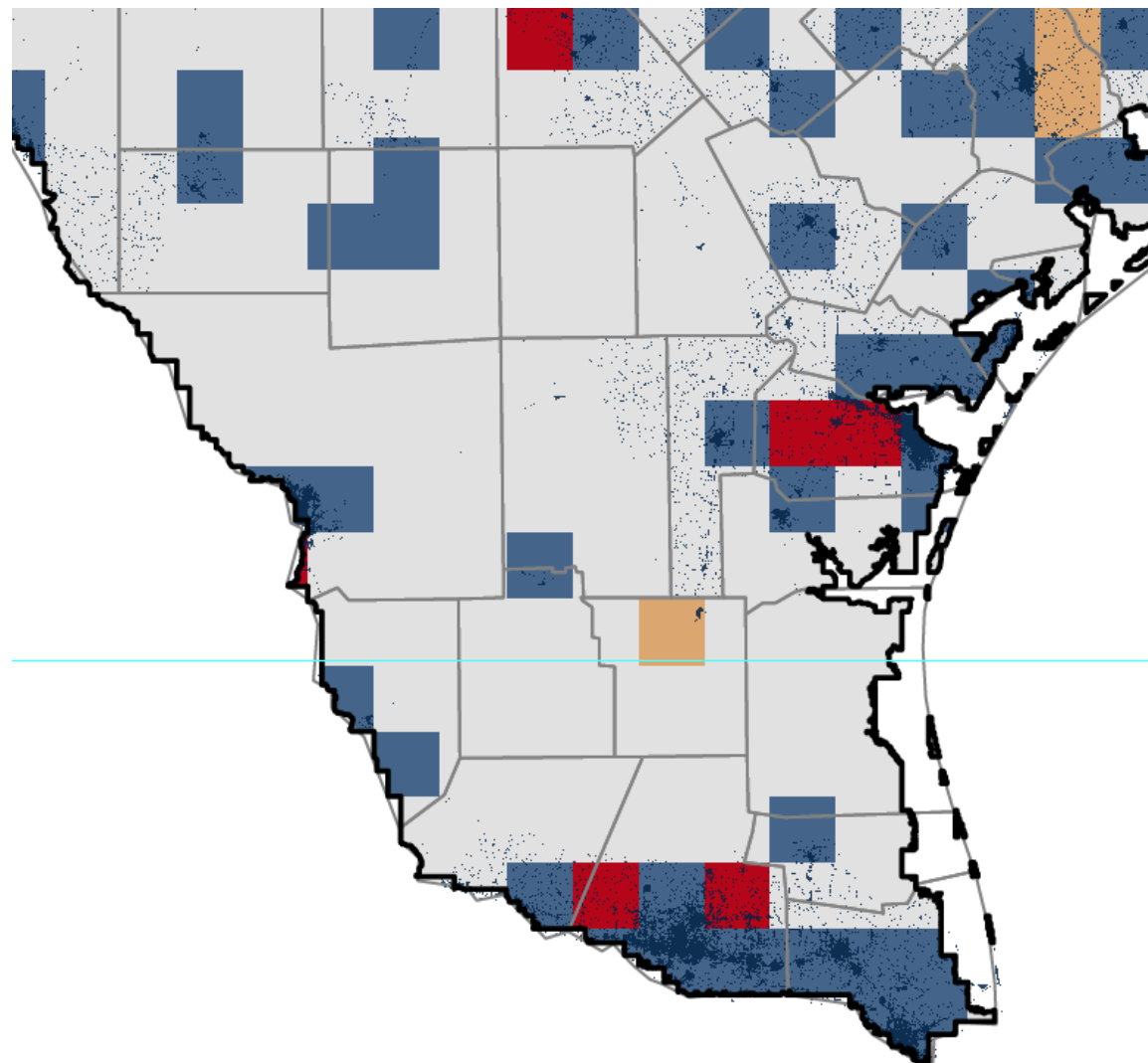
Physicians



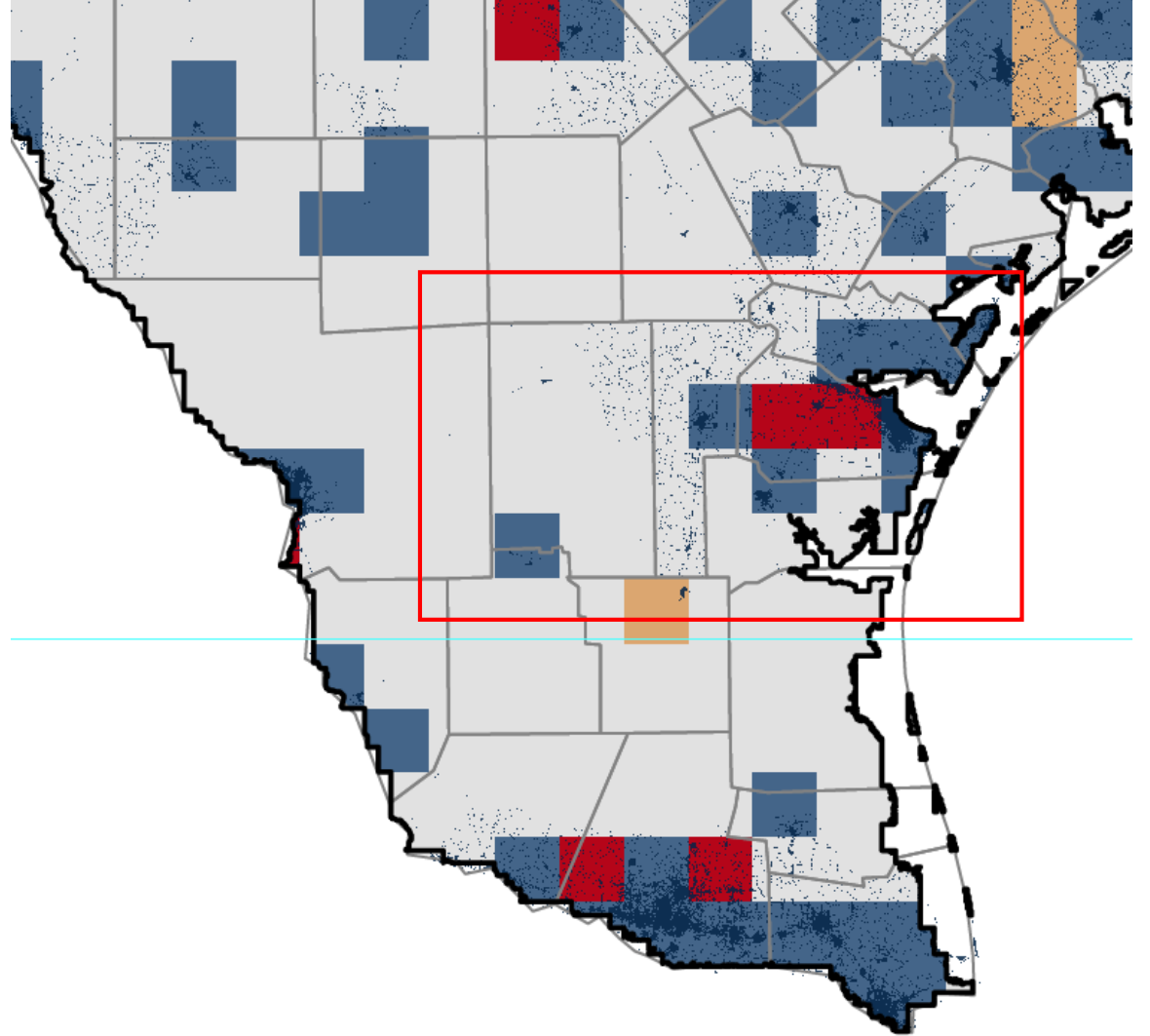
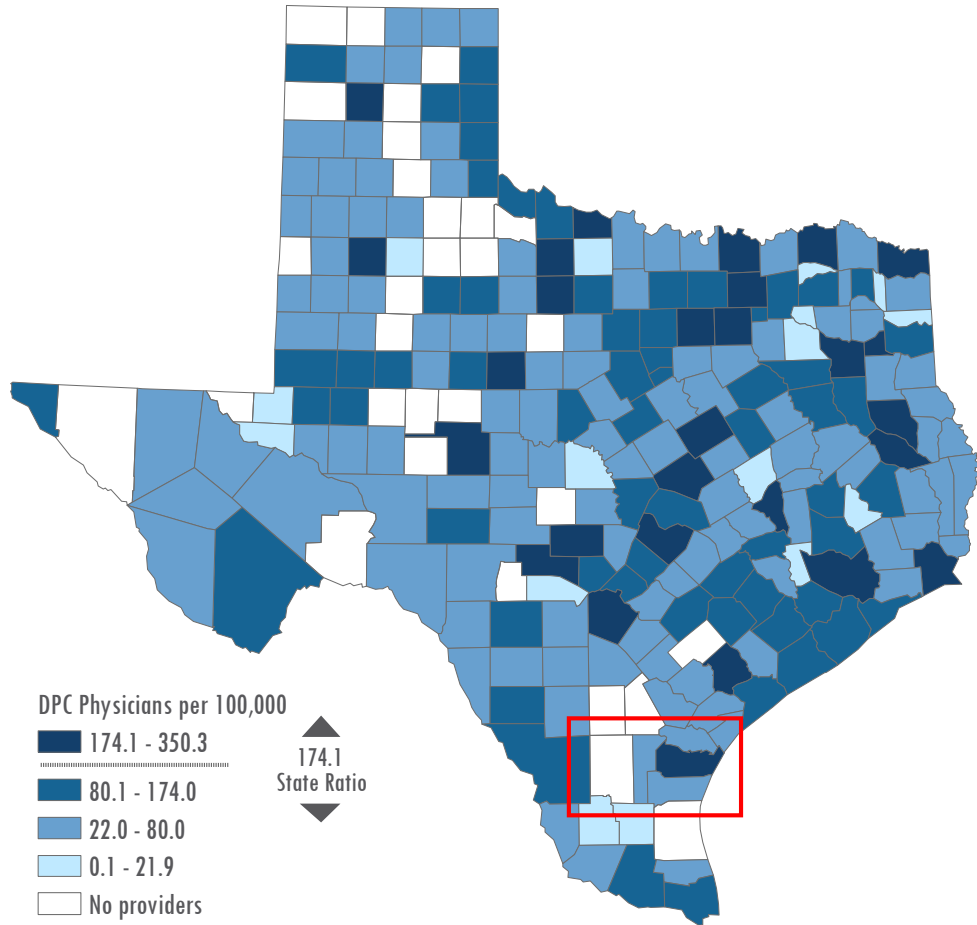
Physicians



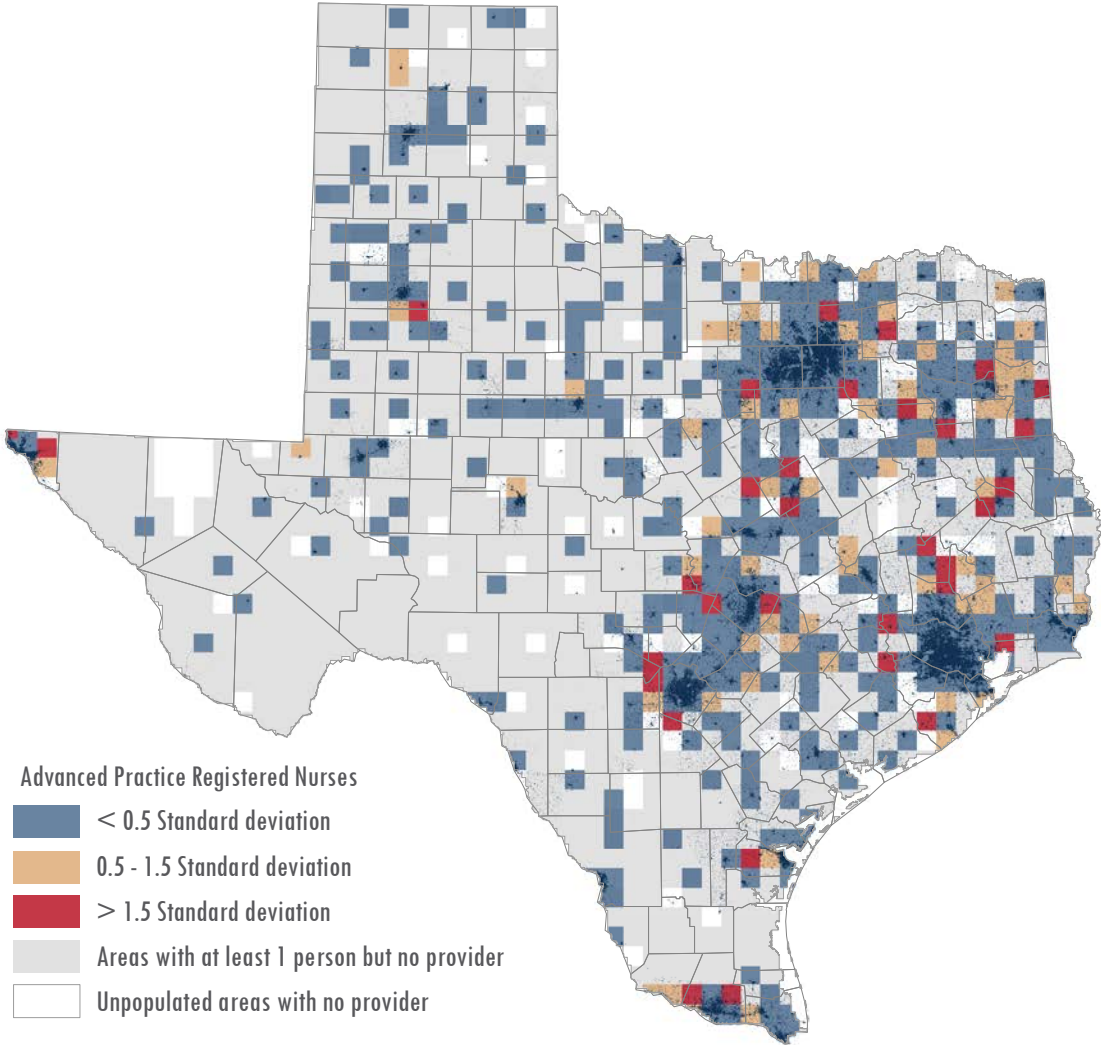
Physicians



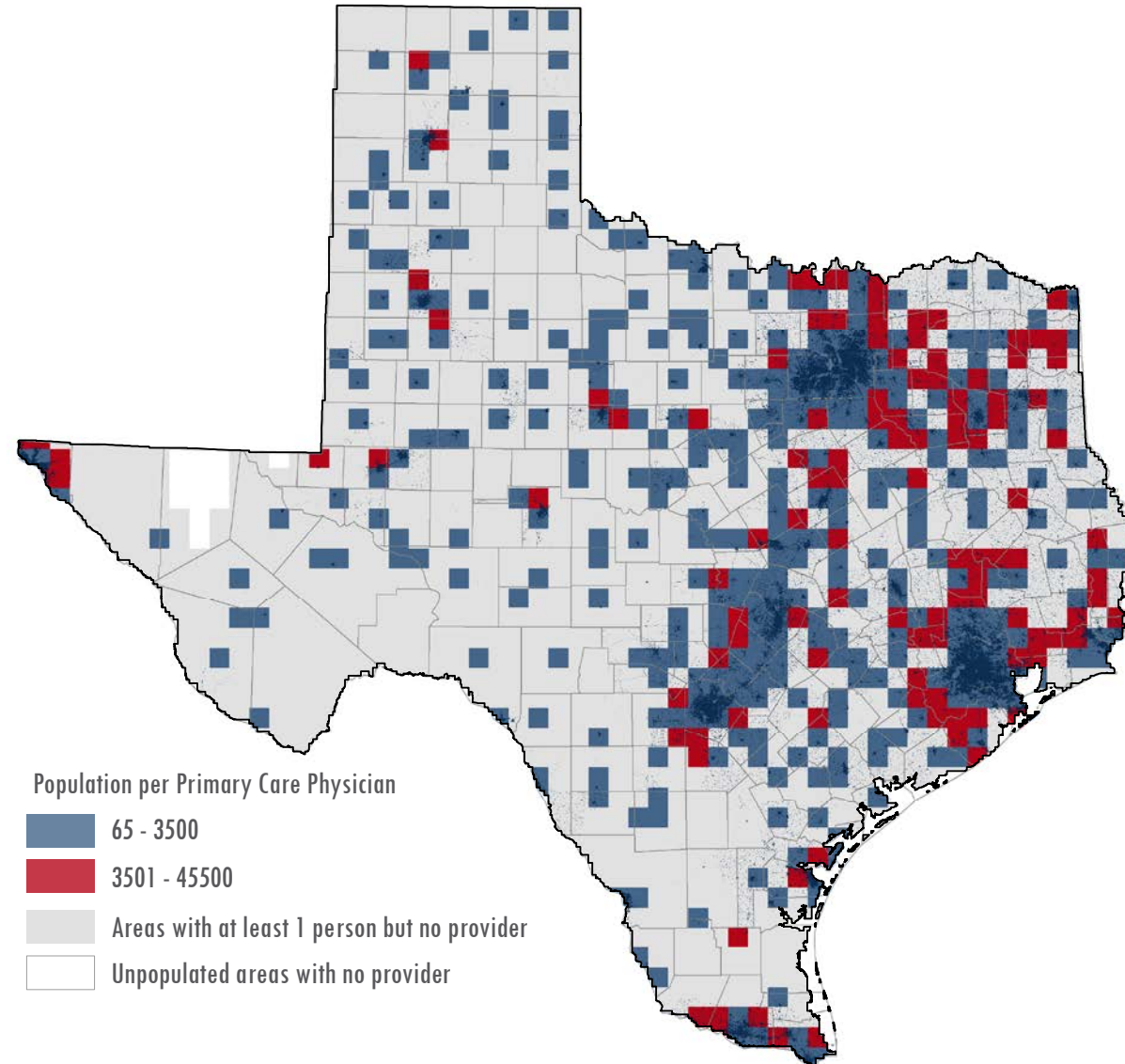
Physicians



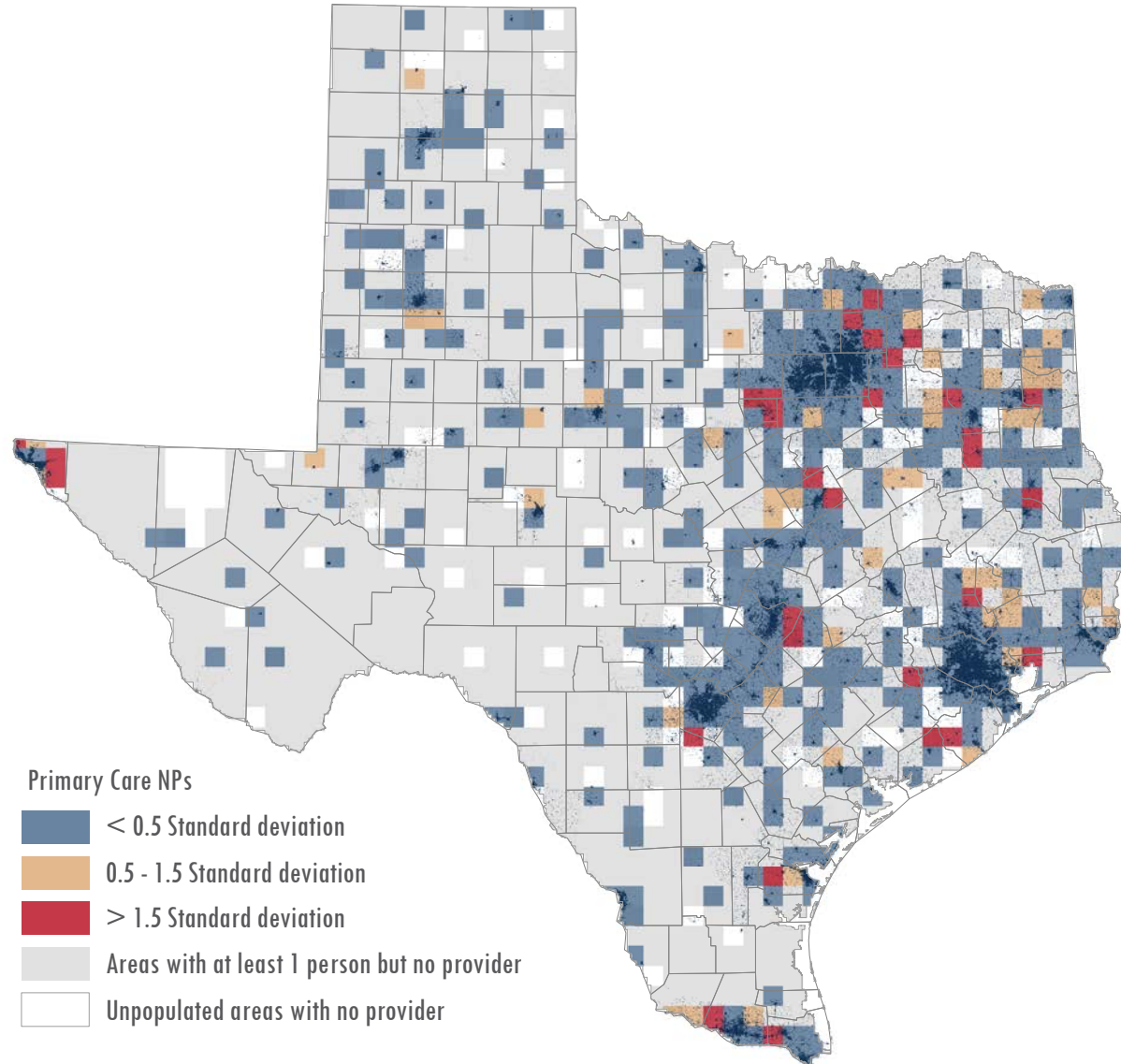
APRNs



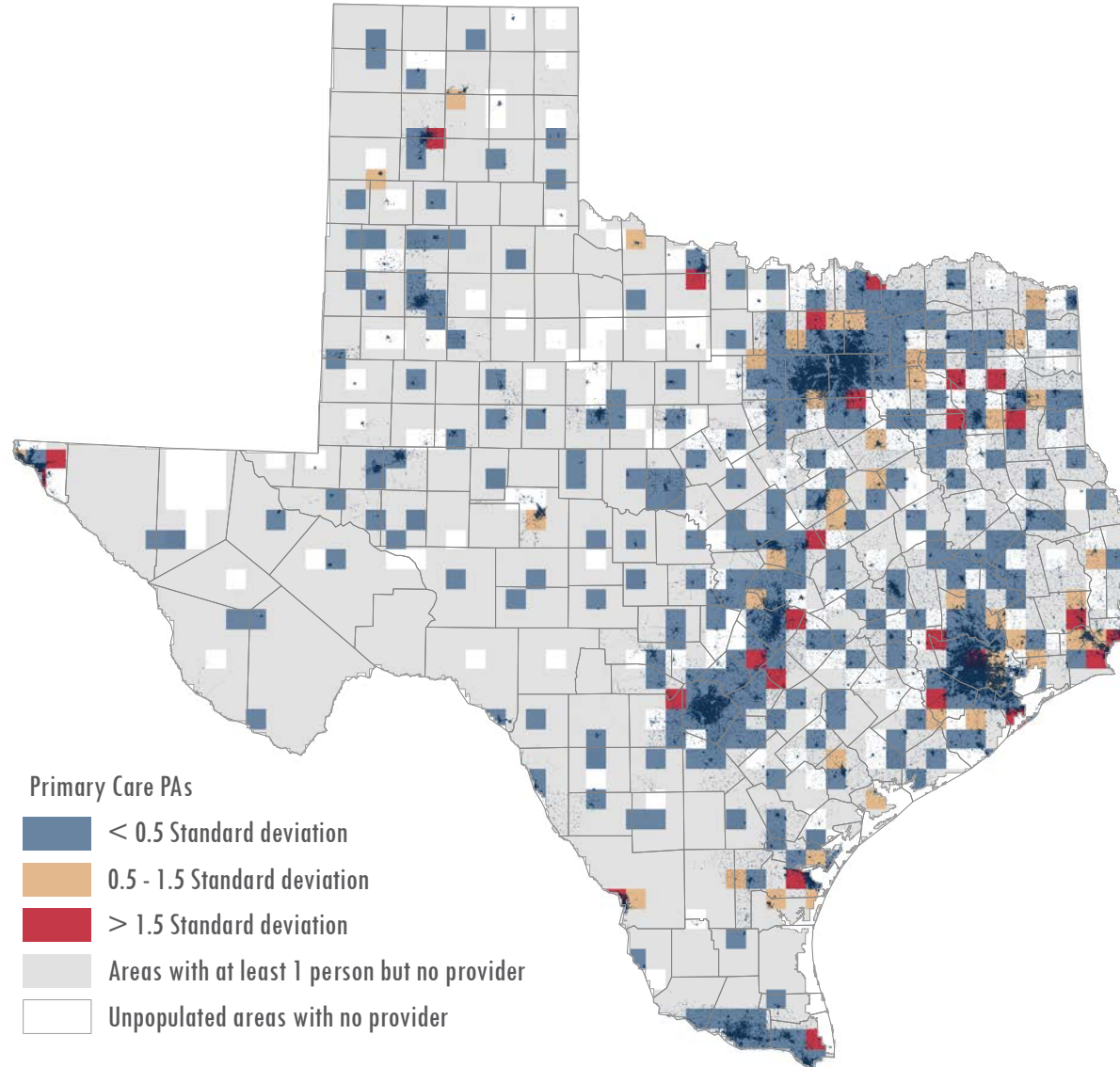
Primary Care Physicians



Primary Care NPs



Primary Care PAs



Discussion

Defining Shortage Areas

- What is the ideal ratio of population per provider?
- Health Professional Shortage Areas (HPSAs)
 - Primary Care HPSA – 3,500:1
 - Mental Health HPSA – 30,000:1

Defining Urban/Rural

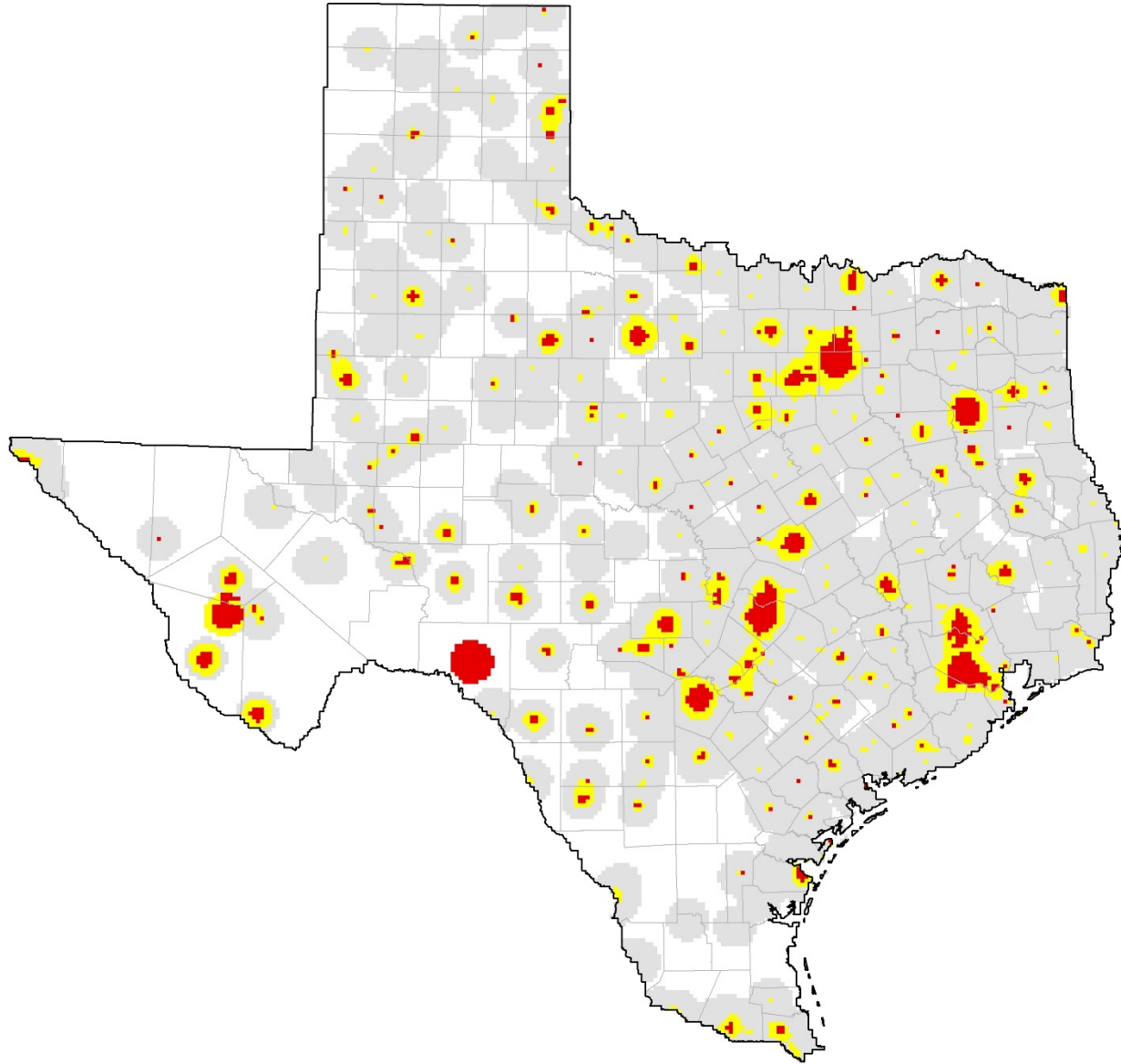
- 82 metropolitan counties in Texas
 - 11 with population <1,000
 - 29 with population <50,000
- OMB definition
 - Core urban area of 50,000+
 - Adjacent counties with high number of commuters

Strategies

- Loan repayment
 - National Health Service Corps
 - Texas Physician Education Loan Repayment Program
- Targeting medical students
 - Rural programs
 - Colleges of osteopathic medicine
 - Internal Medical Graduates

Future Studies

- Get rid of counties as boundaries
- Create entirely continuous heat map
- Consider other barriers to access
 - Drive time
 - Socioeconomic status



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Thank you!