

Online Mapping and GIS



**ADVANCES IN TECHNOLOGY AND
CHALLENGES OF PUTTING THE POWER OF
GIS INTO THE HANDS OF NON-
GEOGRAPHERS**

**Association of American Geographers Annual Meeting
April 11th 2014**

**Panelists: Paul Doherty, Sterling Quinn, Jennifer Rankin,
Sean Finnegan**

Online Mapping and GIS



- “Neogeography”, “Neo Geography”, “Web-based Geographic Information Technologies”, or “Online Mapping and GIS”
- Cartographic Issues
- Technology – Greatly Advanced, but is it still an issue?

Online Mapping and GIS Tools



HealthMap
Global Health, Local Information

ArcGIS Online

mapquest

Google



OpenStreetMap

YAHOO!
MAPS



COMMUNITY COMMONS



geo commons

LawAtlasSM
The Policy Surveillance Portal



HealthLandscape

TRF
policymap

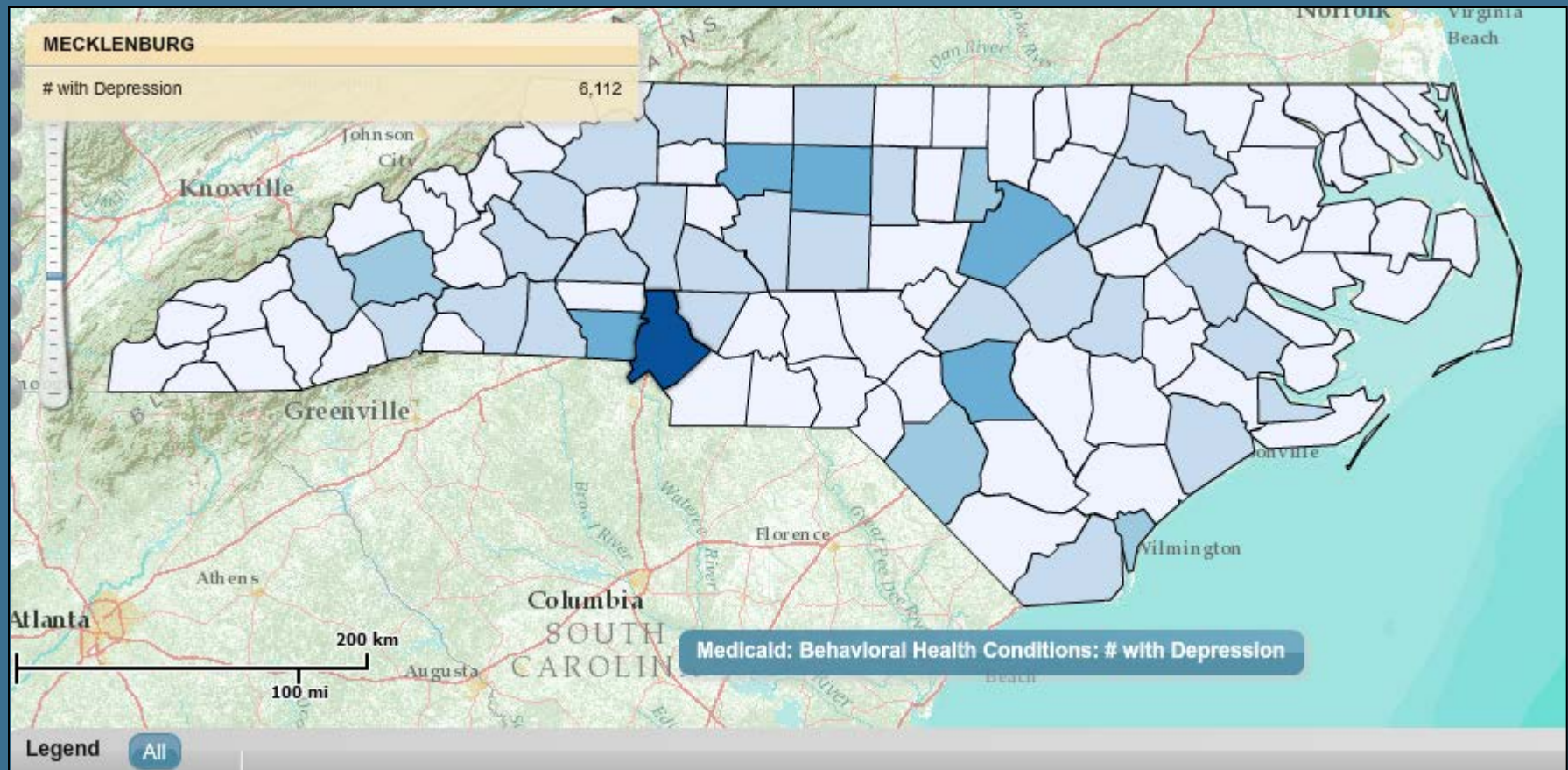
Introductions



- Paul Doherty, PhD
- Sterling Quinn, PhD Candidate
- Jennifer Rankin, PhD, MHA, MPH
- Sean Finnegan, MS

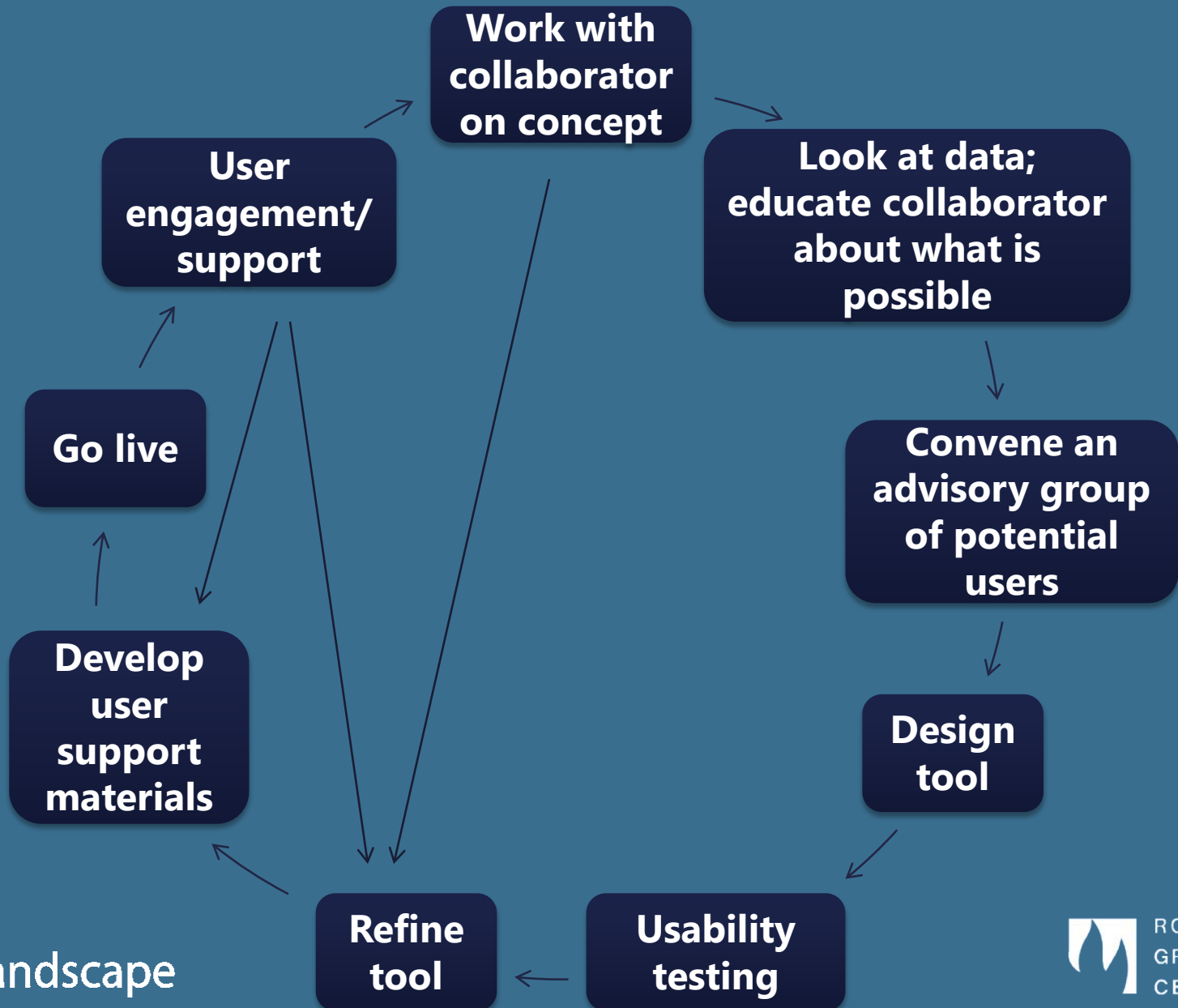
Online Mapping and GIS

Teaching Collaborators the Basics of
Cartography and GIS



Association of American Geographers Annual Meeting
April 11th, 2014
Sean C. Finnegan

Current, Ideal Process



Collaborator:

- ▶ I have data and funding to build a mapping tool.

Us:

- ▶ Great, what do you want to use it for?

Collaborator:

- ▶ To improve the quality of health and healthcare delivery, and cut costs for Medicare and Medicaid.

Us:

- ▶ Ok. Well, let's look at the data.

~~1st: Finding a Use Case~~ Develop a “Purpose”:

- ▶ To be a catalyst and stimulate informed conversation and choices about health and healthcare for the communities in North Carolina.
- ▶ To provide a platform for Community Care of North Carolina’s Networks, public health organizations, practices and physicians to assist in the improvement of health care delivery, outcomes and costs.

Assess what Data are Available

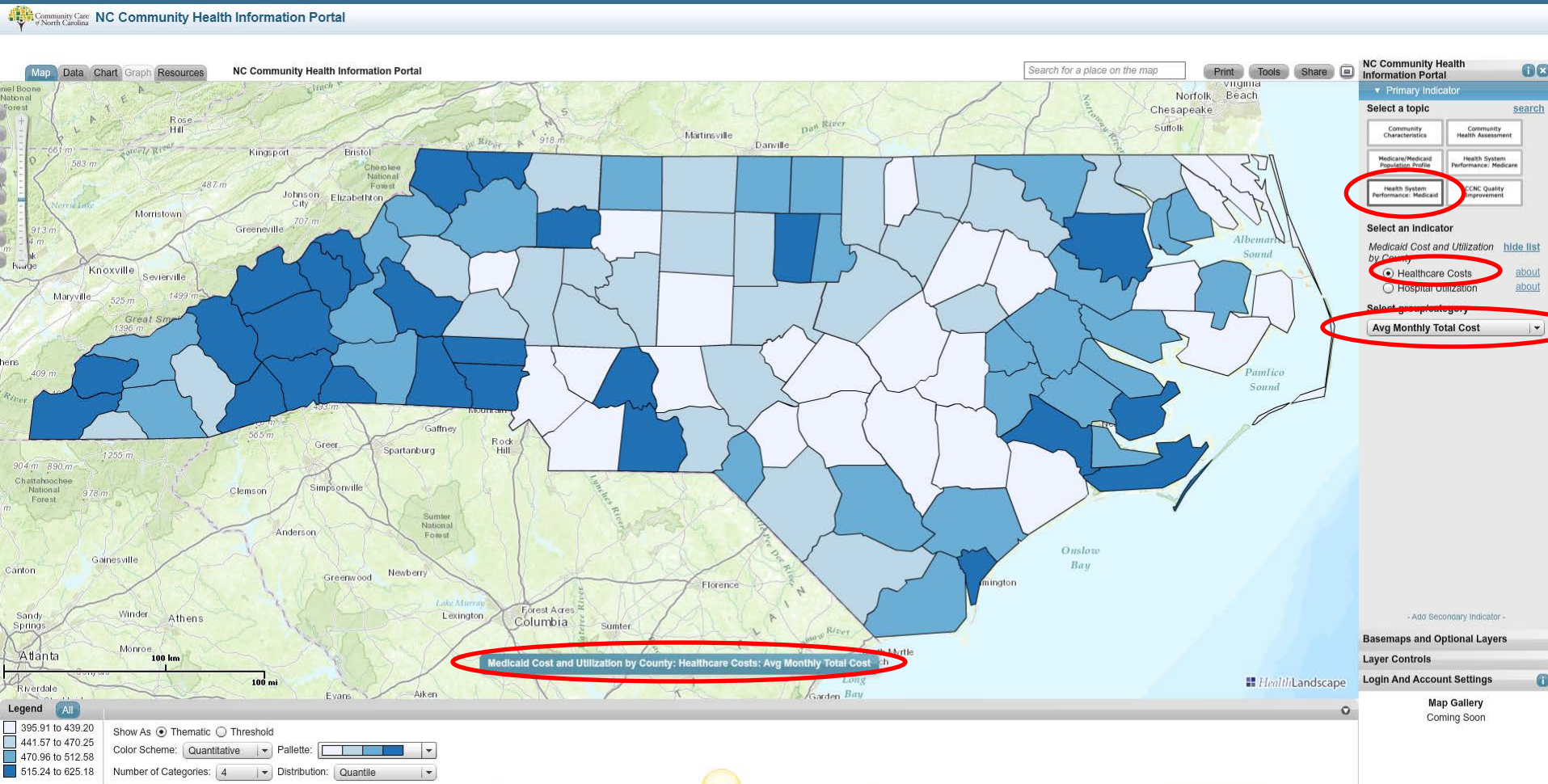
- ▶ US Census Bureau 2010
 - ▶ American Community Survey 2007-2011
- ▶ Robert Wood Johnson Foundation
 - ▶ Roadmap Indicators
- ▶ Healthy People 2020
- ▶ Health North Carolina 2020
- ▶ Centers for Disease Control
 - ▶ Behavioral Risk Factor Surveillance System

Key Available Data

- ▶ State Medicaid and Medicare Data
 - ▶ From all network enrolled practices
 - ▶ Aggregated to the County, Hospital Referral Regions, and practice level
 - ▶ Key Performance and Quality Indicators
 - ▶ Cost and Utilization Data

Geographic Variation in Medicaid Costs

Average Monthly Medicaid Costs by County



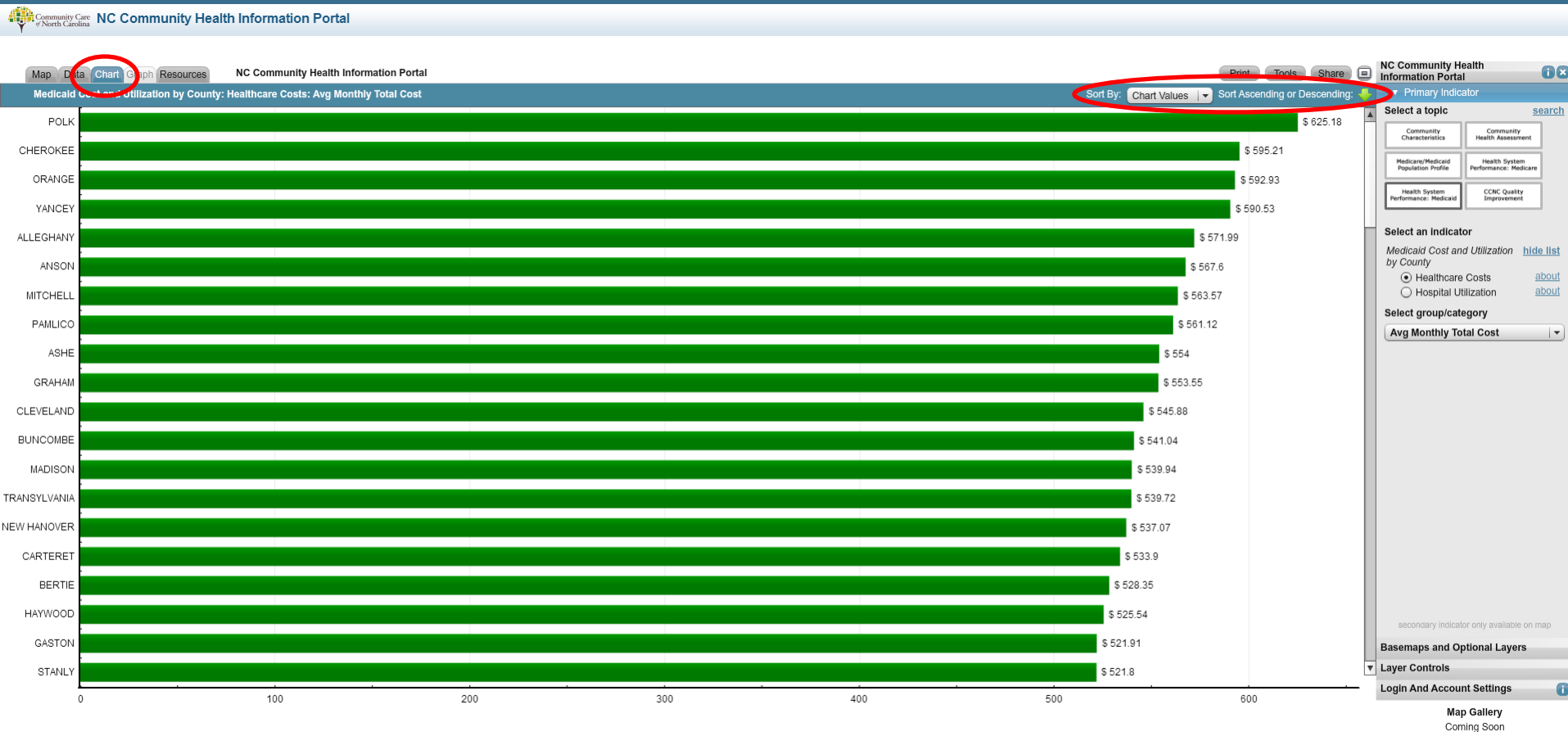
Data Tables

Average Monthly Medicaid Costs by County

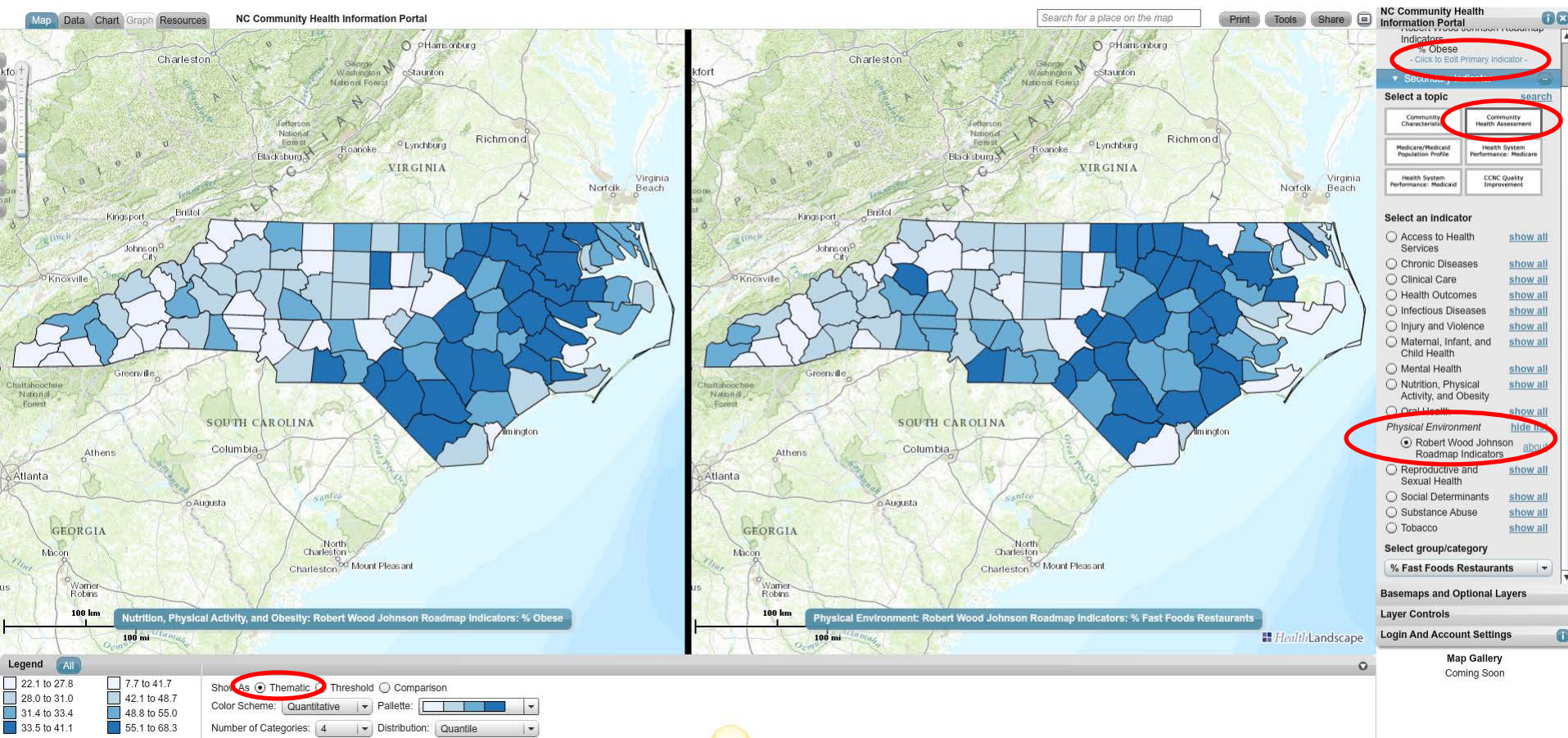
Medicaid Cost and Utilization by County: Healthcare Costs											
Client County	FIPS Code	Avg Monthly Total Cost	Avg Monthly Total Drug Cost	Avg Monthly MH Drug Cost	Avg Monthly DME Cost	Avg Monthly PCS Cost	Avg Monthly ED Cost	Avg Monthly Inpatient Cost	Avg Monthly LTC/SNF Cost	Avg Monthly MH/DD/SA Cost	Avg Monthly NON-MH/DD/SA Cost
ALAMANCE	37001	\$ 443.83	\$ 55.43	\$ 10.99	\$ 6.5	\$ 6.8	\$ 11.5	\$ 45.37	\$ 80.01	\$ 153.58	\$ 290.05
ALEXANDER	37003	\$ 426.62	\$ 69.95	\$ 14.27	\$ 6.12	\$ 3.14	\$ 12.88	\$ 41.53	\$ 72.21	\$ 109.93	\$ 316.69
ALLEGHANY	37005	\$ 571.99	\$ 74.39	\$ 16.19	\$ 10.78	\$ 17.18	\$ 25.02	\$ 48.96	\$ 126.7	\$ 179.81	\$ 392.18
ANSON	37007	\$ 567.6	\$ 65.22	\$ 11.1	\$ 7.92	\$ 28.11	\$ 18.32	\$ 47.75	\$ 123.81	\$ 199.56	\$ 368.03
ASHE	37009	\$ 554	\$ 80.97	\$ 13.2	\$ 9.7	\$ 1.83	\$ 13.8	\$ 43.53	\$ 124.57	\$ 142.8	\$ 411.2
AVERY	37011	\$ 476.61	\$ 75.78	\$ 15.82	\$ 9.49	\$ 2	\$ 17.81	\$ 47.98	\$ 61.31	\$ 120.67	\$ 355.94
BEAUFORT	37013	\$ 490.85	\$ 63.5	\$ 11.26	\$ 7.21	\$ 20.33	\$ 12.49	\$ 45.78	\$ 144.84	\$ 173.82	\$ 317.03
BERTIE	37015	\$ 526.35	\$ 48.84	\$ 9.48	\$ 6.63	\$ 34.99	\$ 20.4	\$ 45.56	\$ 127.48	\$ 149.63	\$ 378.72
BLADEN	37017	\$ 500.11	\$ 69.61	\$ 15.42	\$ 7.62	\$ 34.76	\$ 19.53	\$ 42.51	\$ 102.89	\$ 137.59	\$ 362.52
BRUNSWICK	37019	\$ 476.12	\$ 76.15	\$ 16.8	\$ 6.9	\$ 5.34	\$ 18.54	\$ 57.42	\$ 90.77	\$ 169.4	\$ 306.72
BUNCOMBE	37021	\$ 541.04	\$ 75.06	\$ 19.57	\$ 7.22	\$ 2.09	\$ 14.67	\$ 51.11	\$ 123.88	\$ 223.59	\$ 317.45
BURKE	37023	\$ 519.32	\$ 70.44	\$ 15.37	\$ 7.85	\$ 3.81	\$ 17.49	\$ 46.2	\$ 116.49	\$ 185.53	\$ 333.79
CABARRUS	37025	\$ 427.66	\$ 72.16	\$ 11.21	\$ 7.4	\$ 6.06	\$ 14.03	\$ 34.21	\$ 54	\$ 133.27	\$ 294.39
CALDWELL	37027	\$ 470.11	\$ 77.28	\$ 14.65	\$ 8.15	\$ 4.82	\$ 11.79	\$ 41.92	\$ 105.61	\$ 134.4	\$ 335.71
CAMDEN	37029	\$ 439.2	\$ 68.25	\$ 16.37	\$ 4.66	\$ 3.01	\$ 26.27	\$ 65.83	\$ 84.93	\$ 187.43	\$ 251.77
CARTERET	37031	\$ 533.9	\$ 67.73	\$ 21.37	\$ 6.9	\$ 2.01	\$ 14.18	\$ 51.55	\$ 128.85	\$ 164.33	\$ 369.57
CASWELL	37033	\$ 480.01	\$ 57.98	\$ 13.81	\$ 6.61	\$ 14.72	\$ 13.7	\$ 36.72	\$ 102.09	\$ 164.02	\$ 315.99
CATAWBA	37035	\$ 442.94	\$ 66.72	\$ 13.91	\$ 8.61	\$ 5.11	\$ 11.48	\$ 43.07	\$ 94.95	\$ 127.71	\$ 315.22
CHATHAM	37037	\$ 467.48	\$ 42.29	\$ 9.84	\$ 5.49	\$ 11.83	\$ 13.96	\$ 60.03	\$ 114.84	\$ 157.03	\$ 310.44
CHEROKEE	37039	\$ 595.21	\$ 137.08	\$ 14.17	\$ 8.38	\$ 2.28	\$ 10.21	\$ 55.45	\$ 116.43	\$ 199.85	\$ 404.36
CHOWAN	37041	\$ 512.22	\$ 51.32	\$ 13.44	\$ 4.69	\$ 16.31	\$ 22.86	\$ 42.96	\$ 148.41	\$ 178.17	\$ 334.04
CLAY	37043	\$ 464.46	\$ 70.24	\$ 14.16	\$ 7.34	\$ 7.4	\$ 9.54	\$ 31.88	\$ 119.35	\$ 157	\$ 307.46
CLEVELAND	37045	\$ 545.88	\$ 81.27	\$ 22.02	\$ 9.08	\$ 9.47	\$ 23.85	\$ 52.52	\$ 106.13	\$ 200.31	\$ 345.57

Chart

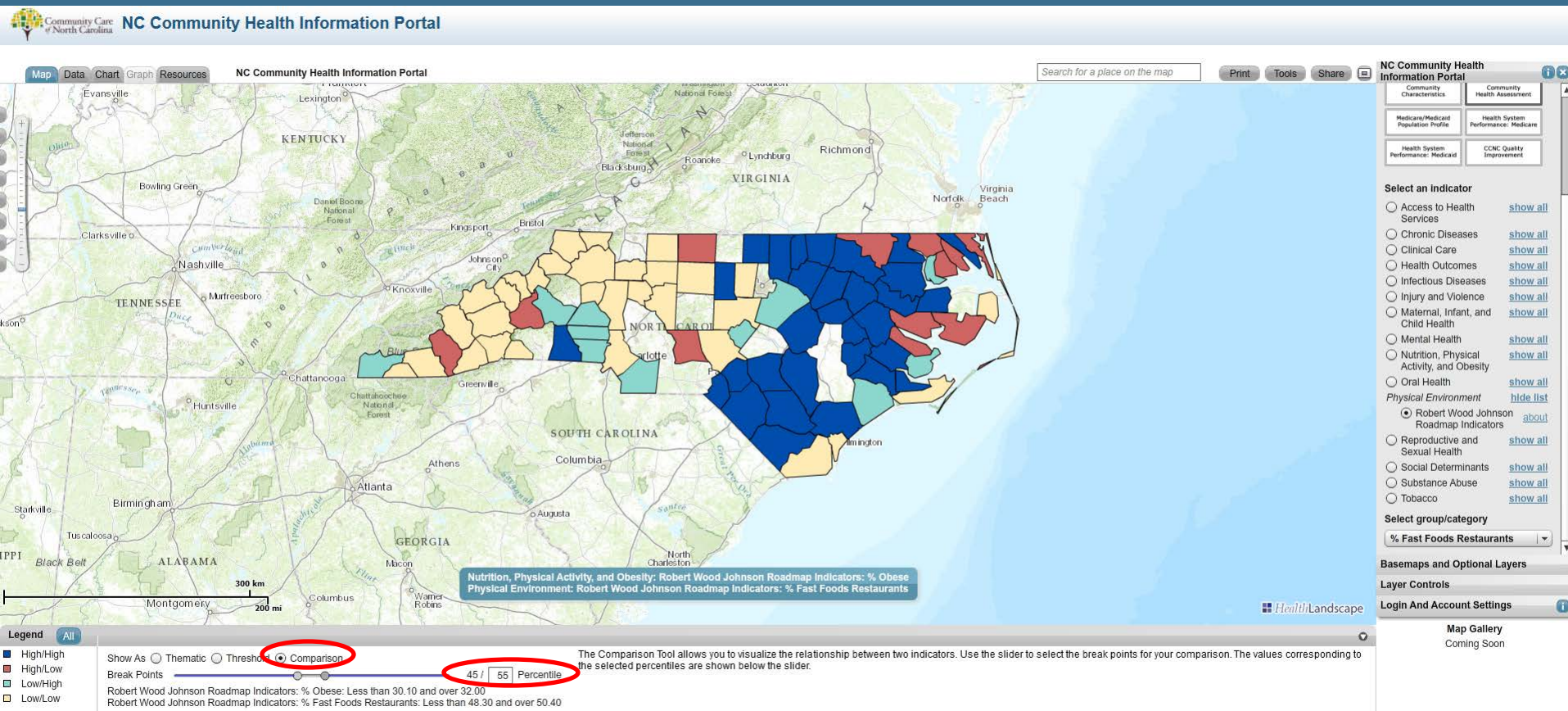
Average Monthly Medicaid Costs by County



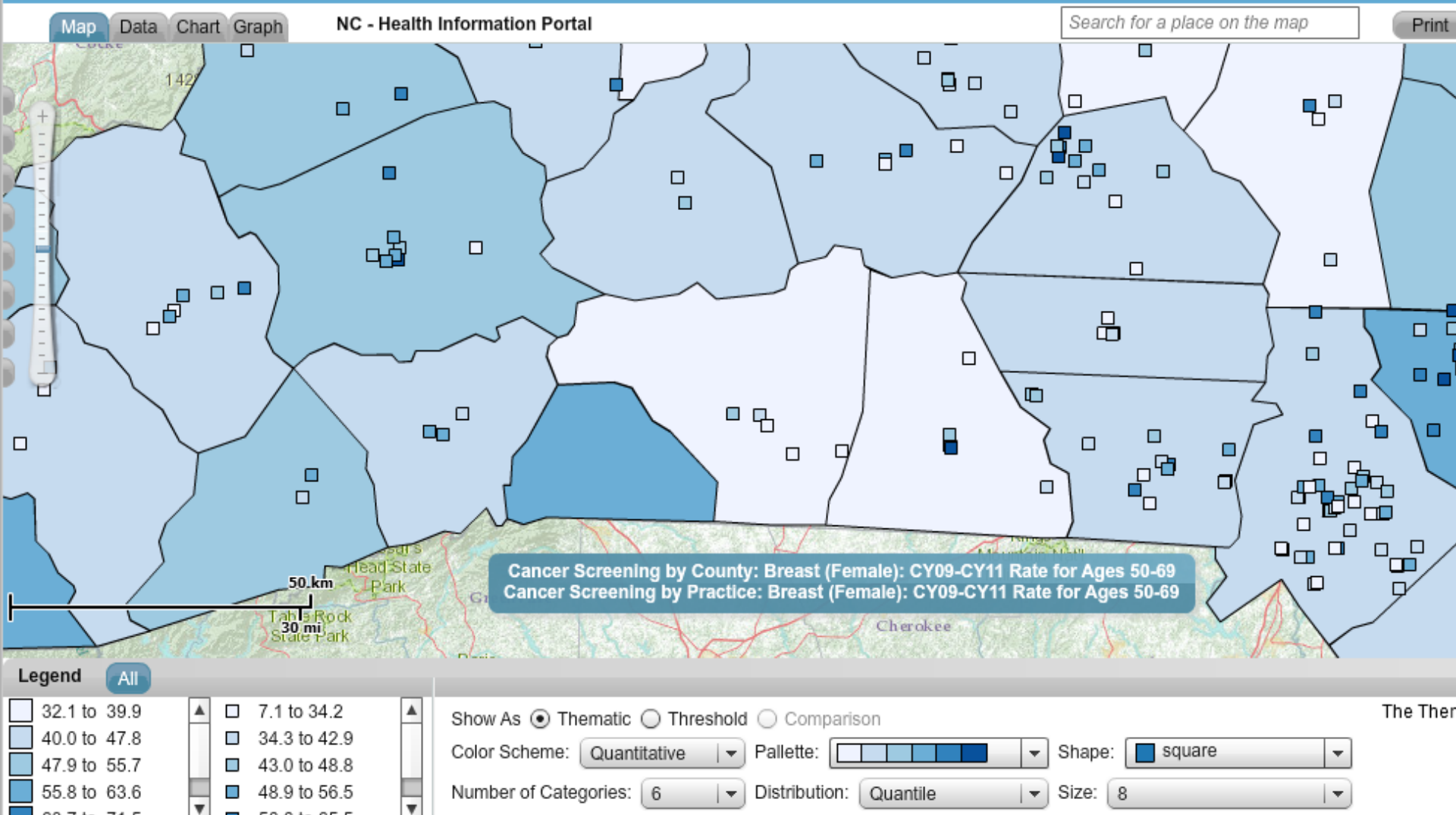
Percent Obesity and Preponderance of Fast Food Restaurants



Percent Obesity and Preponderance of Fast Food Restaurants – Comparison



Practice-Level Variation in Breast Cancer Screening Rates



Initial User Testing

- ▶ After loading the data into the mapping tools, let everyone use the data and see what happens.

Map Data Chart Graph

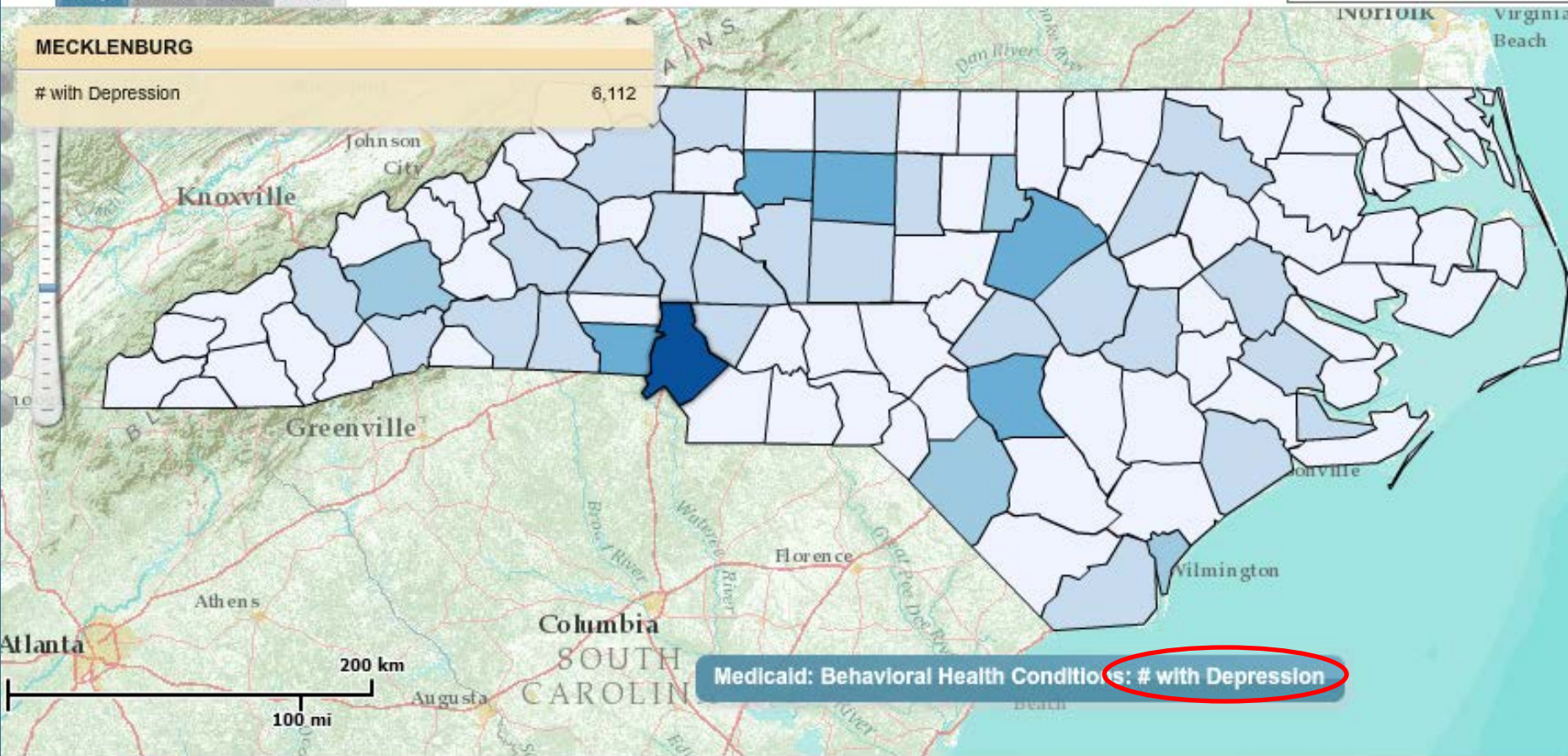
NC - Health Information Portal

Search for a place on the map

MECKLENBURG

with Depression

6,112



Medical: Behavioral Health Conditions: # with Depression

Legend

All



Show As ☒ Thematic ☐ Threshold

Color Scheme: Quantitative

Palette:

Number of Categories: 6

Distribution: Equal Interval

The Thematic View ...

Map Data Chart Graph

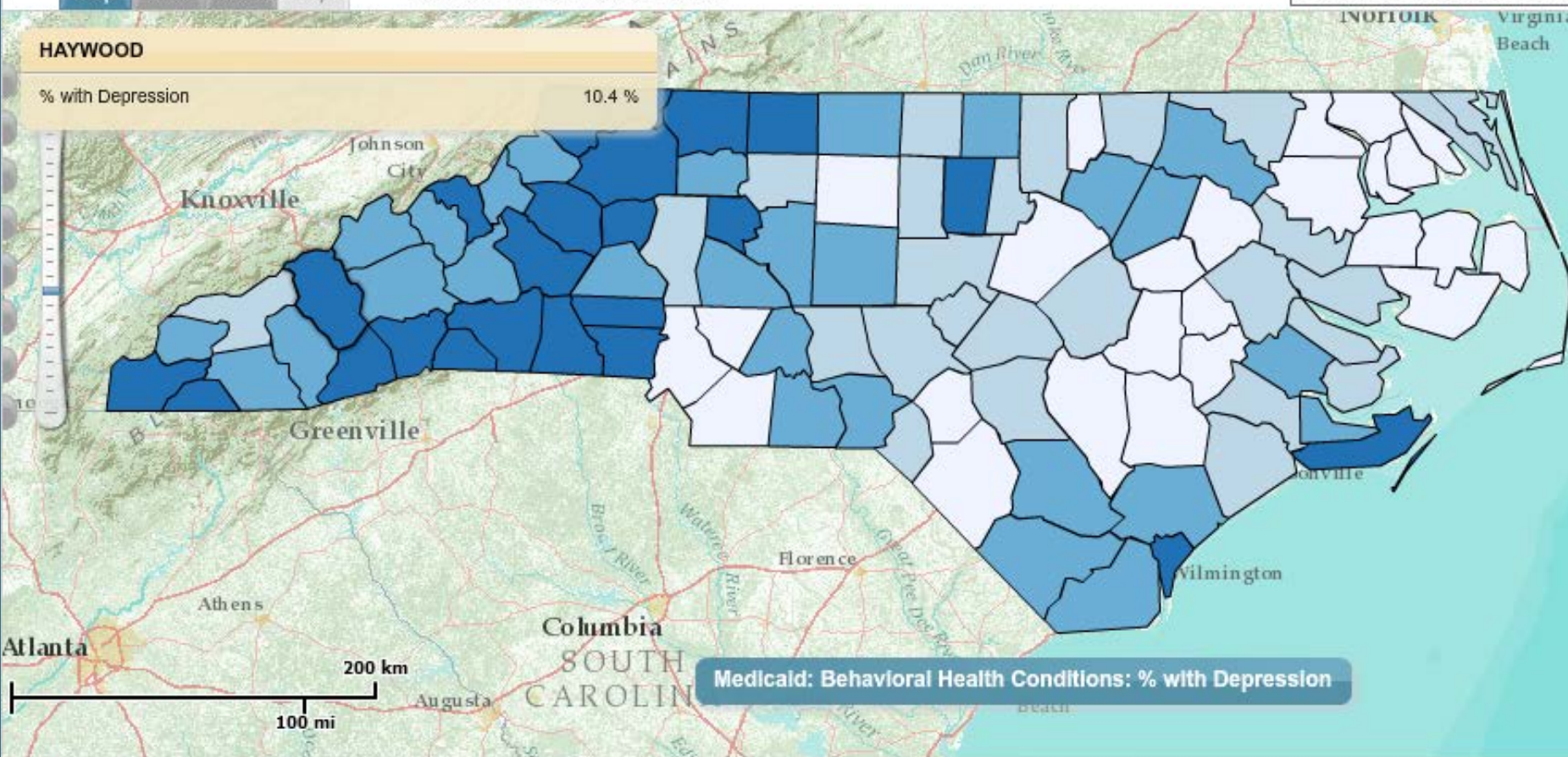
NC - Health Information Portal

Search for a place on the map

HAYWOOD

% with Depression

10.4 %



Medicaid: Behavioral Health Conditions: % with Depression

Legend

All

4.1 to 5.4
5.5 to 6.2
6.3 to 7.9
8.0 to 10.4

Show As ☒ Thematic ☐ Threshold

Color Scheme: Quantitative

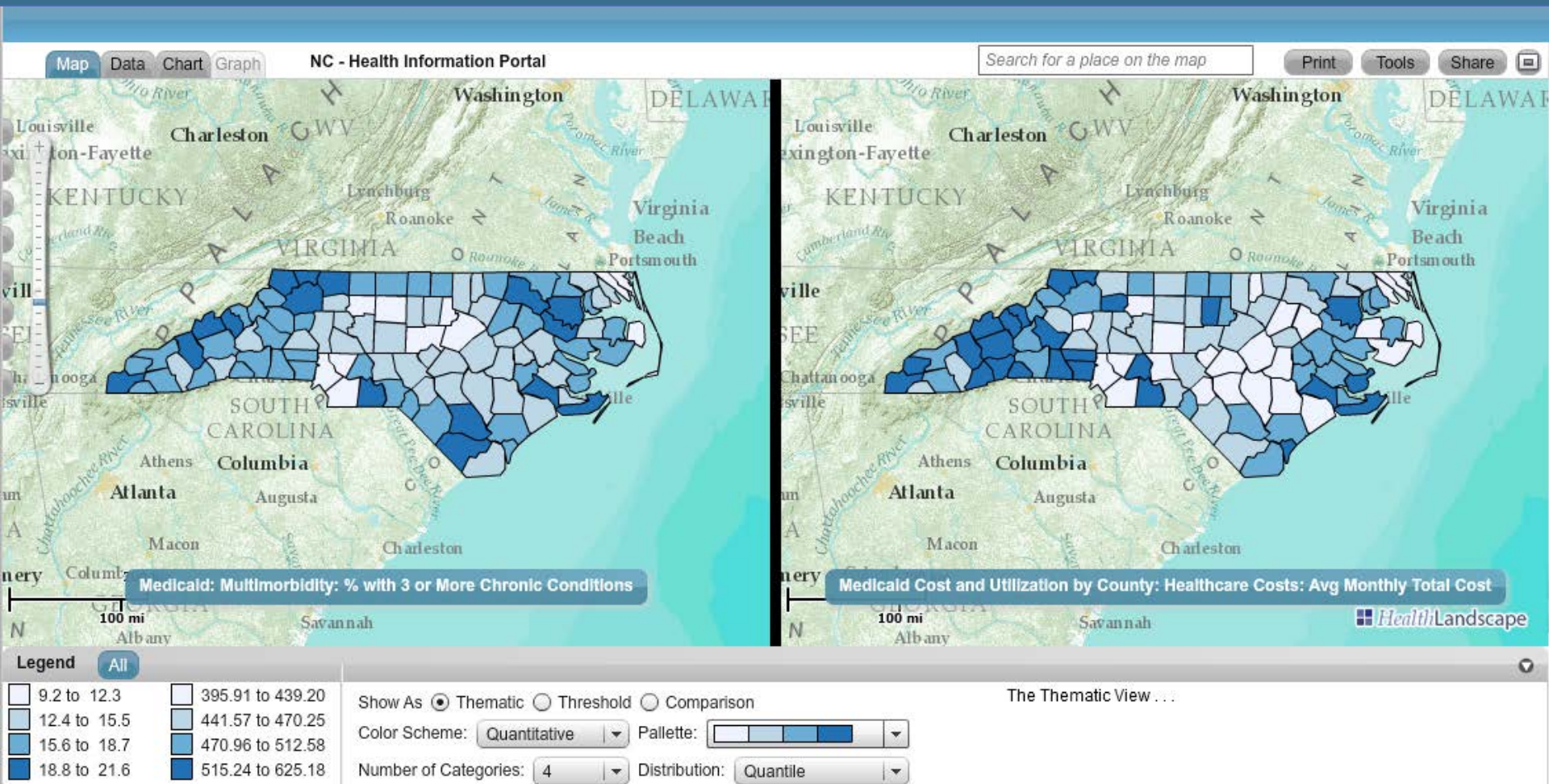
Palette:

Number of Categories: 4

Distribution: Quantile

The Thematic View ...

More on Data Classification Issues



Successes

- ▶ Users need guidance on operating these complex mapping tools and an understanding of how to interpret the data.
- ▶ Create an Advisory Board, or Users Group
- ▶ Train the Trainers
- ▶ Create Training and User Support Materials
- ▶ Training Through Webinars and Online Materials

Opportunities for Geographers

- ▶ Support in the Development
- ▶ Support in the Training
- ▶ Helping users at all levels understand how to appropriately display and interpret Maps.

Thank you!

North Carolina Health Information Portal

nc-hip.nc3n.org

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