Digital Equity Analytics

Visualizing your community story

June 12th, 2024

Discussion

- Digital Equity Analytics
- Visualizing the Story: Pueblo, CO
- View from the Trenches: An Award Recipient
- View from the State

Digital Equity Analytics

Why Digital Equity Analytics?

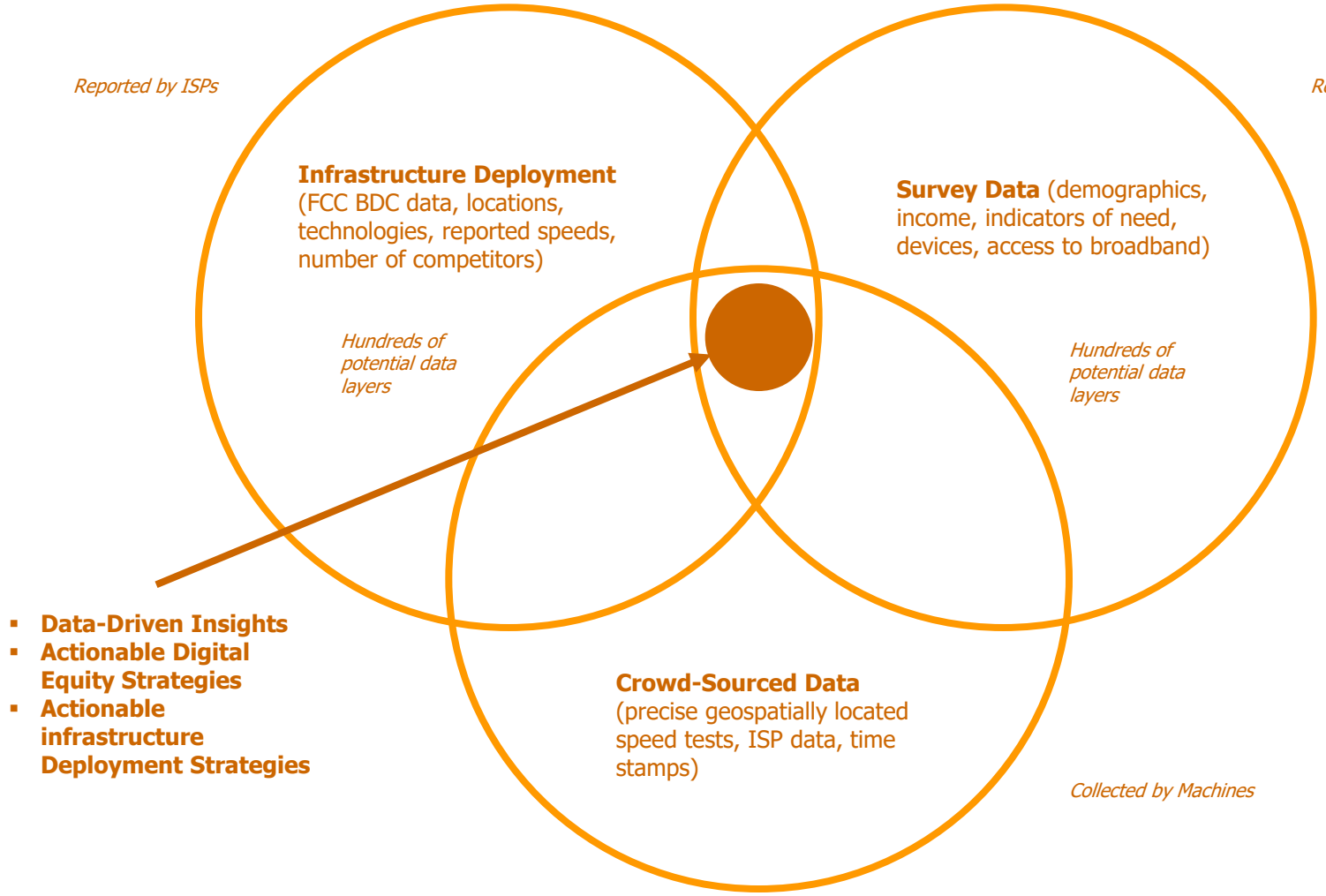
- Digital Equity requirements are embedded in many initiatives:
  - BEAD stands for Broadband *Equity* Access and Deployment Program
  - BEAD requires each eligible entity to develop a 5-Year Action Plan and a Digital Equity Plan.

- The Digital Equity Act funds three programs:
  - Digital Equity Planning Grant ($60 million)
  - Digital Equity Capacity Grant Program ($1.44 billion)
  - Digital Equity Competitive Grant Program ($1.25 billion)

- The FCC is establishing digital discrimination rules.

- Affordability
  - Low-Cost Plans
  - Possible Future ACP

Sources of "Truth"

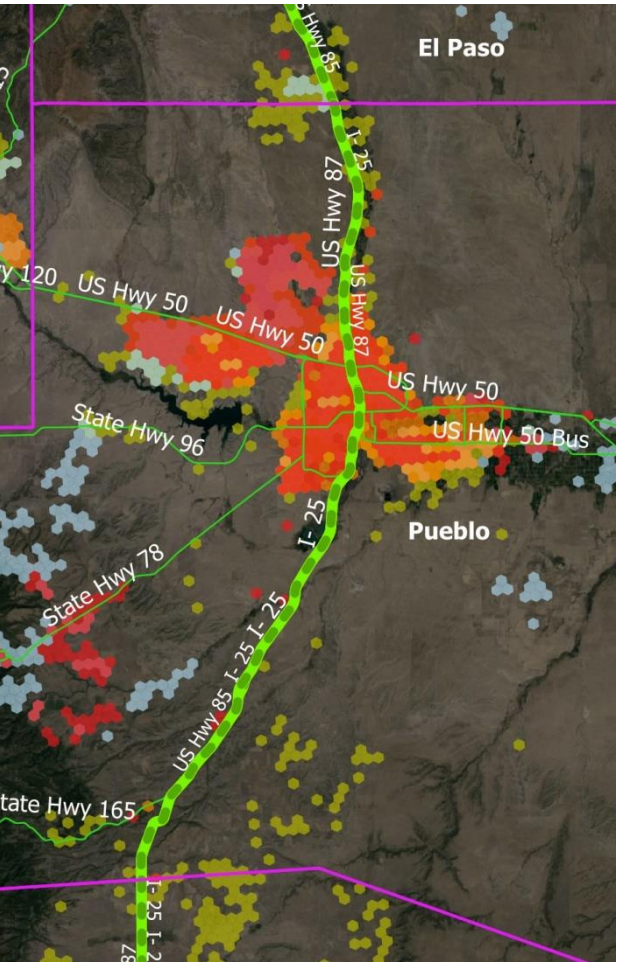


- **Data-Driven Insights**
- **Actionable Digital Equity Strategies**
- **Actionable infrastructure Deployment Strategies**

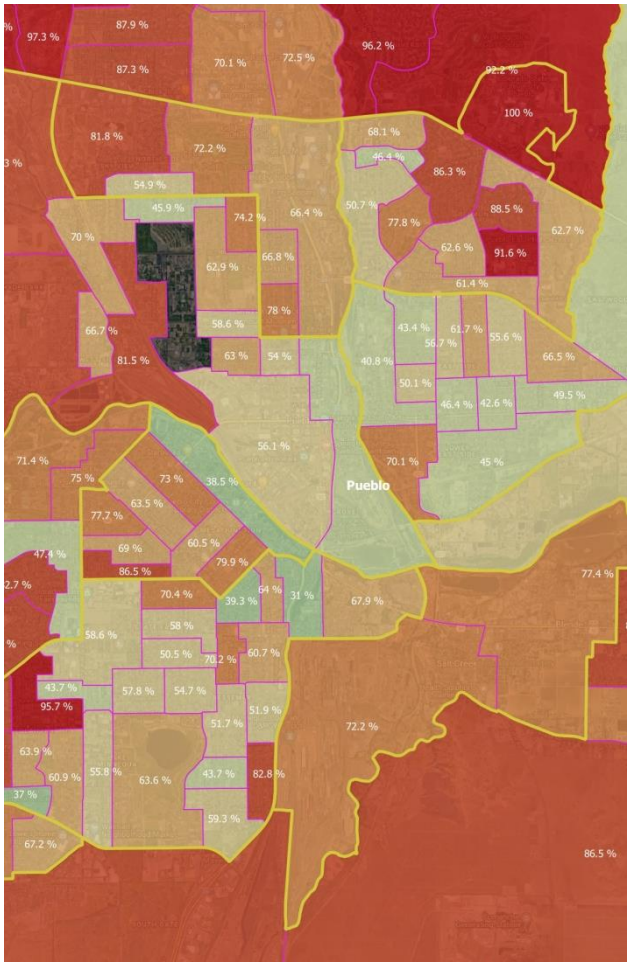
Broadband advocates can draw upon several overlapping data sources – each with strengths and weaknesses – to understand what is happening "on the ground"

ISP-Reported | Survey-Based | Crowd Sourced

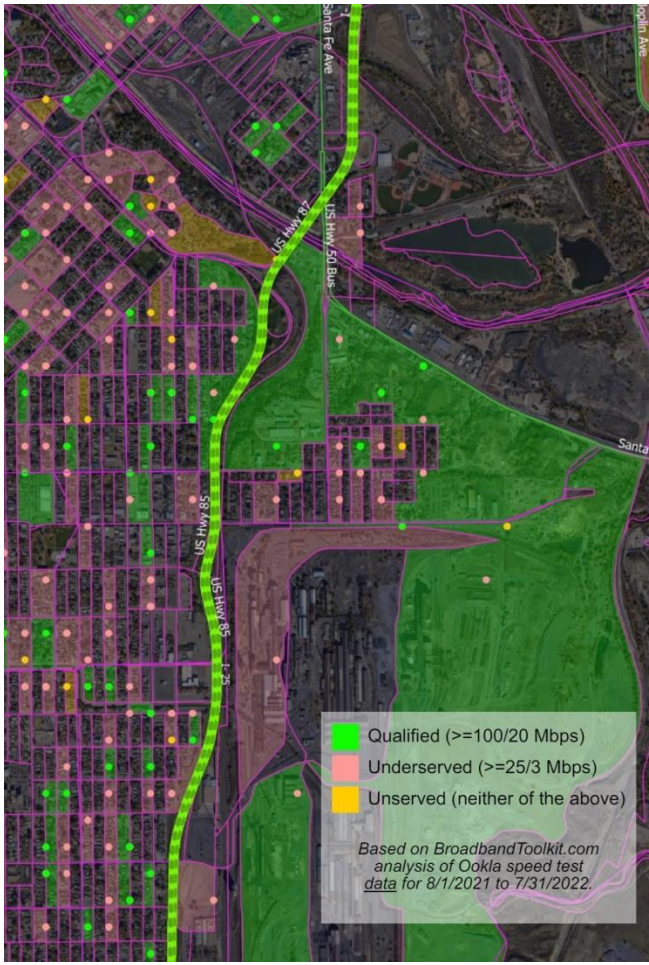
ISP-Reported
Layers of Technology



Survey-Based
Device Ownership



Crowd-Sourced (whitepaper)
Measured Performance



American Community Survey (ACS)

- The US Census Bureau's American Community Survey is comprehensive and expansive:
  - 48 pages long
  - Sample size: 3.5 million households x 5 years = 17.5 million surveys mailed (response required by law; response rate: ~ 50%)
  - Covers: household demographics, income, key categories of household expenditure, housing attributes, participation in government programs, education, disability status, veteran status, telephone and broadband connectivity, and other topics.
  - Tabulated in 1-year (very current, but not as granular) and 5-year (most granular) formats.

Levels of Aggregation		**Number of tables (think "cross-tabs")**		**Parameters per table**		***Potential* Number of Data Sets**
(14 in 1-Year, 18 in 5-Year, plus specialty calculations, less suppressed calculations)	X	(1,577 in 1-Year plus 1,277 in 5-Year = 2,854)	X	Assume 10 – varies widely by subject.	=	Ignores overlaps between data tables and permutations of tables and levels of aggregation that are suppressed, for various reasons.
16		**2,854**		**10**		**456,640**

Analogy: the ACS is like the Library of Congress. It takes skill to navigate it.

Digital Equity Act: Covered Population (Simple Metric)

Low-Income Households (150% of Poverty)

Aging Populations

Incarcerated Individuals

Veterans

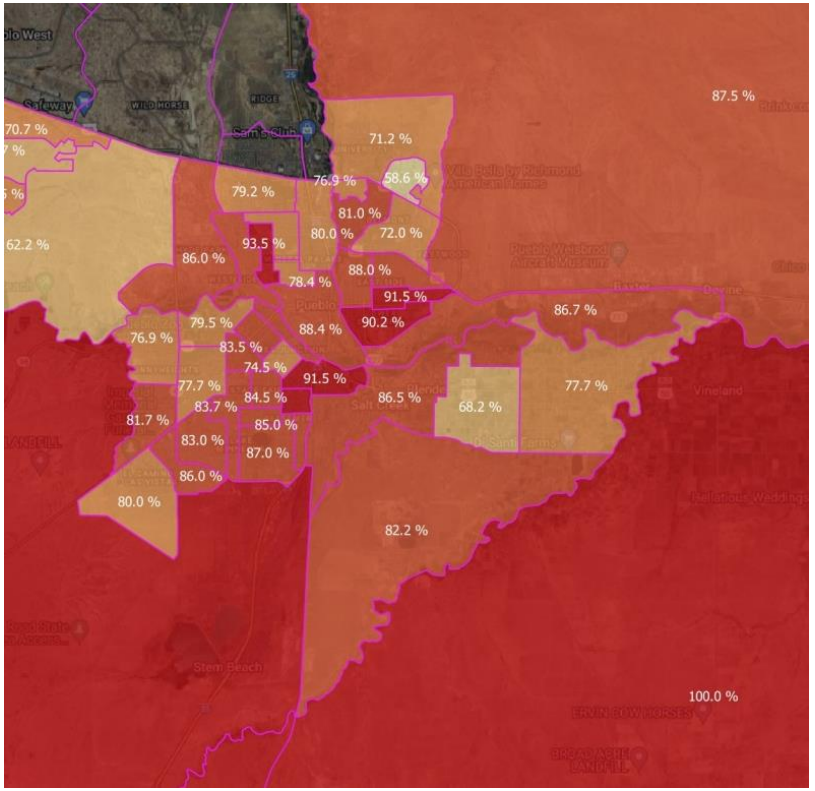
People with Disabilities

People with Language Barriers

Racial and Ethnic Minorities

Rural Inhabitants

Result: Covered Population

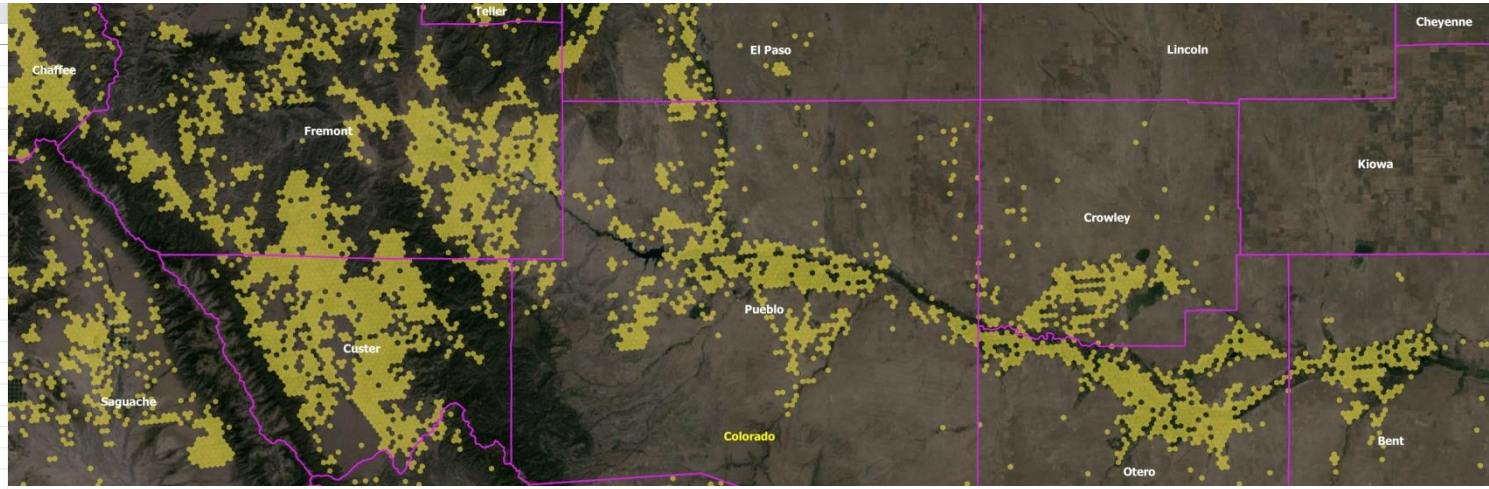


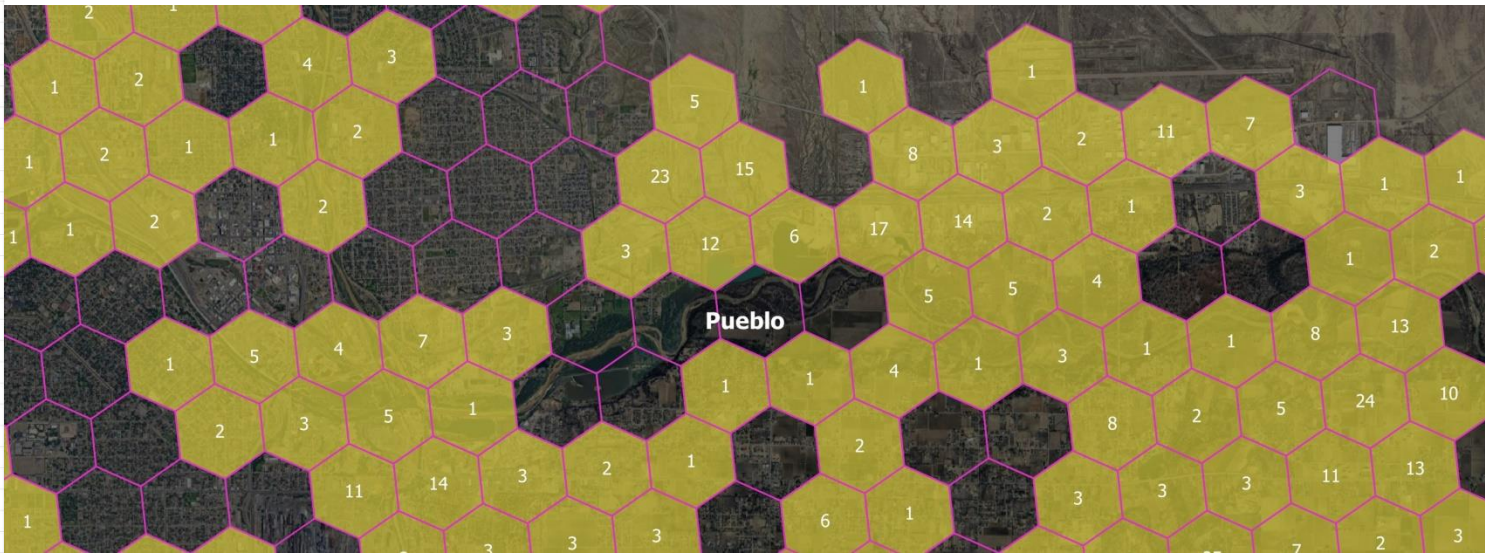
Unserved and Underserved Locations

CSV Data (BEAD Vol 1)

	A	B	C
1	location_id	funding	servicelevel
5332	1344815258	Unfunded	Unserved
5333	1344815257	Unfunded	Unserved
5334	1344815252	Unfunded	Unserved
5335	1344918316	Unfunded	Unserved
5336	1344918267	Unfunded	Unserved
5337	1344815312	Unfunded	Underserved
5338	1344815311	Unfunded	Underserved
5339	1344815376	Unfunded	Underserved
5340	1344815386	Unfunded	Unserved
5341	1344815385	Unfunded	Underserved
5342	1344815384	Unfunded	Underserved
5343	1344815383	Unfunded	Unserved
5344	1344815382	Unfunded	Underserved
5345	1344815381	Unfunded	Underserved
5346	1344815380	Unfunded	Underserved
5347	1344815379	Unfunded	Unserved
5348	1344815378	Unfunded	Unserved
5349	1344815377	Unfunded	Underserved
5350	1338614031	Unfunded	Served
5351	1338613871	Unfunded	Served
5352	1338613872	Unfunded	Served
5353	1338613873	Unfunded	Served
5354	1338613874	Unfunded	Served
5355	1338613875	Unfunded	Served
5356	1338613889	Unfunded	Served
5357	1338613890	Unfunded	Served
5358	1338613888	Unfunded	Served
5359	1338613891	Unfunded	Served
5360	1338613892	Unfunded	Served
5361	1338613893	Unfunded	Served
5362	1338613909	Unfunded	Served
5363	1338613910	Unfunded	Served
5364	1338614035	Unfunded	Served
5365	1338613974	Unfunded	Served
5366	1338613876	Unfunded	Served
5367	1338614113	Unfunded	Served
5368	1338613894	Unfunded	Served
5369	1338613895	Unfunded	Served
5370	1338613881	Unfunded	Served
5371	1338613896	Unfunded	Served
5372	1338613948	Unfunded	Served
5373	1338613884	Unfunded	Served
5374	1338613947	Unfunded	Served
5375	1338613946	Unfunded	Served
5376	1338448361	Unfunded	Served
5377	1338448364	Unfunded	Served
5378	1338448365	Unfunded	Served

Visualized Data (top: zoomed out, bottom: zoomed in)





NTIA Indicators of Need

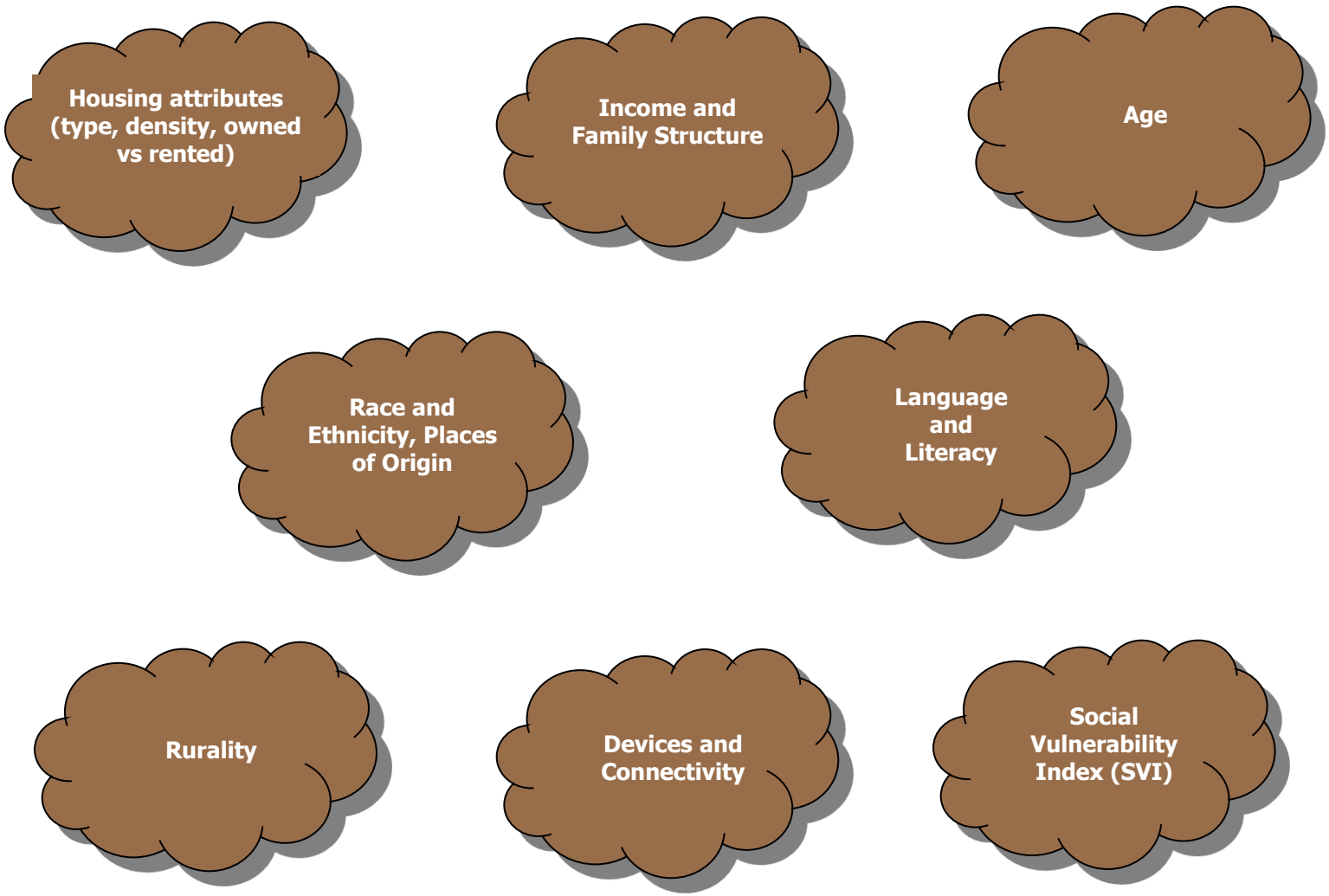
- A data set and an associated online map (link), created in 2021, providing demographic and crowd-sourced data at the tract and county level. See the PDF guide (link). The map also included program-specific data.

- *Tract data*: population, number of households, households with no internet enabled devices, households with no internet, poverty rates, maximum advertised internet download speeds based on FCC form 477, median download speeds based on Ookla data, and median upload speeds based on Ookla data.

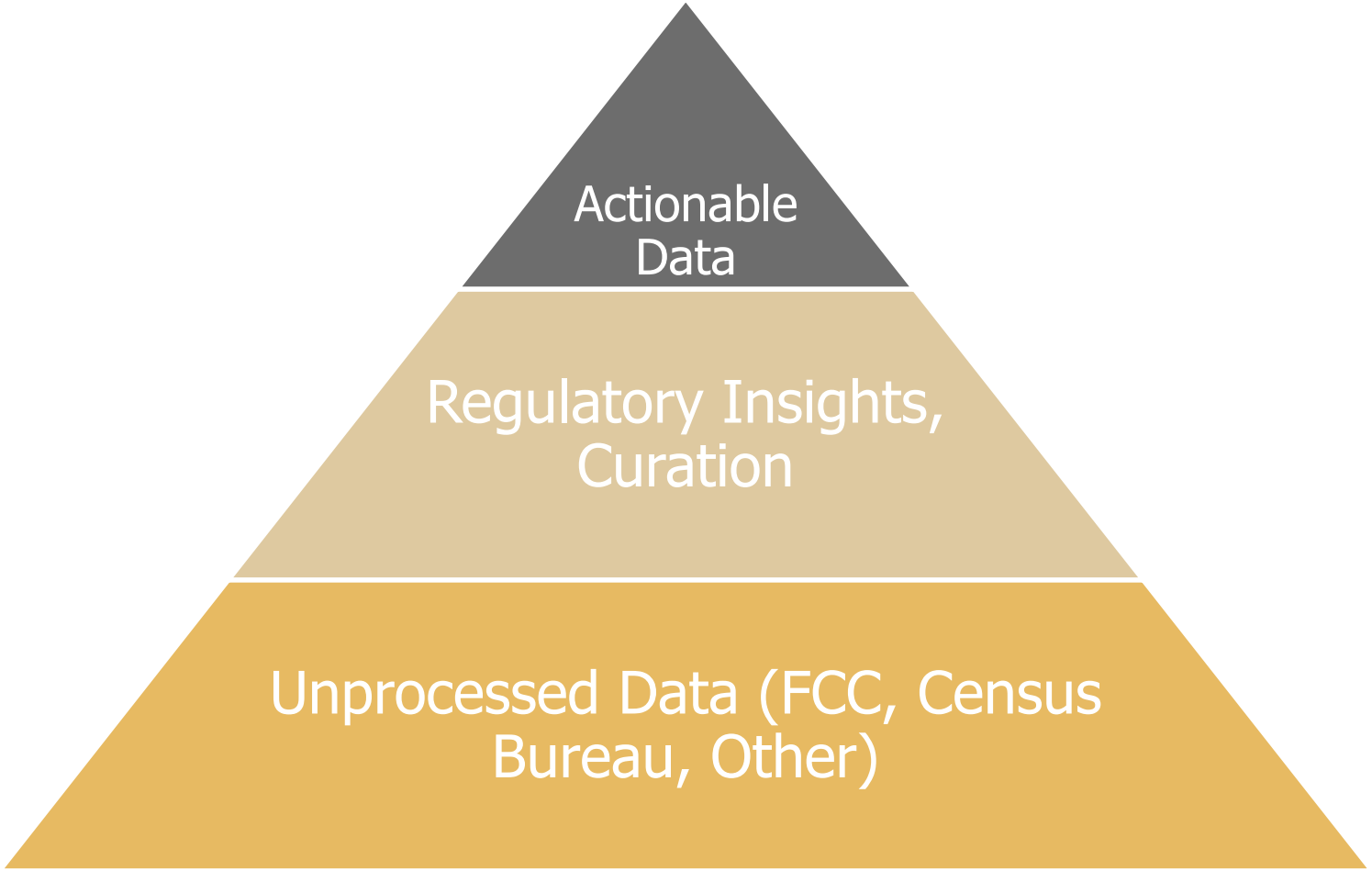
- *County data*: population, number of households, households with no internet enabled devices, households with no internet, poverty rates, maximum advertised internet download speeds based on FCC form 477, median download speeds based on Ookla data, and median upload speeds based on Ookla data, median download speeds based on M-Lab data, median upload speeds based on M-Lab data, and broadband usage percentage based on Microsoft data.

Many would love to see the *Indicators of Need* updated on a regular basis.

Correlation, Causality, and Metrics

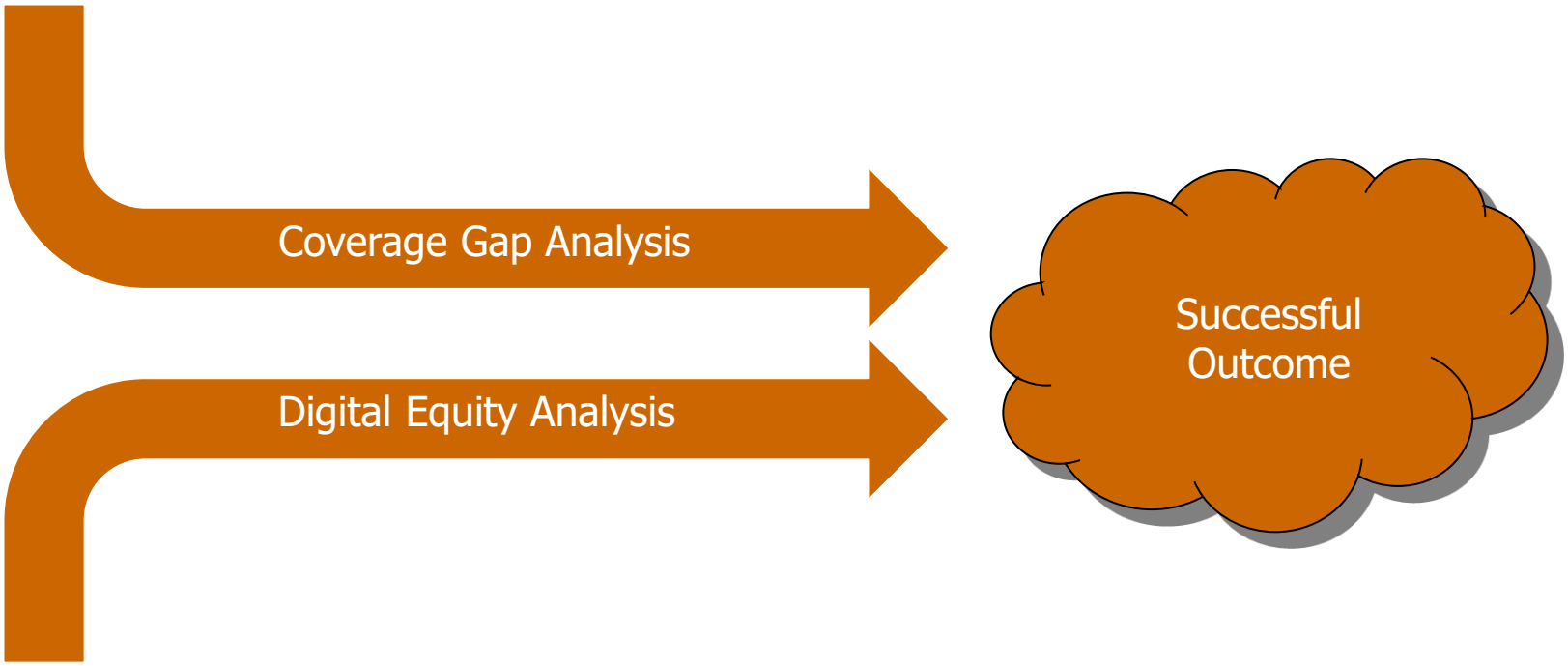


What is actionable data?



Downloadable CSV files are necessary but not sufficient to deliver actionable data

Coverage Analysis + Digital Equity Analysis



A successful outcome involves the alignment of very different types of goals and the associated data.

BEAD | Who and Where: Subgrantee Selection

Left Brain

- Must comply with detailed BEAD NOFO requirements
- Unserved, underserved, uplink and downlink speeds, latency, reliable technologies, high cost threshold, avoiding areas with enforceable commitments

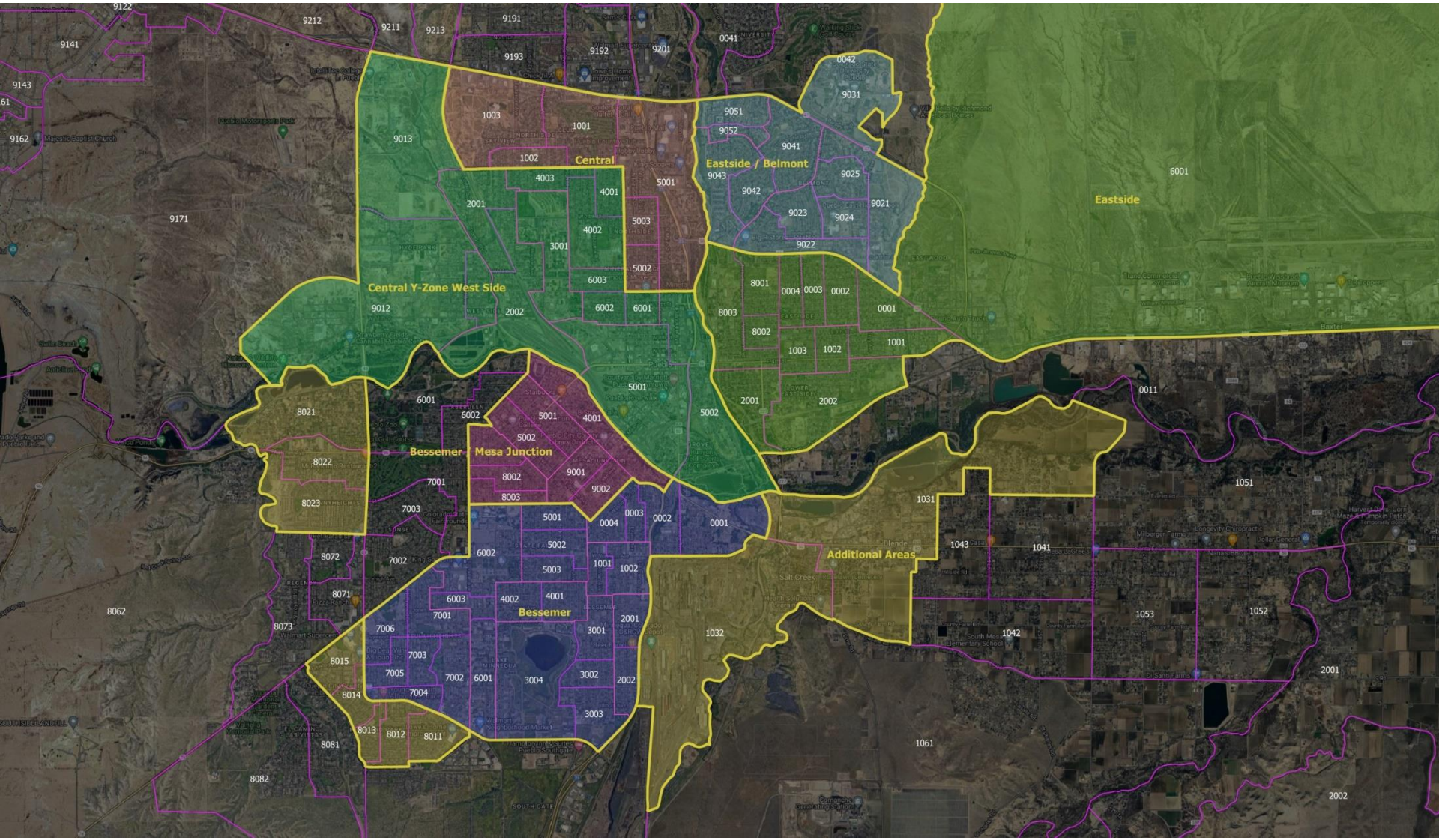
Right Brain

- A transformative solution for those in need
- Reflects many qualitative dimensions
- Tells a story
- Ideally, visualizes the story with data

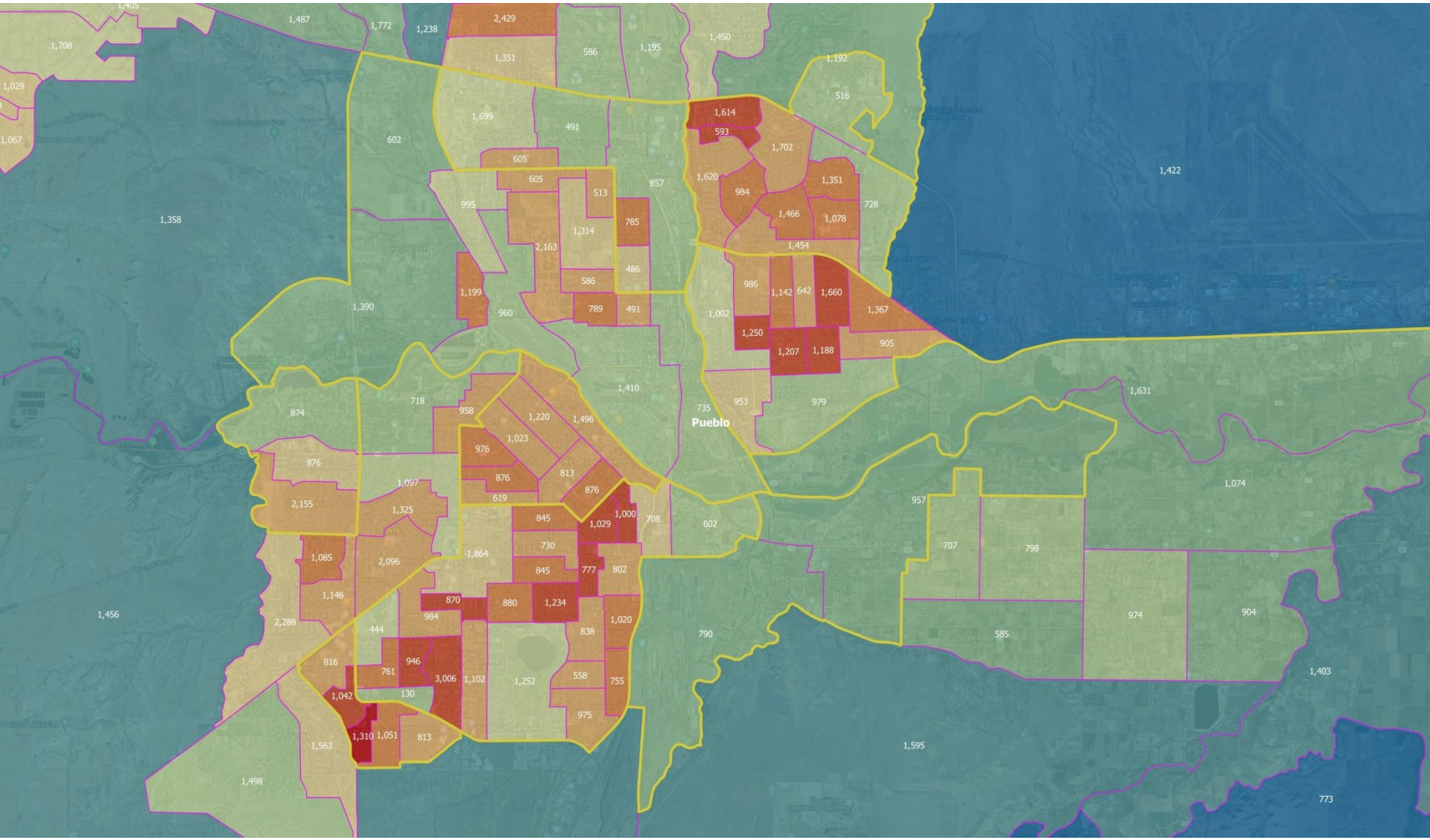
State broadband officials, grant applicants, and others must engage both sides of the brain

Visualizing the Story: Pueblo, CO

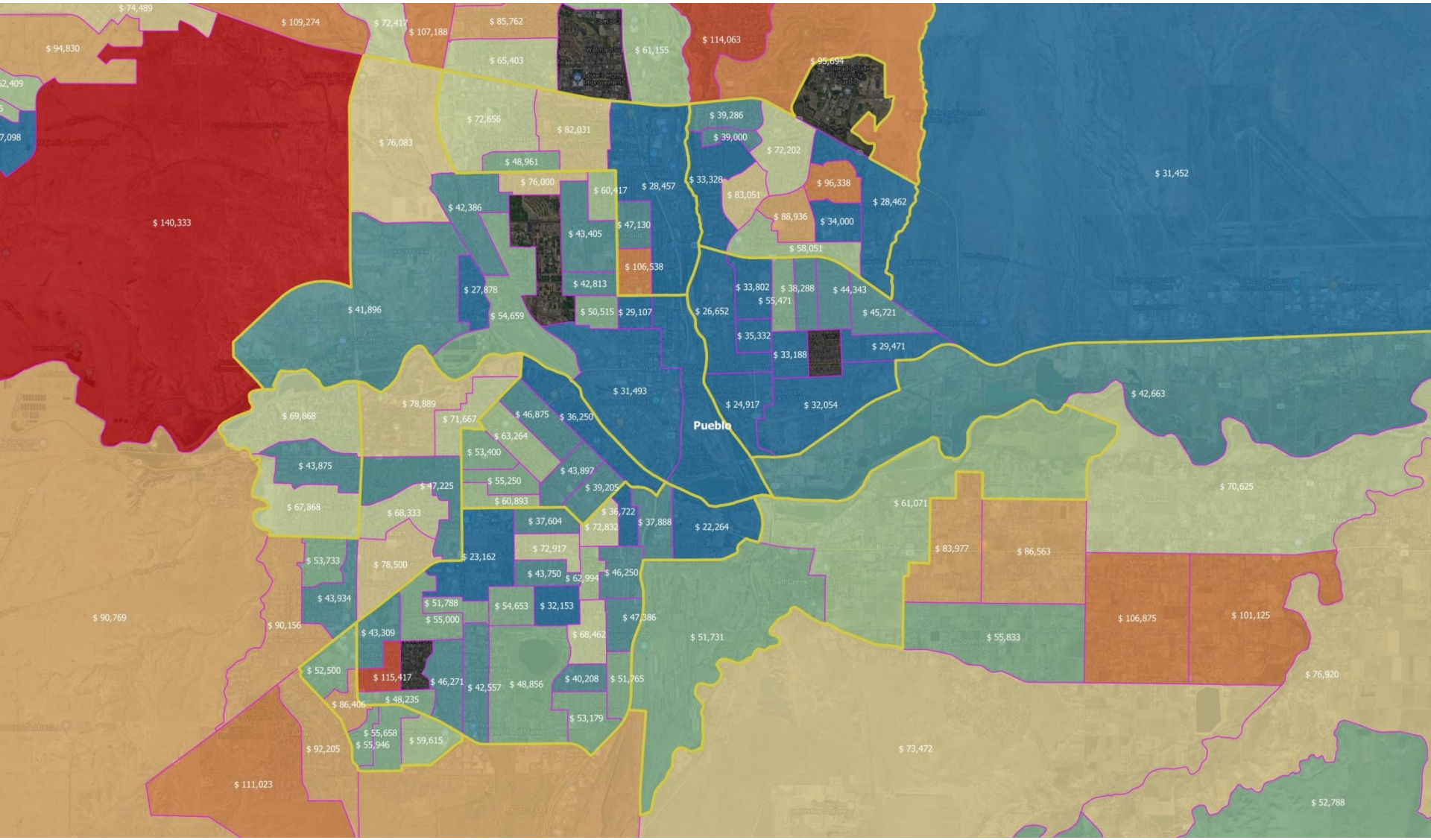
Community of Pueblo, CO | Adelante Connect



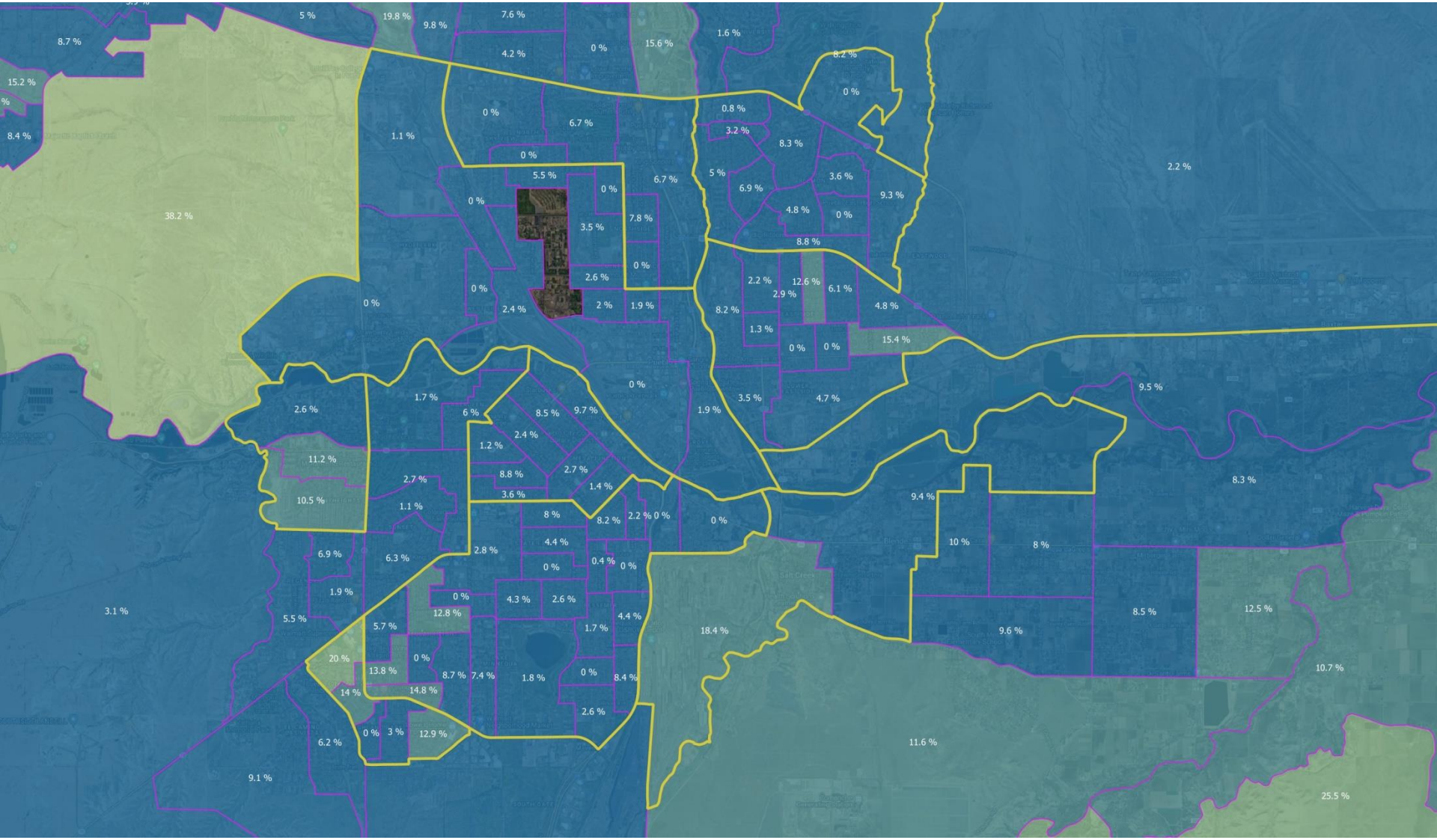
Population (color = density, number = population, bgroup)



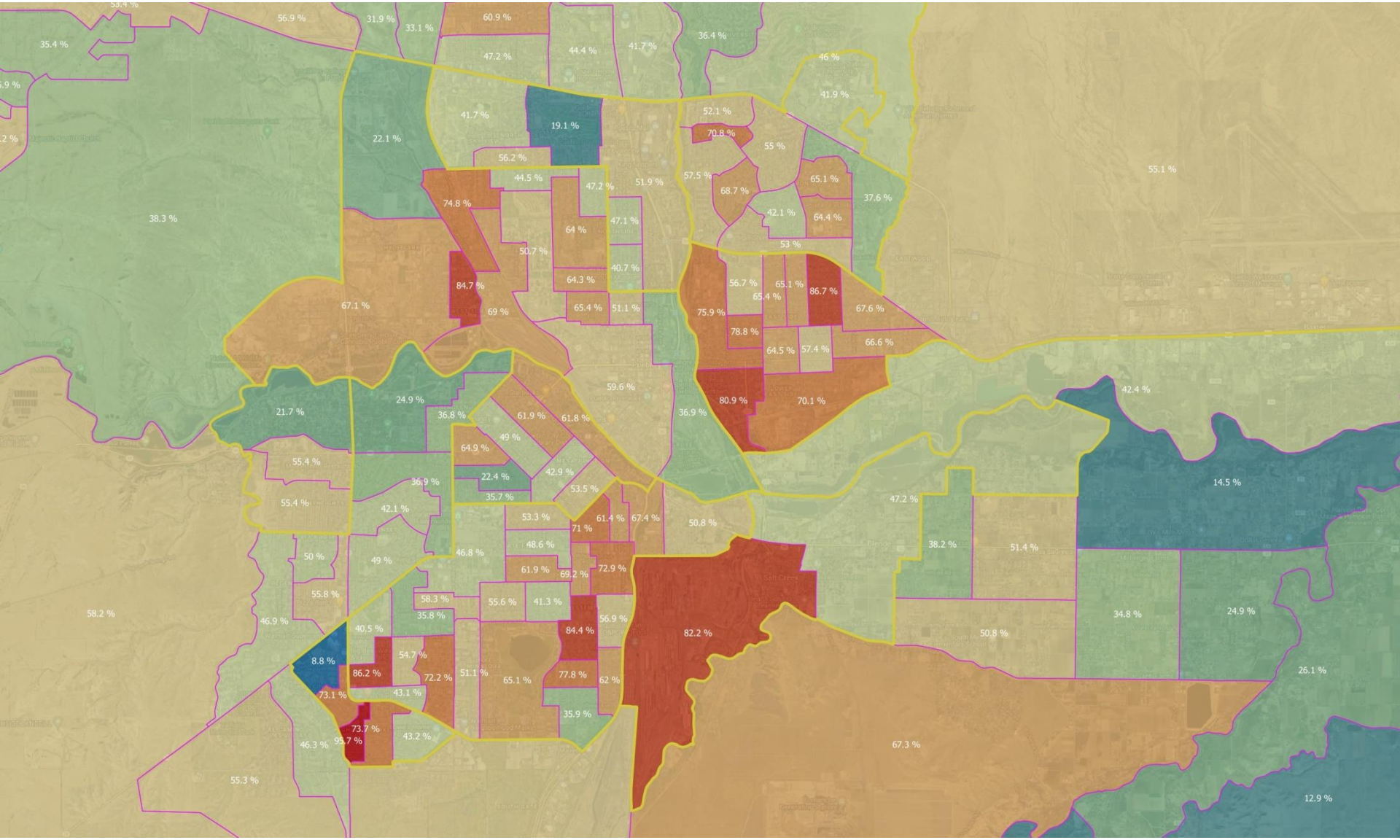
Median Household Income ($, bgroup)



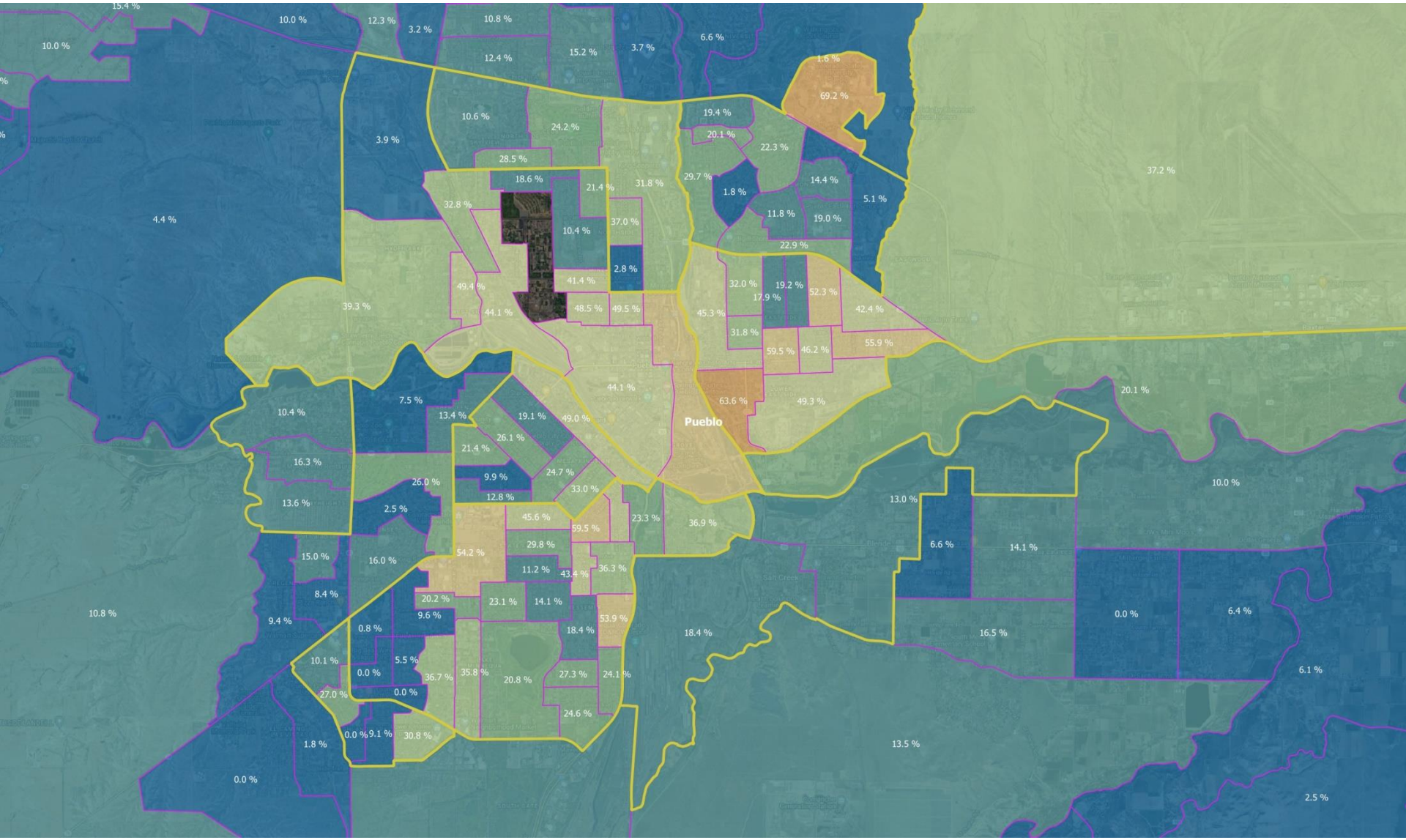
Internet Access via Satellite (%, bgroup)



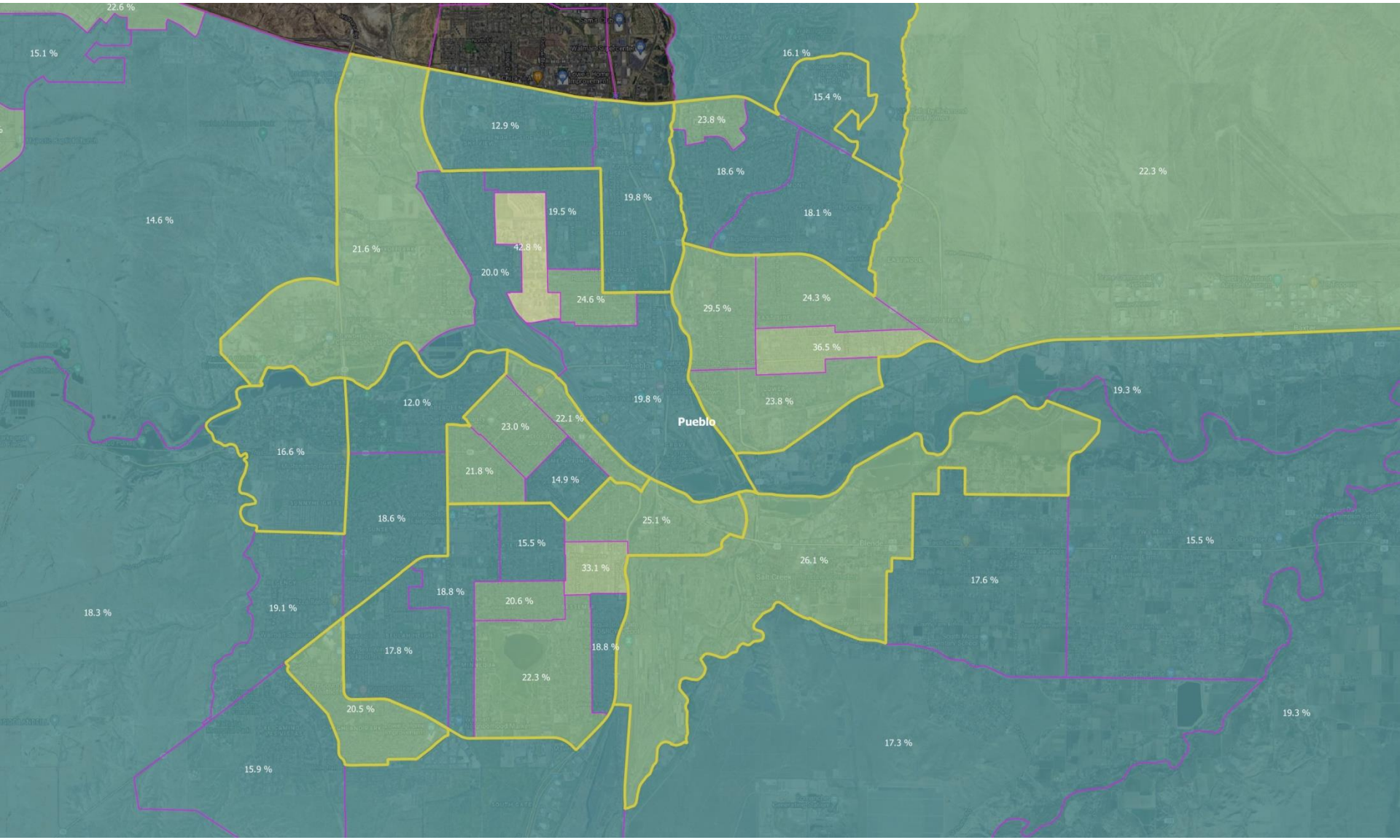
Minority Population (%, bgroup)



SNAP Participation Rate (%, bgoup)

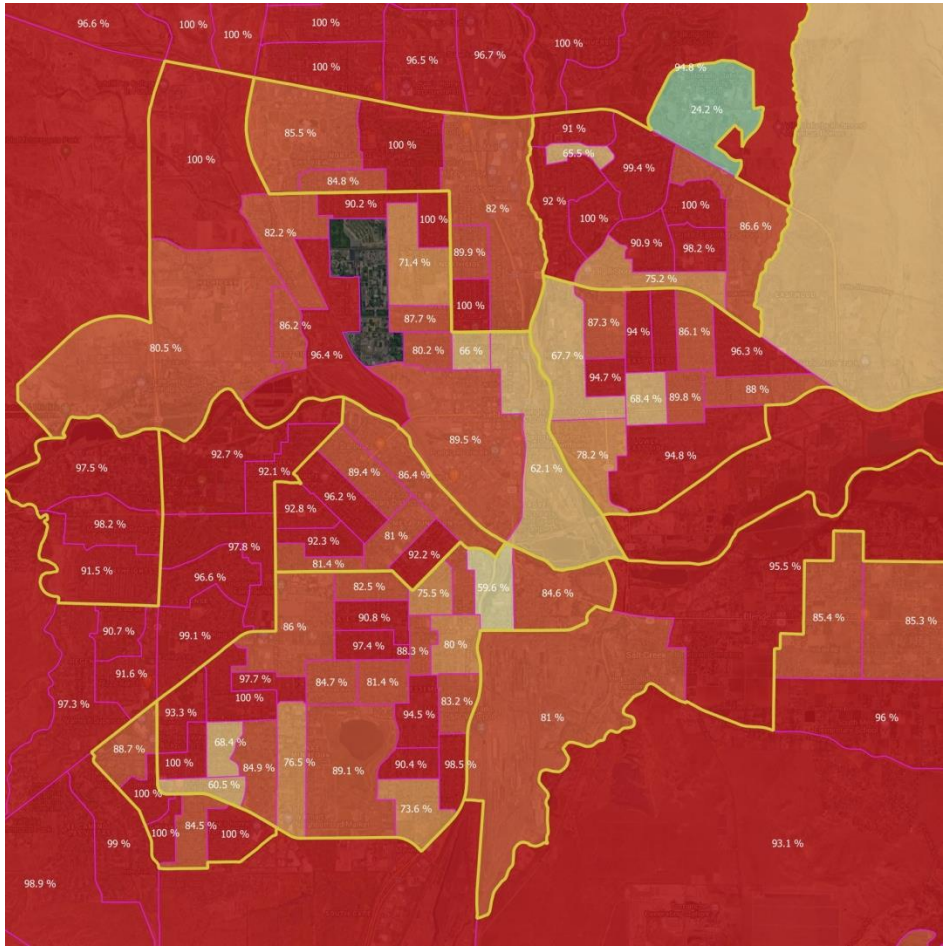


Language Barriers (%, tract)

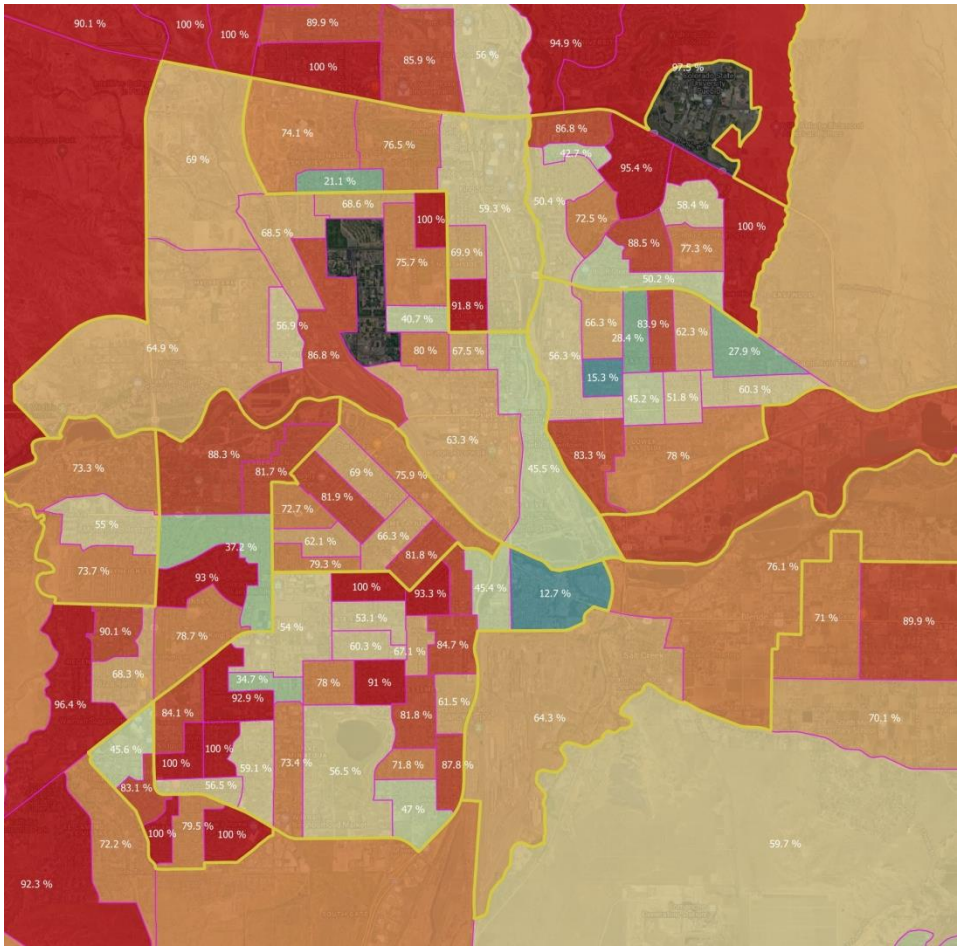


Broadband Adoption by Age (%, bgroup)

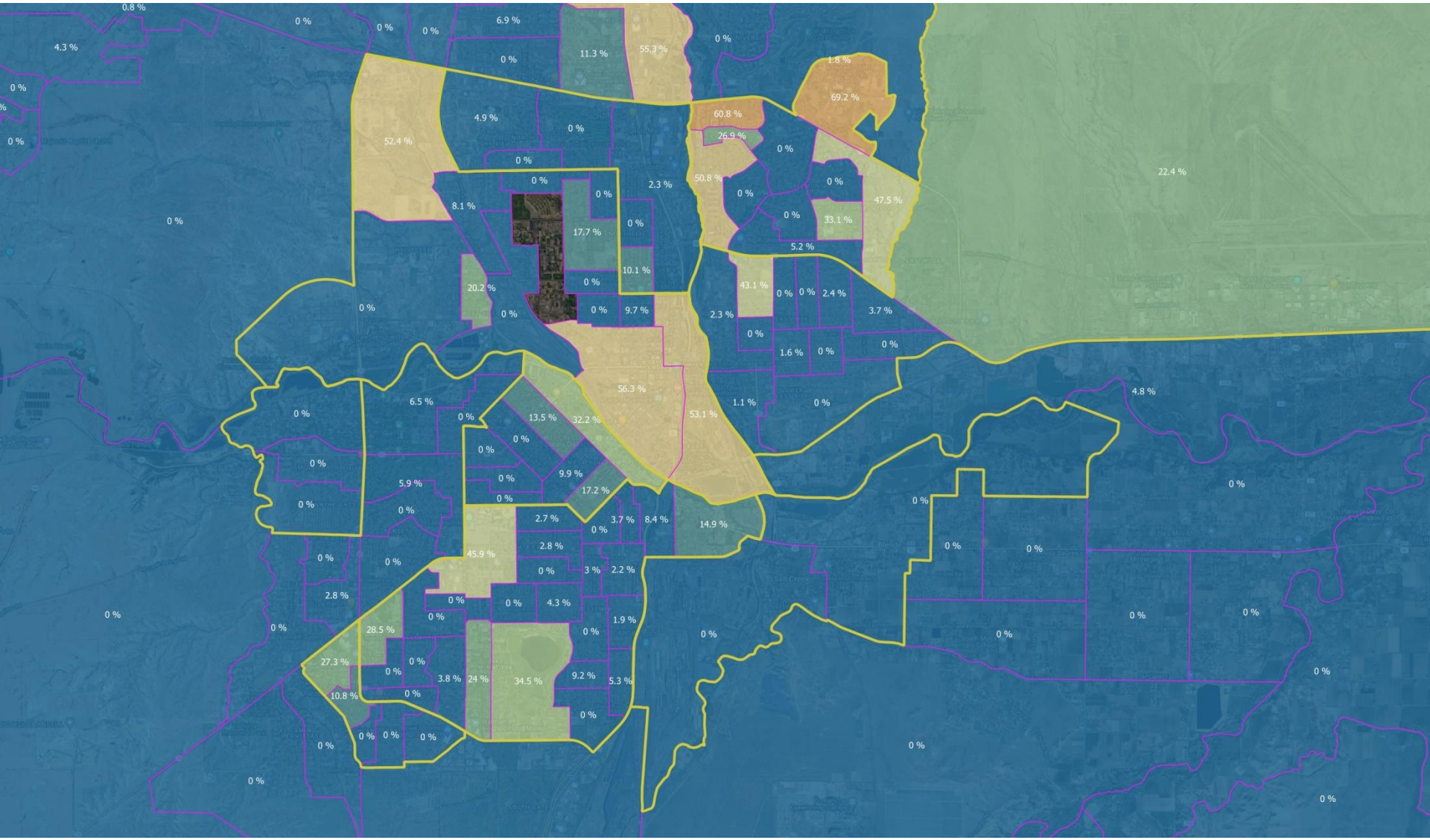
18 – 64 Years



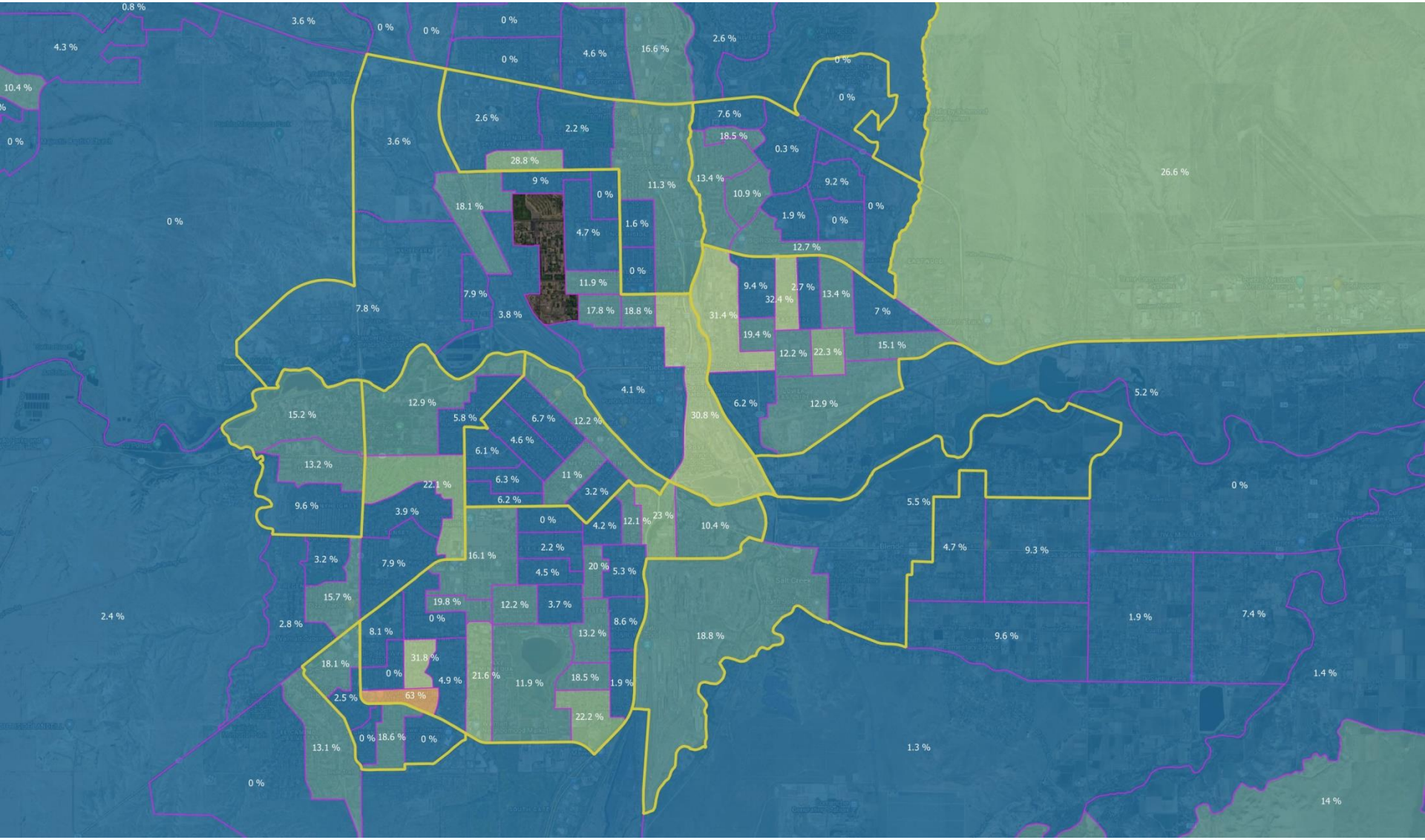
65 and over Years



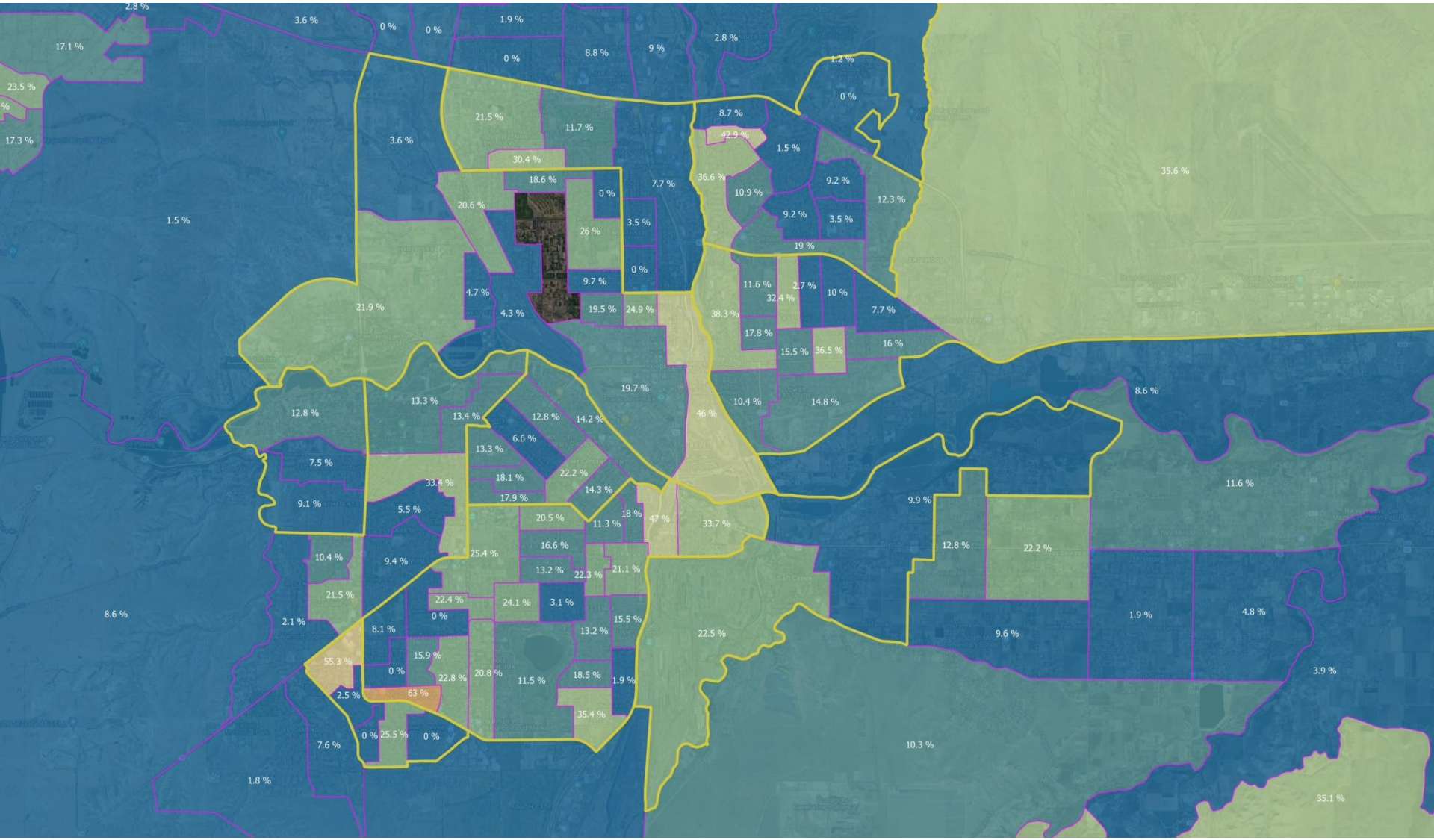
Renting, 10 or More Units per Building (%, bgroup)



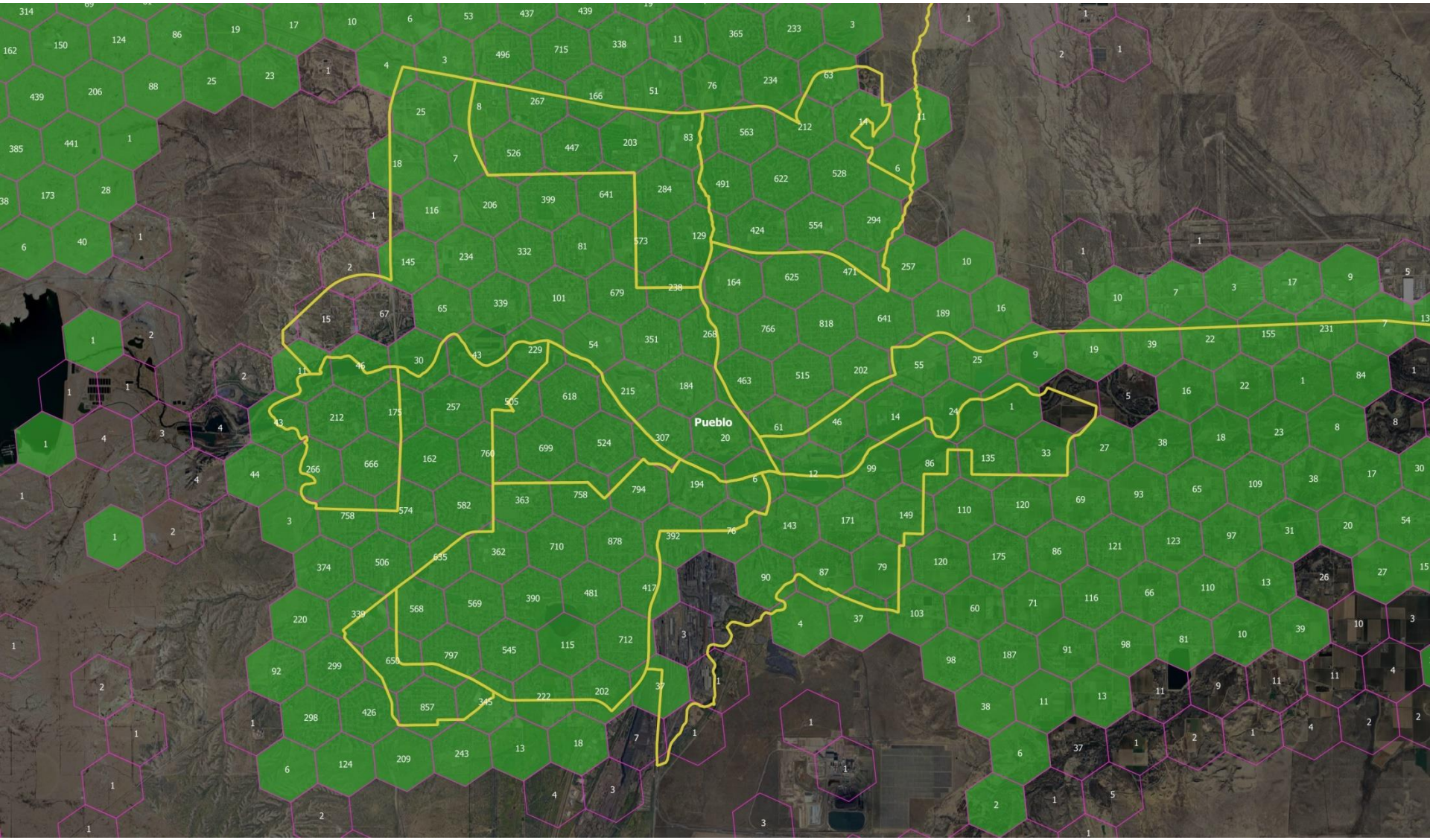
No Computing Device (not even a smartphone, %, bgroup)



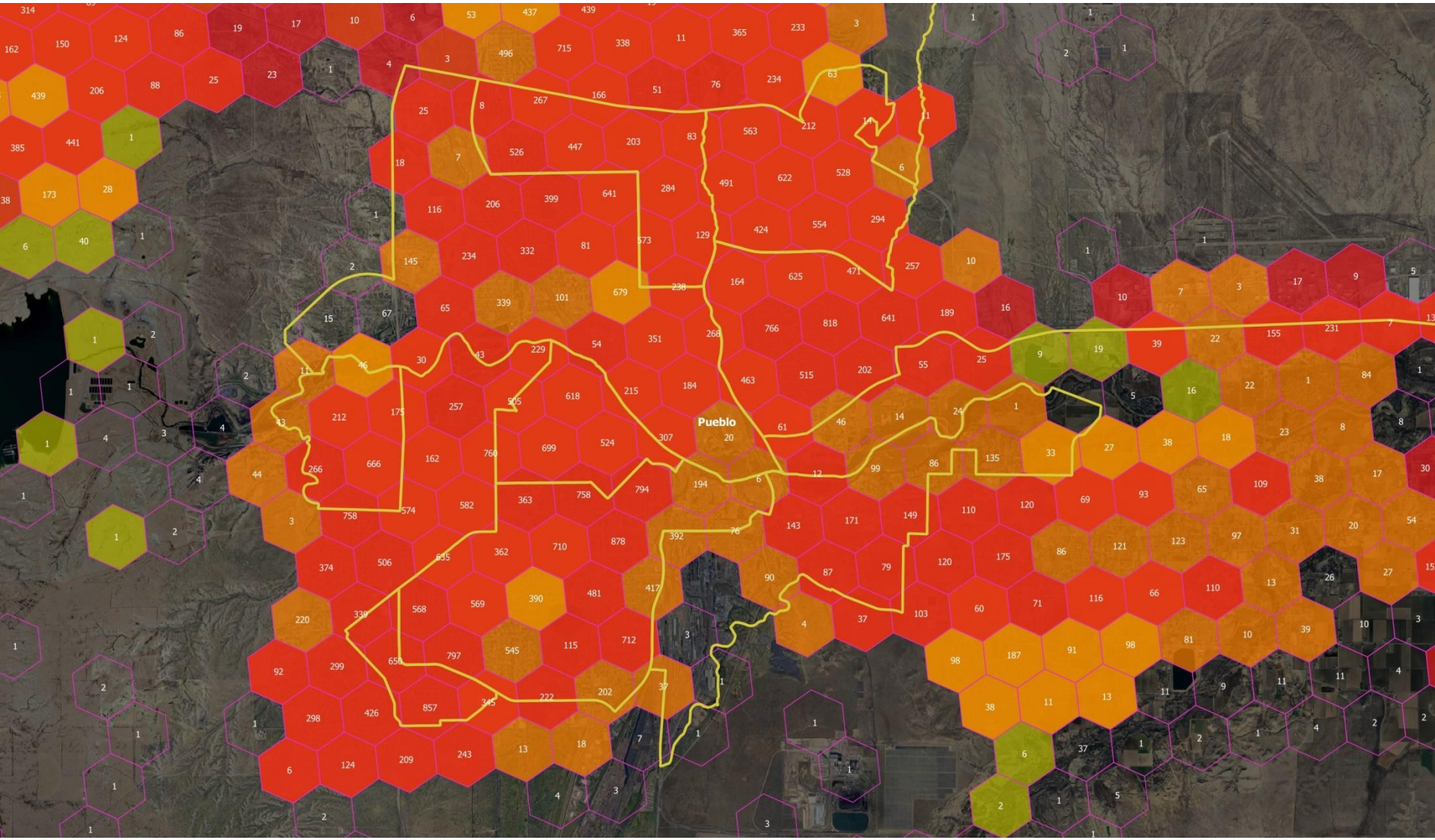
No Internet Access (%, bgroup)



Qualifying Coverage (Presence, 100/20 Mbps, Green), BSL Locations



Technologies (Presence, Fiber=red, Cable=orange, Licensed Wireless=Olive)



View from the Trenches: an Award Recipient

Community of Pueblo, CO | Adelante Connect

- A urban / rural county in Colorado:
  - Home to Colorado State University, Pueblo
  - Facing digital divide challenges reflective of many rural communities
  - A majority minority community
  - Predominantly Hispanic
  - Largely low income, at least in the urban core
  - No significant broadband initiatives in the past 20 years

- The following pages describe the community using demographic / digital equity data, available on a tract or block group (when available) level.

Implications of Showcasing the Available Data (2021 to 2024)

- An NTIA Connecting Minority Communities Pilot Program grant recipient
  - The grant is designed to serve the community, not just the university
  - Six distinct neighborhoods plus some outlying geographic areas

- Recent Developments: Federal Funding
  - Small NTIA middle mile grant
  - Capital Projects Fund grant in Avondale
  - FCC ACP Pilot Grant

- Recent Developments: Equity Investments
  - Comcast: major upgrade ($70 million)
  - Intrepid / T-Mobile: fiber funding ($80 million)

Pueblo Opportunity Project: “Alliance”

Pueblo Opportunity Project - Digital Navigation System

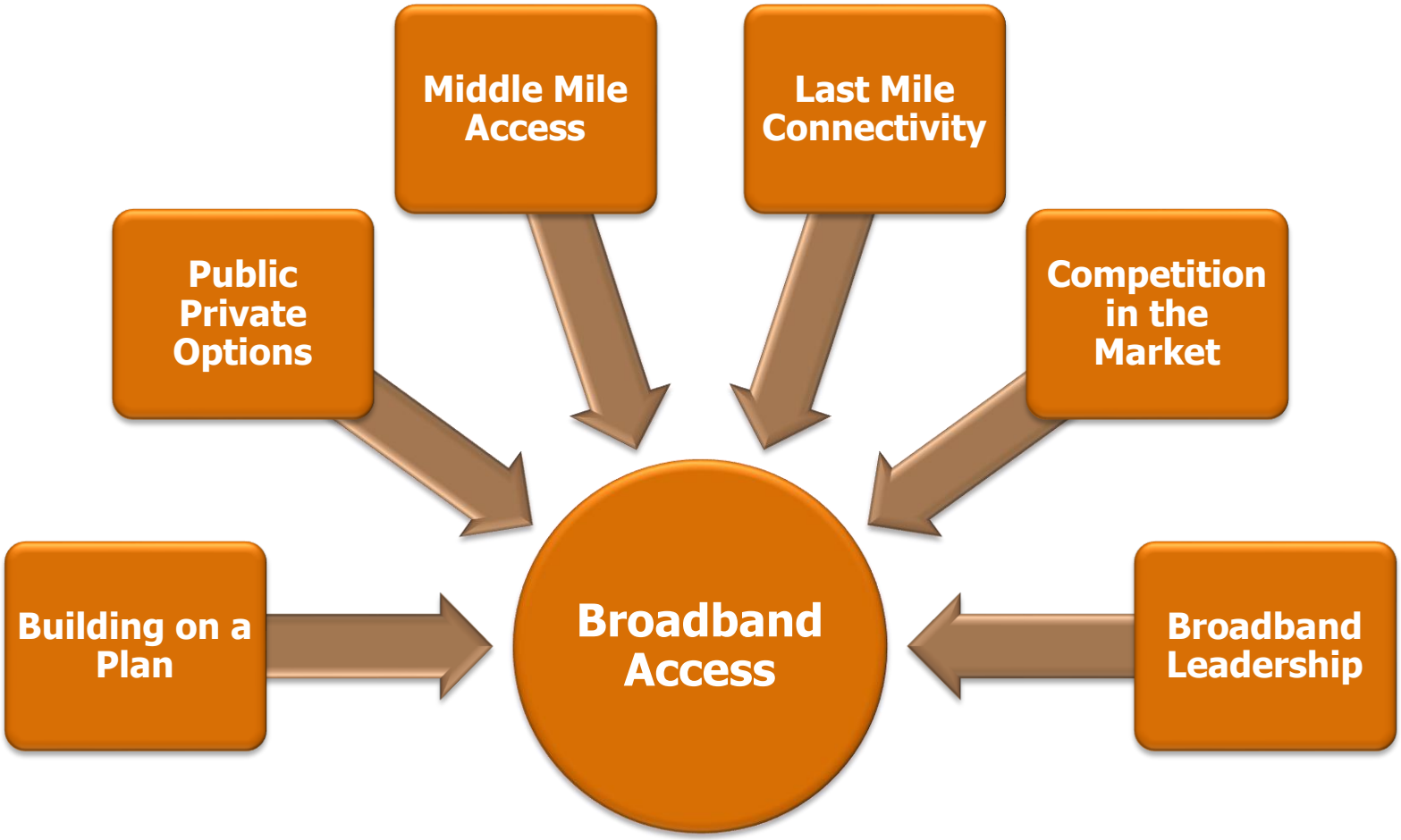
- Business Navigators
- Health Care Navigators
- Education Navigators
- Intercultural Navigators
- Government Navigators
- Workforce Development Navigator
- Housing Navigators

Measuring Outcomes

Key Stakeholder Vision Sessions

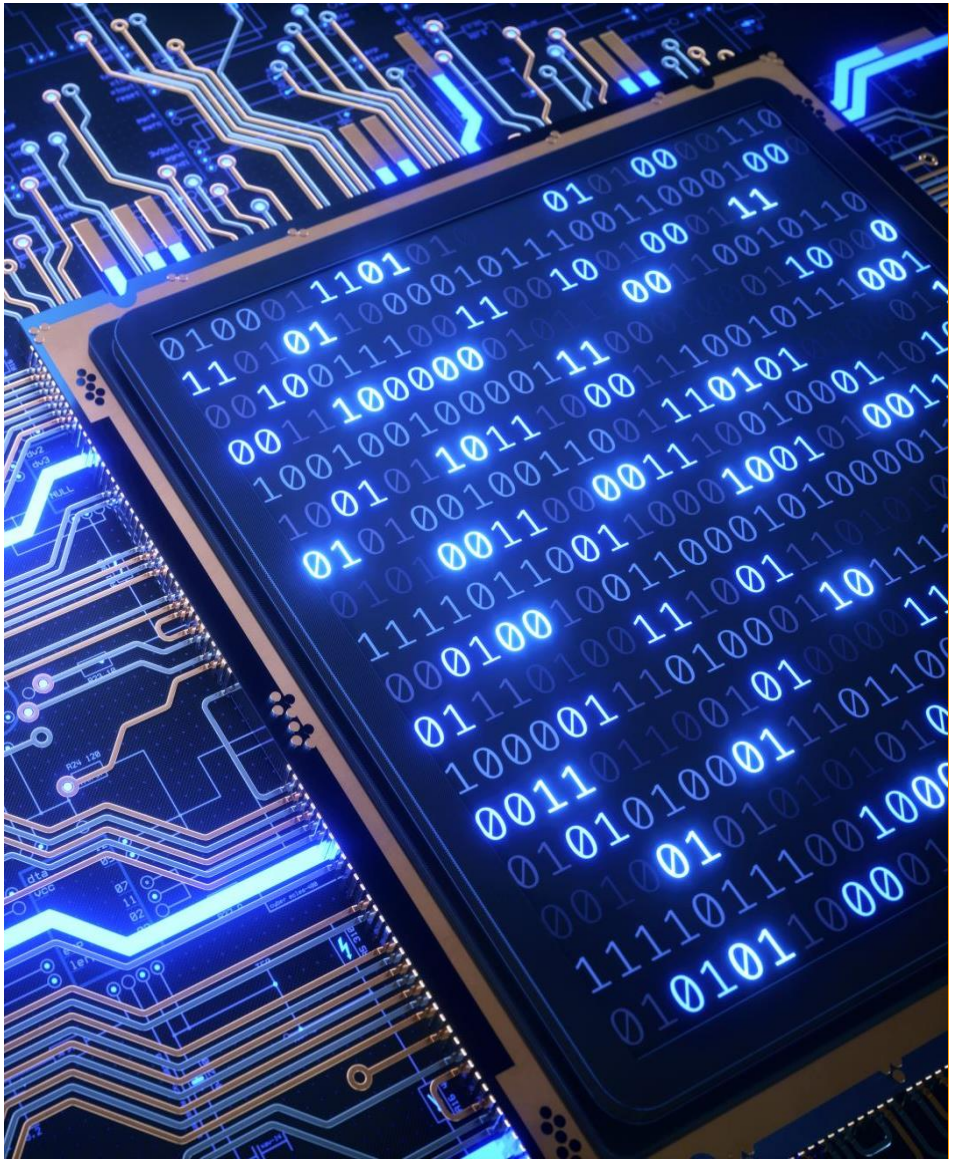
Focus Groups

Pueblo Opportunity Project (POP) - Broadband Access



Adelante Connect

- Targeted Digital Literacy / 50 Learning Modules
- 7 Digital Navigator Positions
- Student Households and Services:
  - Devices for 200 Students / Households
  - Broadband Access, up to 1Gbps symmetrical, for the duration of the program
- 4 Community Anchor Institution Partners



View from the State

Workforce Development - Colorado

- BEAD-funded project will create more than 3k jobs in Colorado
- CBO & CDLE-OFW created a Broadband Workforce Plan:
  - Awareness
  - Outreach and Education
  - Trainings available
- Main Strategies
  - Awareness: Raise awareness of telecommunications and broadband pathways.
  - Training: Pilot, evaluate, and scale training and job placement programs.
  - Employment: Embed telecom into workforce infrastructure.

Contact Information

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