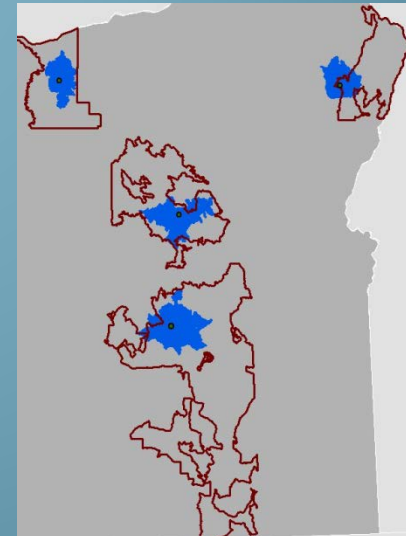
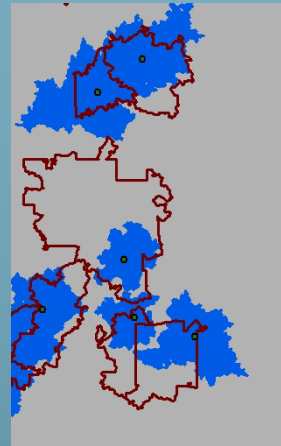
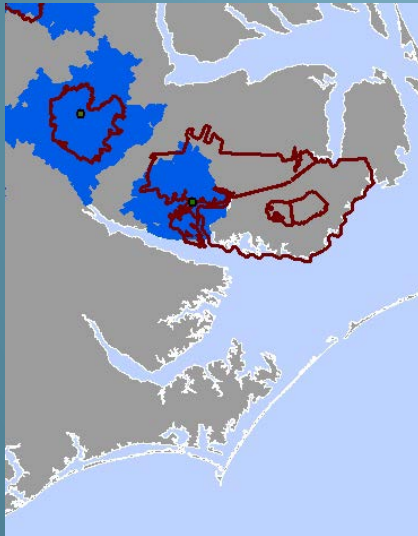


COMPARISON OF PRIMARY CARE SERVICE AREAS AND ESTIMATED DRIVE TIMES



An Evaluation of the Geographic Accessibility to Primary Care Services for the Populations within Primary Care Service Areas

Sean Finnegan MS

October 30th, 2012

American Public Health Association 140th Annual Meeting

BACKGROUND AND OBJECTIVE



- *Healthcare service areas allow for the measurement of health outcomes, assessment of health care services utilization and healthcare shortage area designation*
- *Healthcare service areas have been at the center of policy decisions and are vital for the efficient distribution of federal and state funds*
- *This research compared rural Primary Care Service Areas (PCSAs) to estimated 30-minute drive-time polygons centered on a primary care service access point within each PCSA*

PRIMARY CARE SERVICE AREAS (PCSA)



- *Developed by the Dartmouth Institute 2003*
- *Service areas defined primarily from Medicare claims data*
- *Comprised of ZIP Code Tabulation Areas (ZCTAs)*
- *Plurality of services dictate which ZCTA belongs to which group*
- *ZCTAs reassigned for contiguity*
- *Currently only consider distance in 2 ways:*
 - *ZIP Code Centroid distances between Provider ZIP and Beneficiary ZIP*
 - *Land Area of 1,256 square miles*

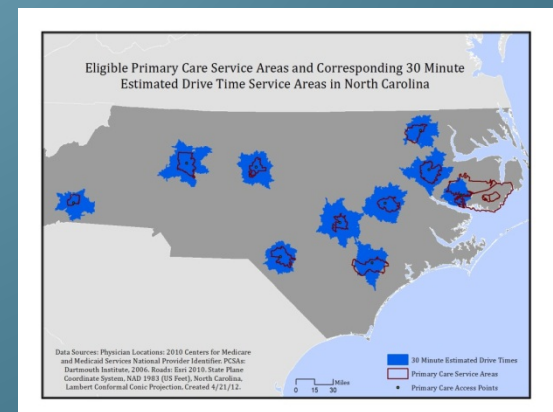
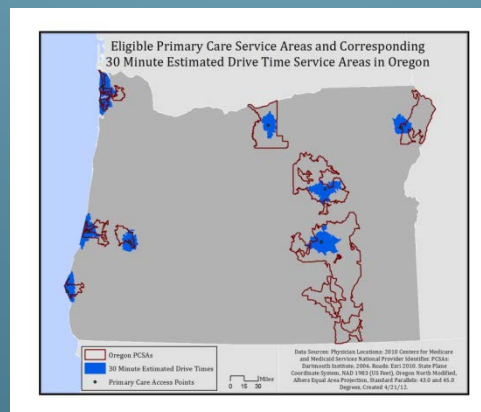
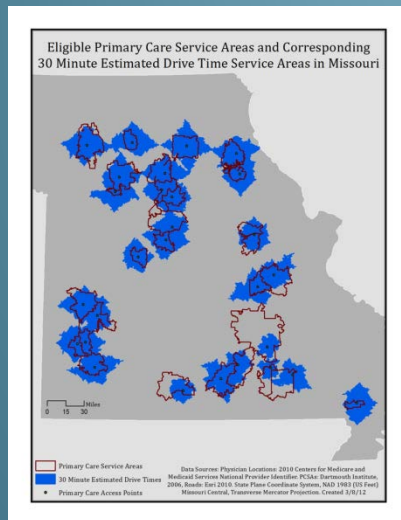
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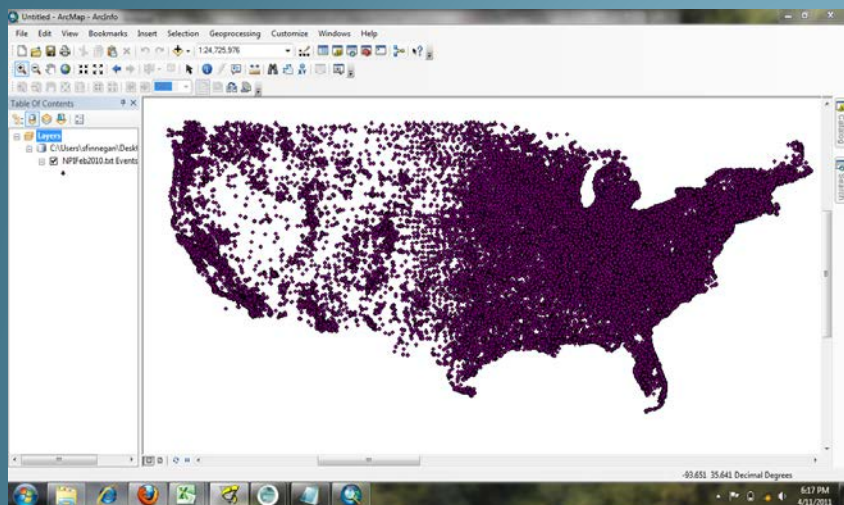


STUDY AREA

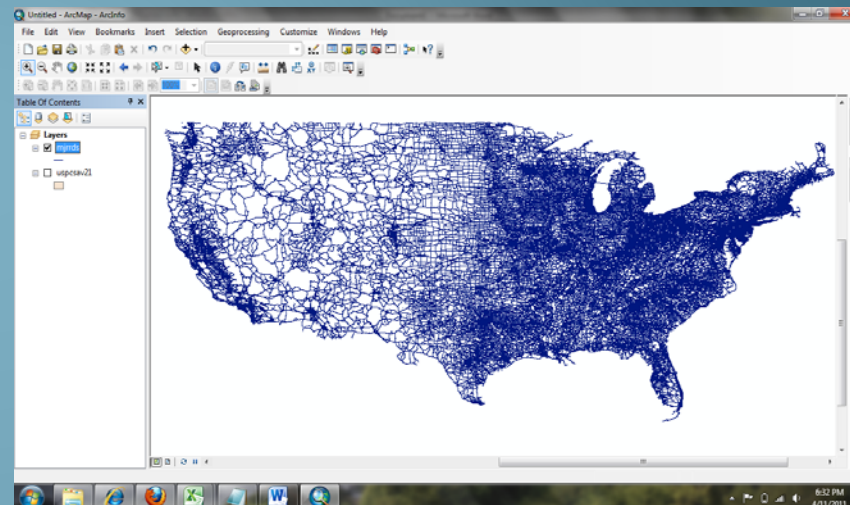
- Missouri
- Oregon
- North Carolina
- Rural PCSAs with a Rural Urban Commuting Area classified as “Small Rural” or “Isolated”
- Containing a single primary care physician from which to calculate the estimated drive times



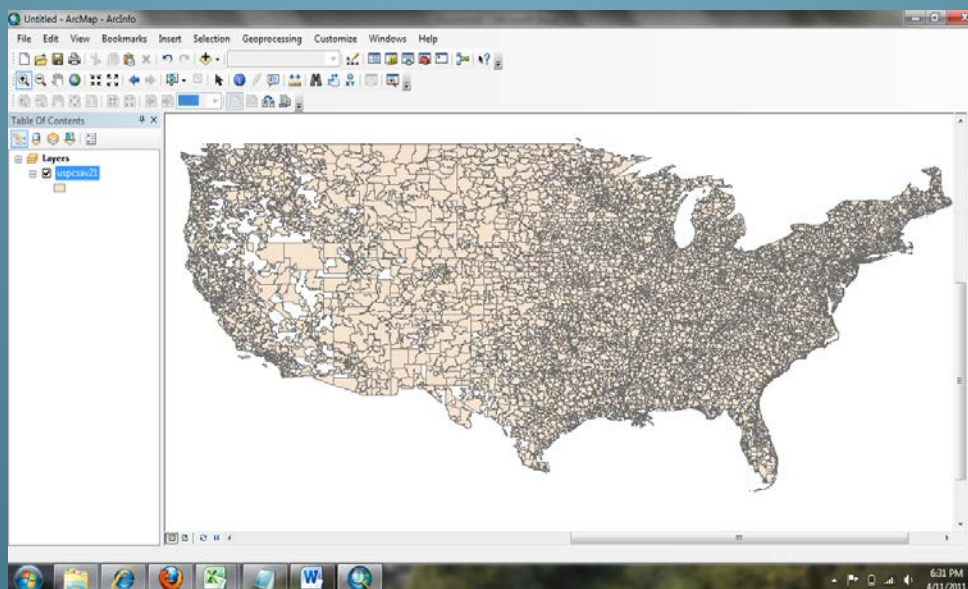
DATA



National
Provider
Identifier

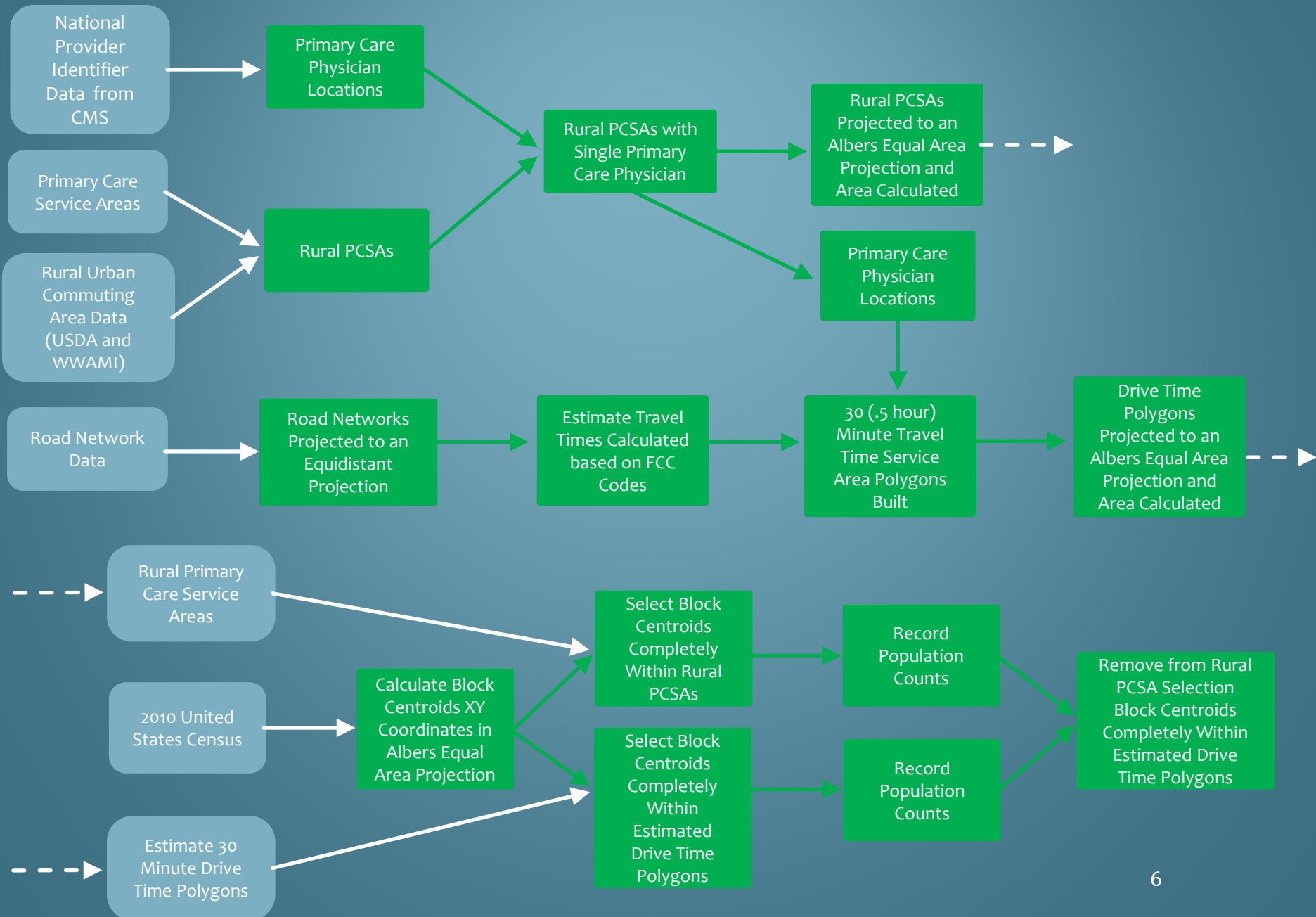


Esri Road
Network



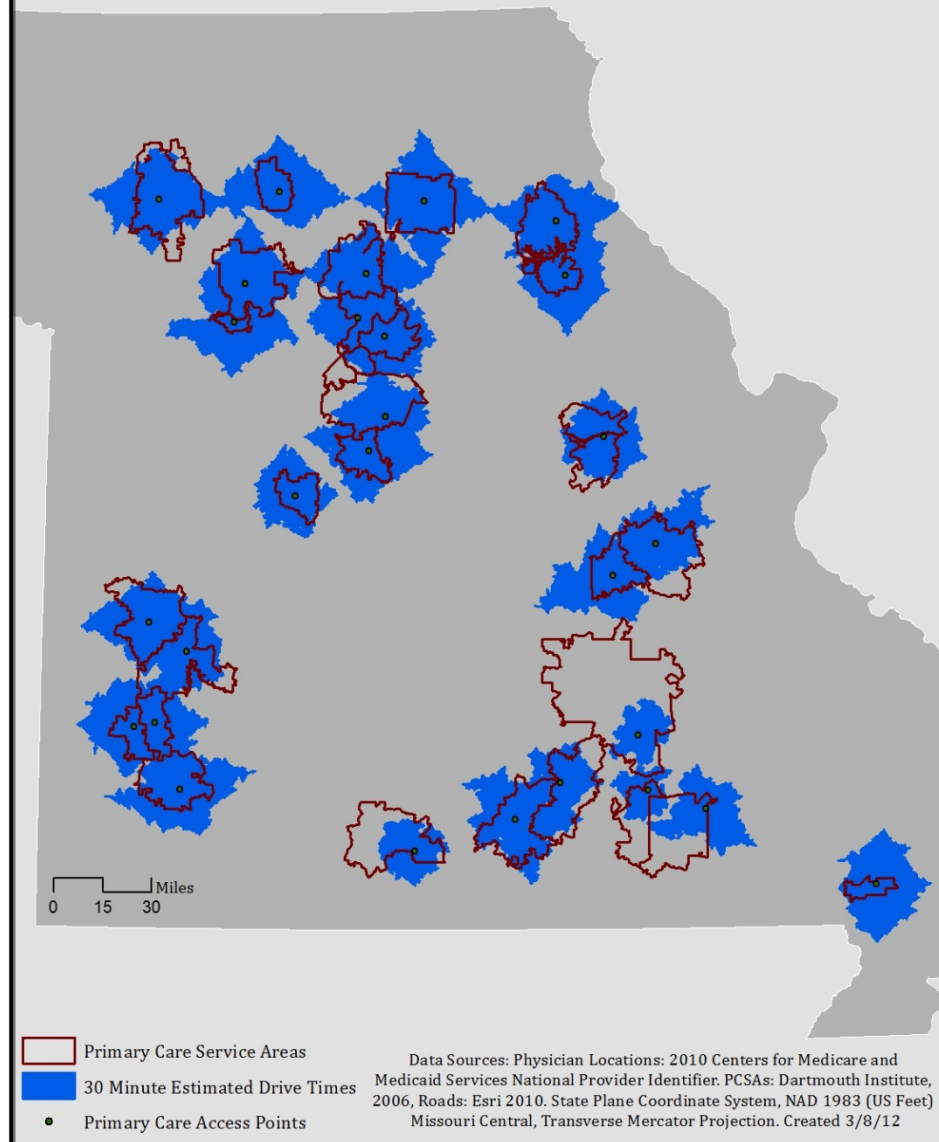
Primary Care Service Areas

DATA AND METHODS

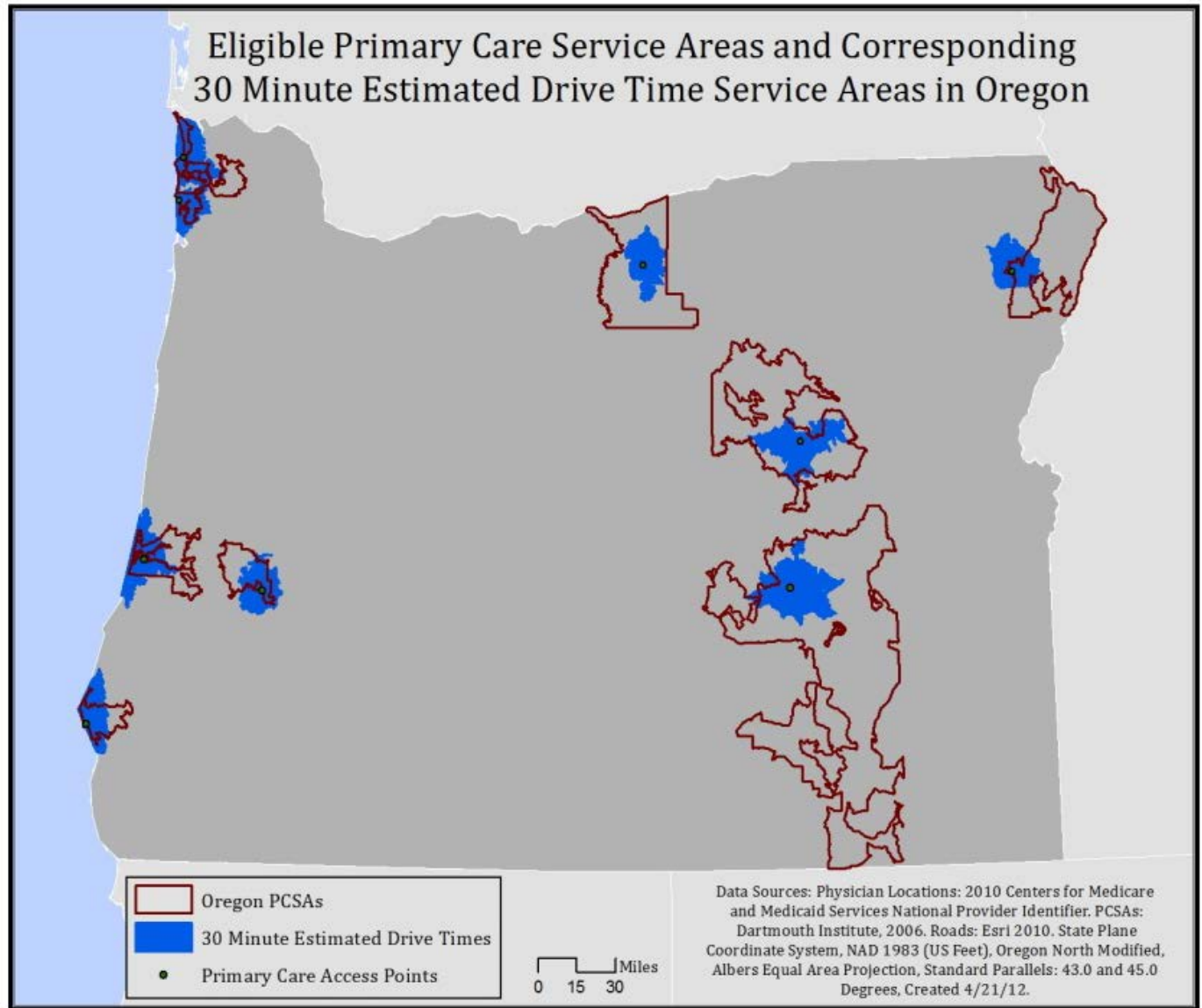


MISSOURI

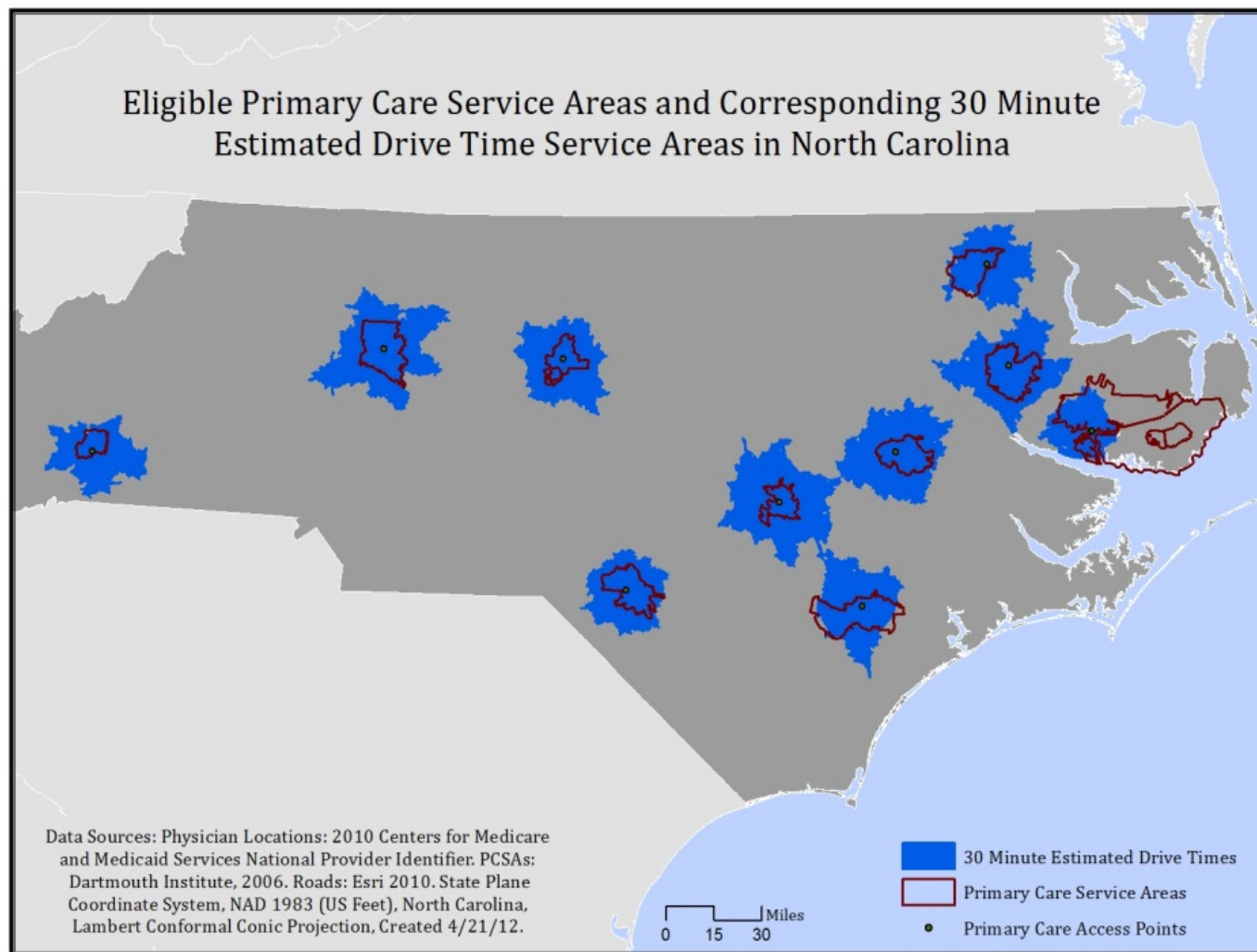
Eligible Primary Care Service Areas and Corresponding 30 Minute Estimated Drive Time Service Areas in Missouri



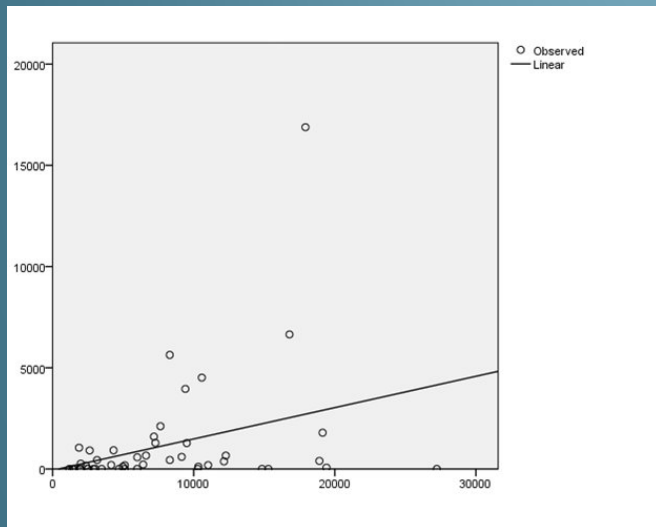
OREGON



NORTH CAROLINA



QUANTITATIVE COMPARISON



- *Areas of each PCSA and corresponding estimated drive time*
- *Populations within each PCSA and drive time*
- *Population within the PCSA that did not fall within the drive time*
- *Correlation between the total populations in PCSAs and the Populations outside of the estimated drive times*
- *Additional Comparison of 20 and 40 minute drive time polygons*

RESULTS

Missouri

N=28	PCSA Area (Sq Miles)	Drive Time Area	Area Difference	PCSA Population	Drive Time Population	Population Difference
Sum	8,846.69	12,677.62	3,830.93	194,118	496,673	302,555
Average	315.95	452.77	136.82	6,933	17,738	10,806
SD	214.04	141.27	301.05	5,045	12,910	7,865

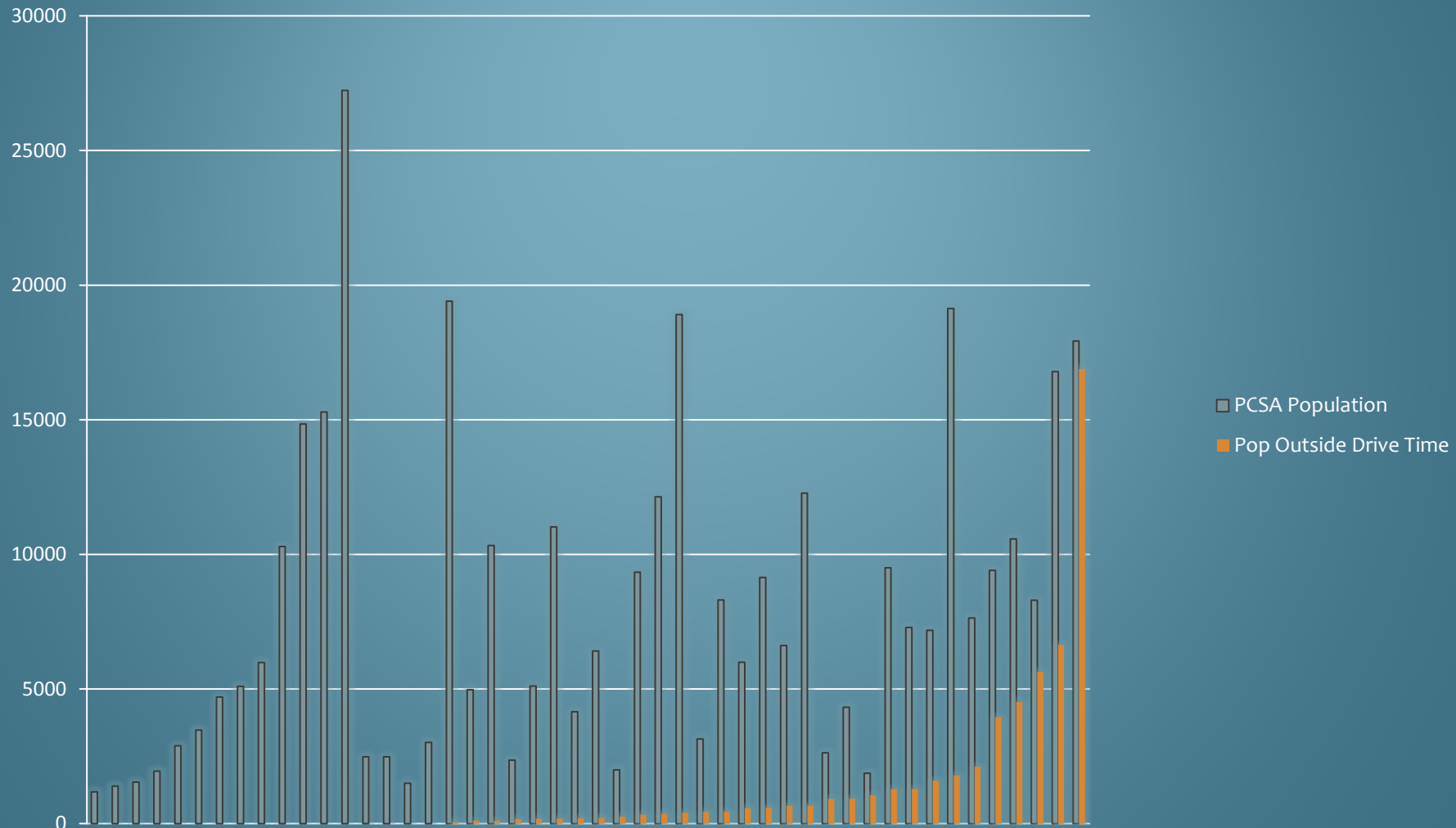
Oregon

N=9	PCSA Area (Sq Miles)	Drive Time Area	Area Difference	PCSA Population	Drive Time Population	Population Difference
Sum	10,015.42	2,470.39	-7,545.03	53,613	66,032	12,419
Average	1,112.82	274.49	-838.34	5,957	7,337	1,380
SD	1,465.49	101.43	1,371.08	5,375	6,117	2,804

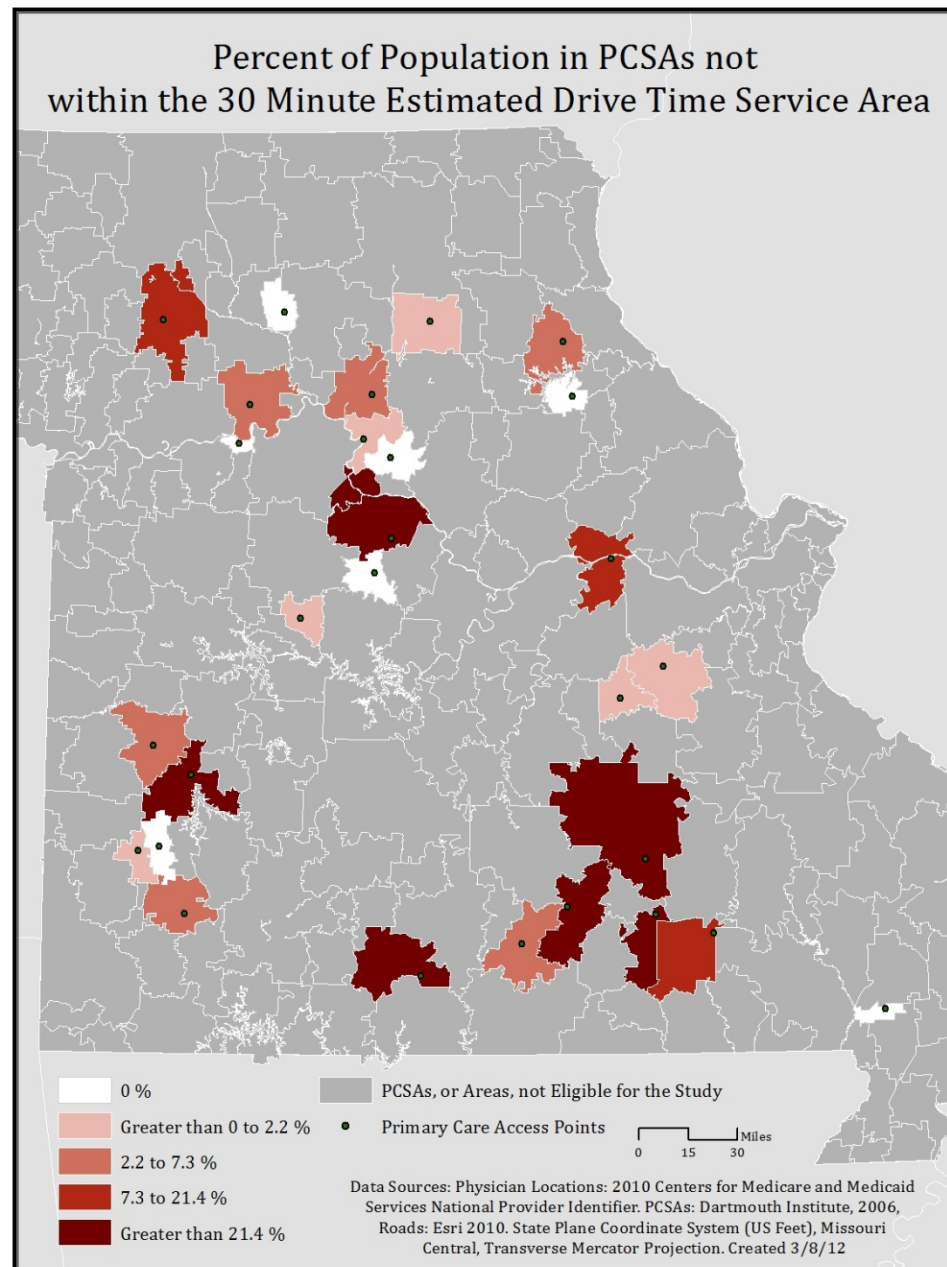
North Carolina

N = 10	PCSA Area (Sq Miles)	Drive Time Area	Area Difference	PCSA Population	Drive Time Population	Population Difference
Sum	2,223.79	5,452.02	3,228.23	122,472	758,140	635,668
Average	222.38	545.20	322.82	1,225	75,814	63,567
SD	249.04	134.11	320.98	7,435	64,494	59,475

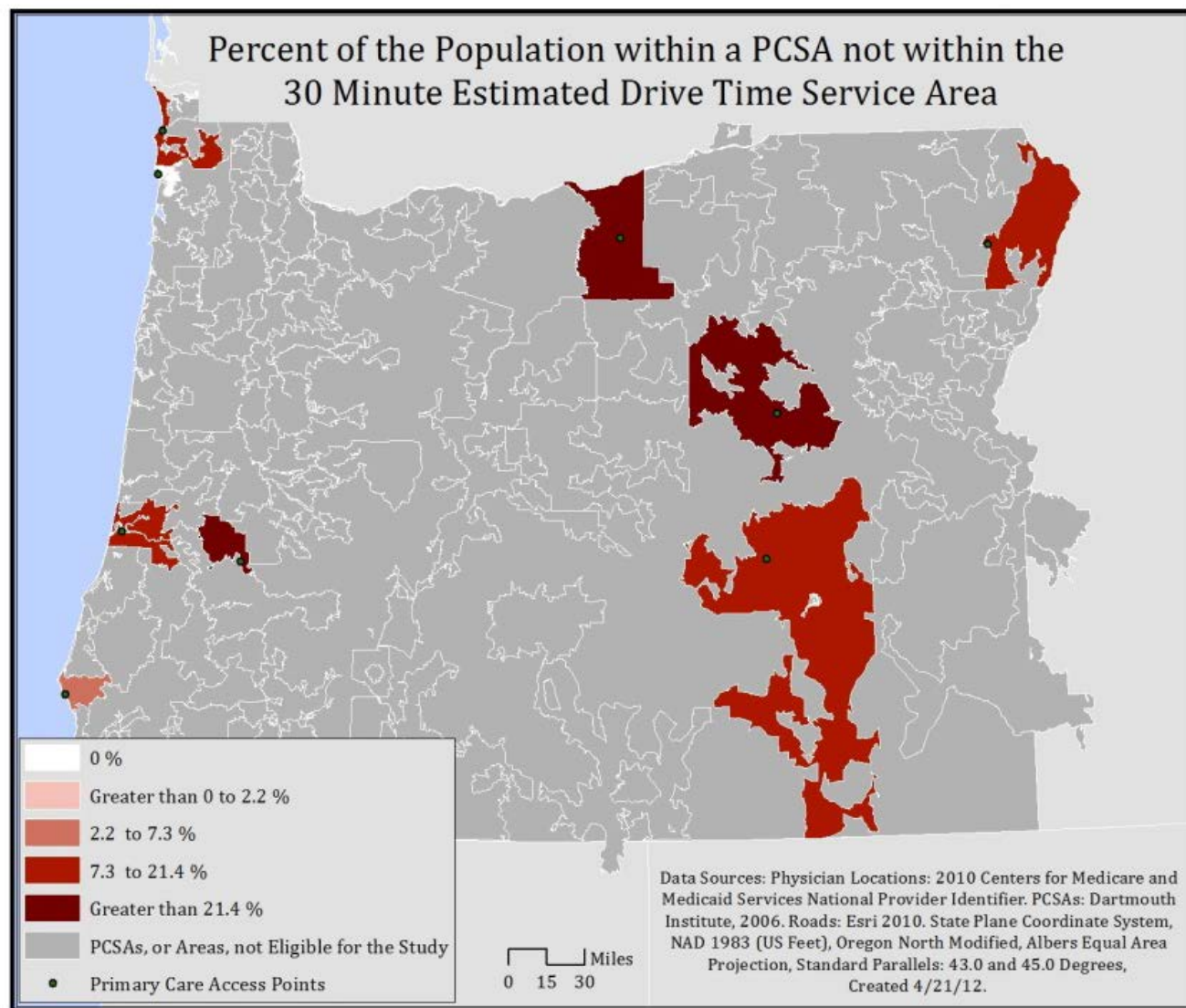
RESULTS



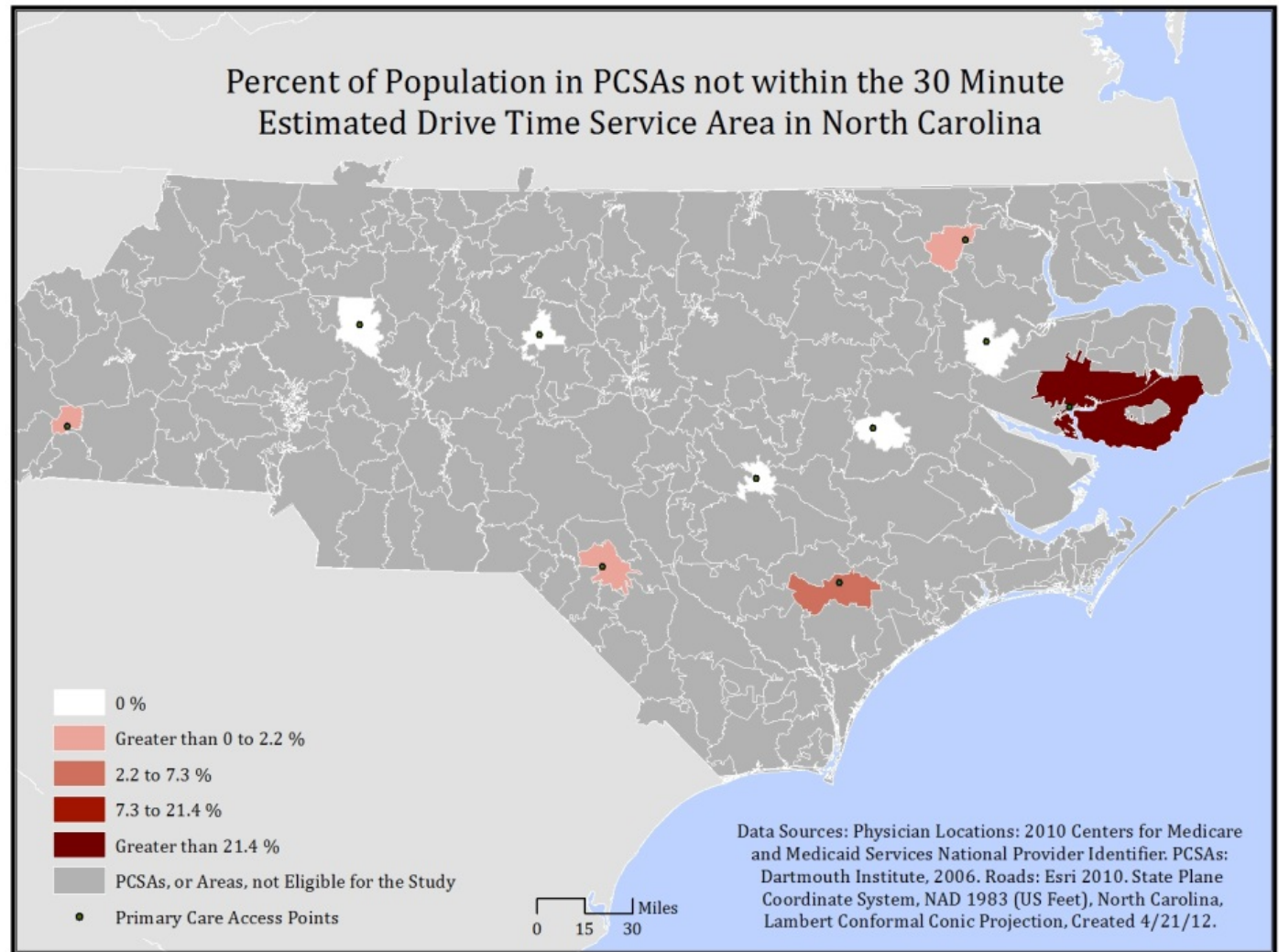
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OREGON



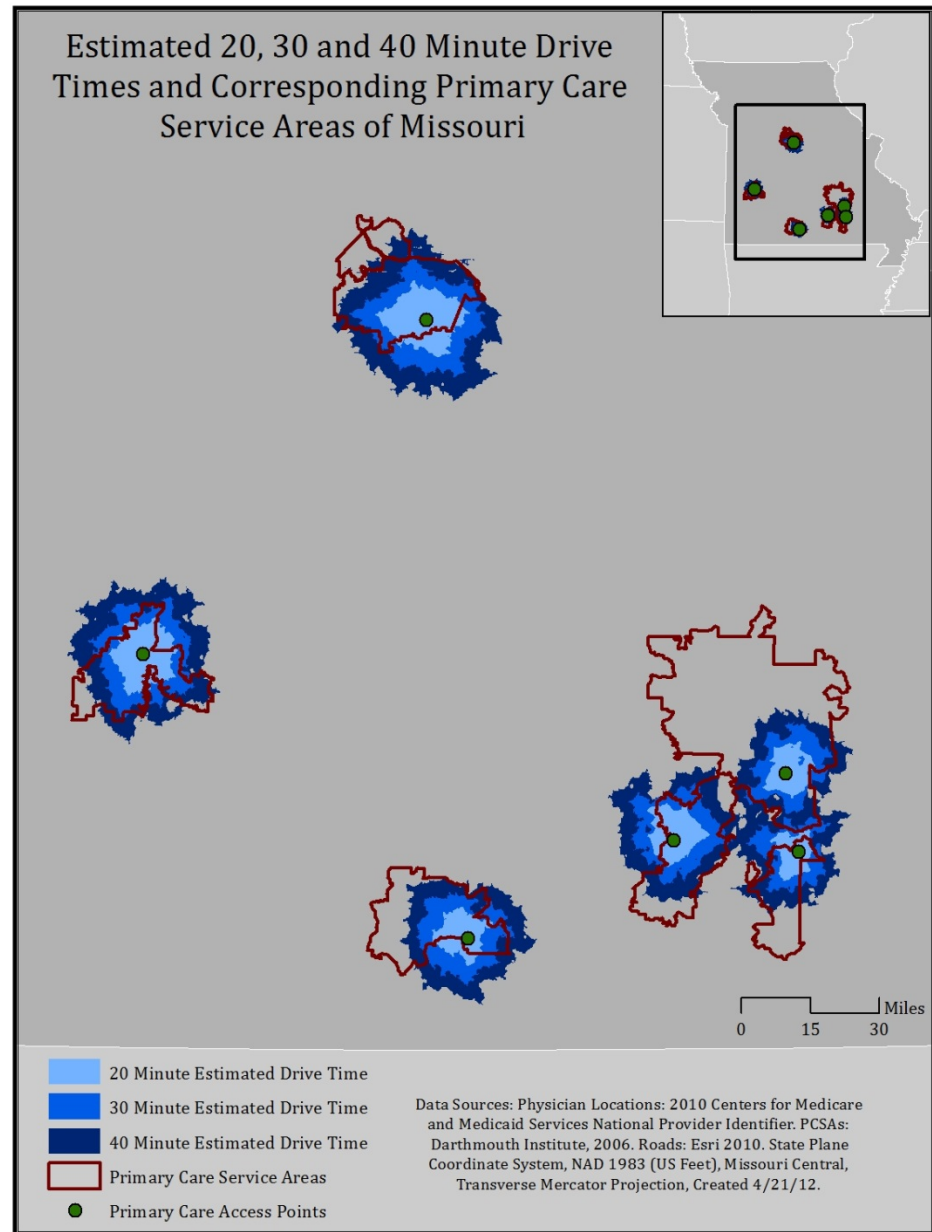
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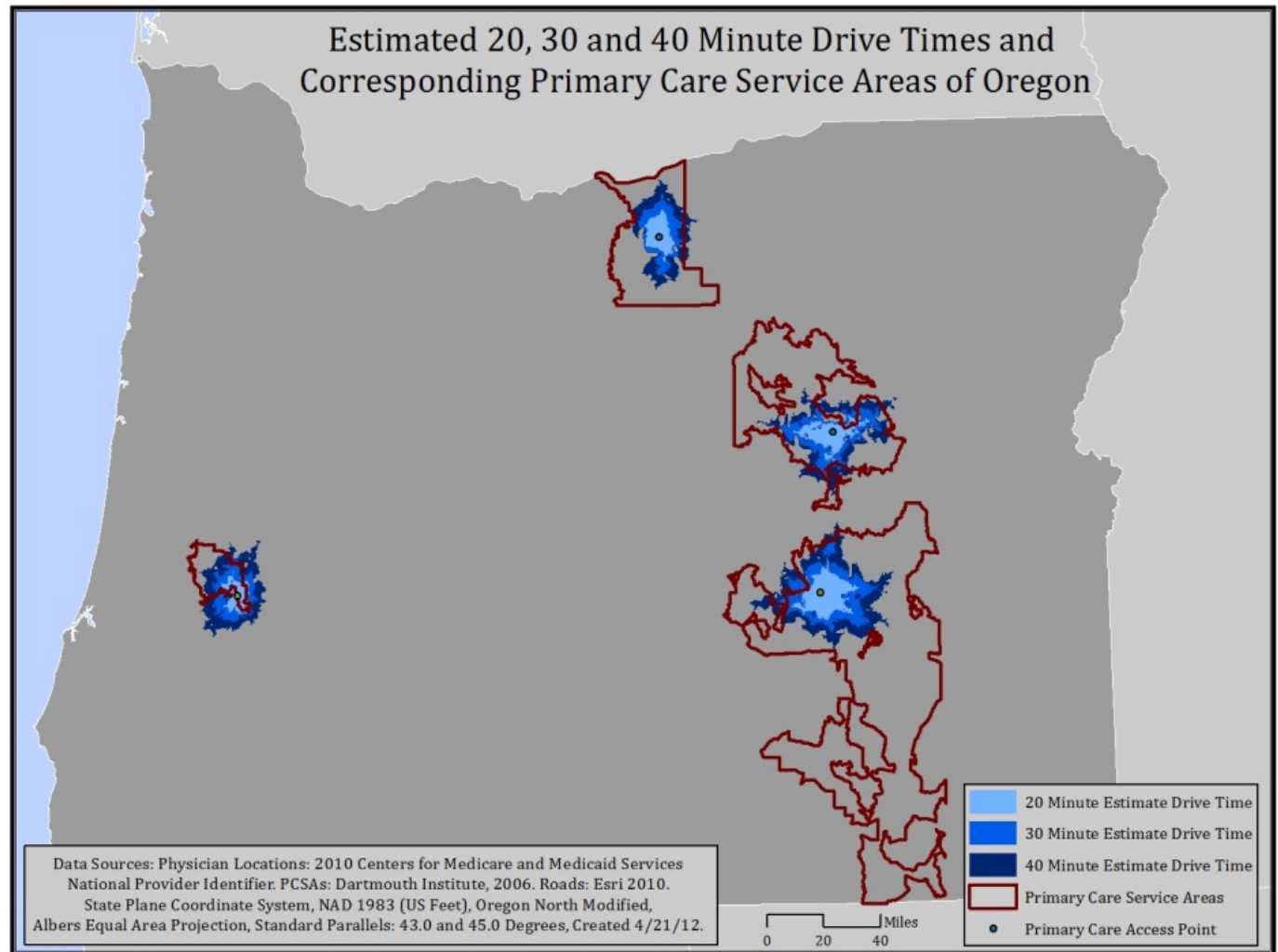
20, 30 AND 40 MINUTE DRIVE TIMES

N = 11	Population Outside 30 Minutes	Percent Outside 30 Minutes	Population Outside 20 Minutes	Percent Outside 20 Minutes	Population Outside 40 Minutes	Percent Outside 40 Minutes
Sum	45,533	-	68,537	-	28,755	-
Average	4,139	42.42%	6,231	70.86%	2,614	24.32%
SD	4,690	22.93%	5,451	28.10%	4,687	25.64%

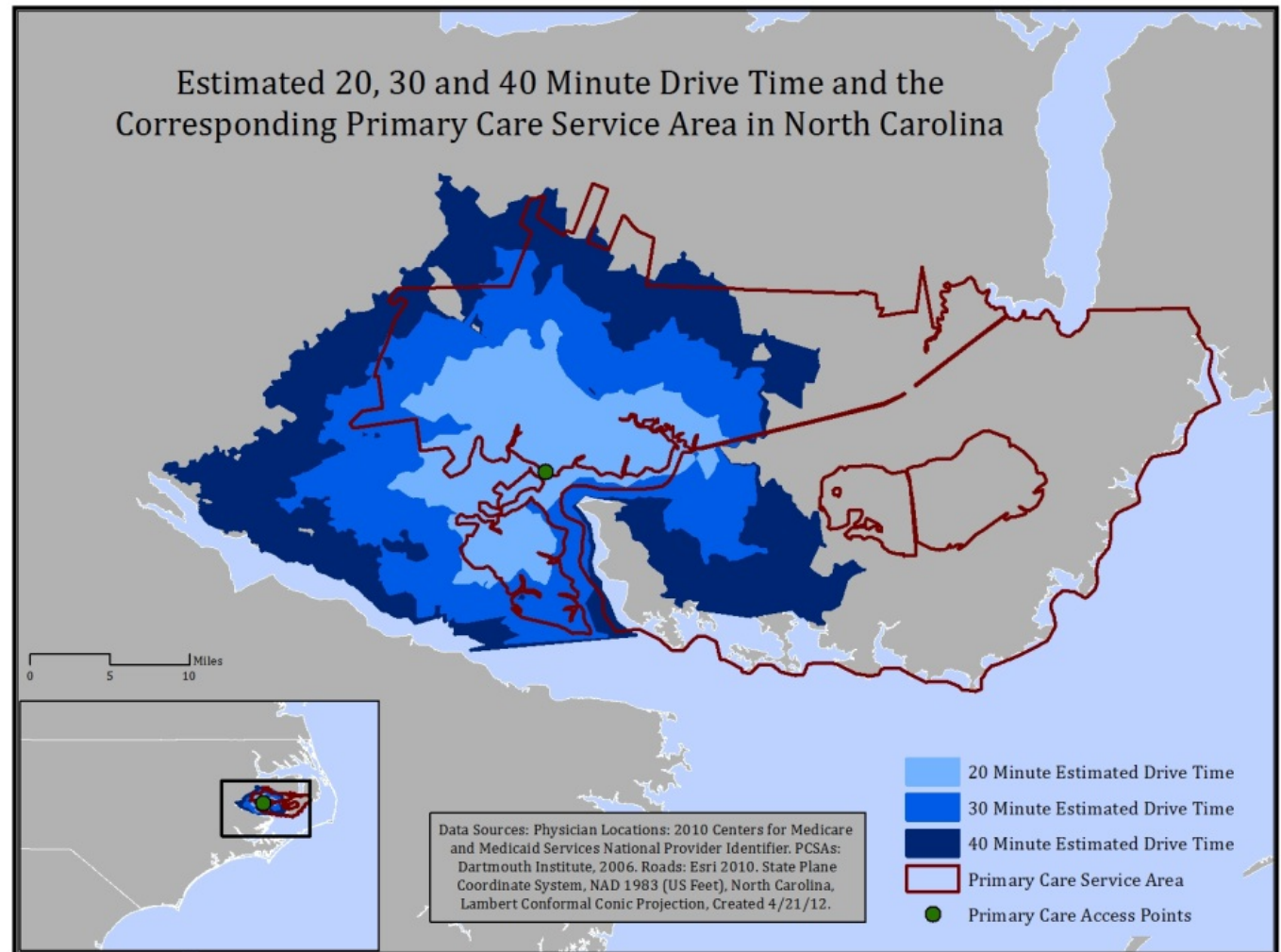
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OREGON



NORTH CAROLINA



KEY FINDINGS

- *72 percent of the PCSAs analyzed had populations that could have potential geographic accessibility issues for primary care*
- *More than 14 percent of the population of the PCSAs in the study area were outside of the drive time polygons*
- *In the poorest performing PCSAs, greater than 42 percent of the population fell outside of the estimated 30 minute drive time polygons*
- *The area of the PCSAs sampled in Oregon was greater than the area of the polygons based on estimated drive times*

CONCLUSIONS

- *While PCSAs may be a good start at defining actual primary care service areas there are some that may not be appropriately representing the population actually served in these areas*
- *Some consideration to distance, such as estimated drive times, should be considered to address the geographic accessibility for populations within PCSAs*

POLICY IMPLICATIONS

- *Larger PCSAs may be a result of primary care service shortages (Health Professional Shortage Areas) and therefore may need policy interventions to encourage additional primary care services*
- *In order to ensure access to health care for all citizens as outlined in the Patient Protection and Affordable Care Act, more consideration needs to be given to geographic accessibility to health care services*

FUTURE RESEARCH

- *Evaluation of data used in the PCSA project to assess whether an element of travel time would increase the outcomes of the PCSAs original goals*
- *The evaluation of estimated drive times and their accuracy compared to actual drive times*
- *An evaluation of estimated drive time polygons and Euclidian distance buffers to see how well their population coverage is correlated*
- *Dartmouth has decided to recreate PCSAs with Census Tracts*

ACKNOWLEDGEMENTS

- *My thesis advisor and committee Drs. Waters, Curtin and Leslie*
- *The Robert Graham Center, especially Dr. Jennifer Rankin, Dr. Andrew Bazemore and Dr. Bob Phillips*

QUESTIONS ?

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