Framework Standard: Census Data

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Objectives

1.1 Incorporate census geographic boundaries from the latest 2020 and previous years that are relevant for Oregon state's geospatial data goals and agency planning purposes.

1.2 Collect, standardize, and filter demographic data available at each geographic level in the Framework to ensure that Framework data users are relying on a common set of recognized and reliable indicators for all state planning purposes.

1.3 Develop a dashboard that leverages these Framework data elements to demonstrate the relationship of demographic data to other summary indicator projects.

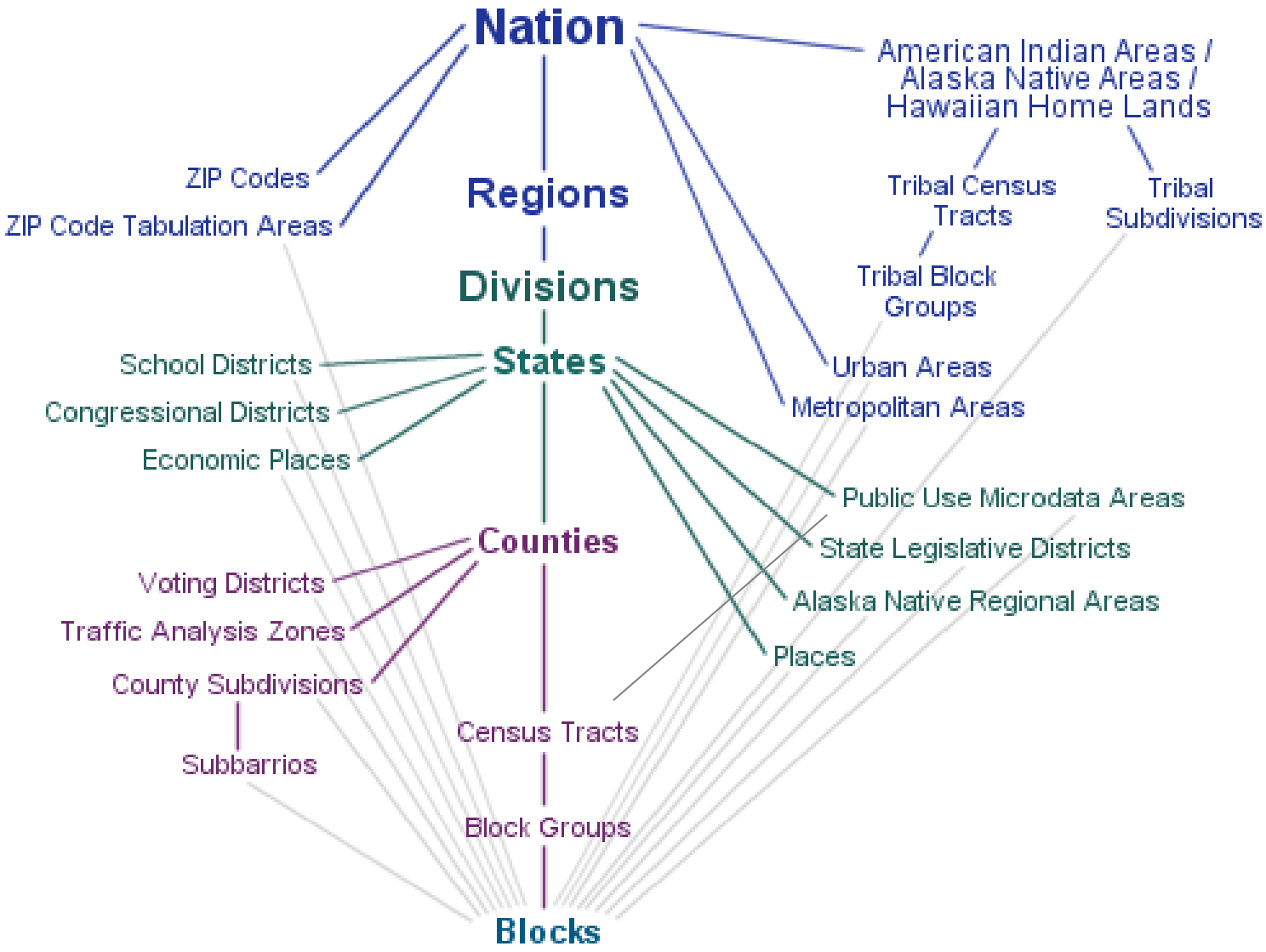
<u>Elements</u>
census geography (ID:9)

demographic data (ID: 85)

1.1 Census geographic boundaries

Example data hierarchies for OR:

A: blocks within block groups within tracts within counties (or PUMAs)
B: blocks within places* (incorporated, defunct, or census-designated) within Oregon
C: blocks within county subdivisions within counties.
D: blocks within ZCTAs*
E blocks within tribal areas*
*: may be identifiable by county



U.S. Census Bureau. (1994). *Geographic Areas Reference Manual*.

1.1 Census geographic boundaries

A. Proposed census geographies for framework:

* Blocks (N=130,807)
* Block groups (2,970)
* Tracts (1,001)

B. Possible future geographies:

* Public Use Microdata Areas (35)
* County subdivisions (212)
* ZCTAs (429)

C. In conflict with other standards:*

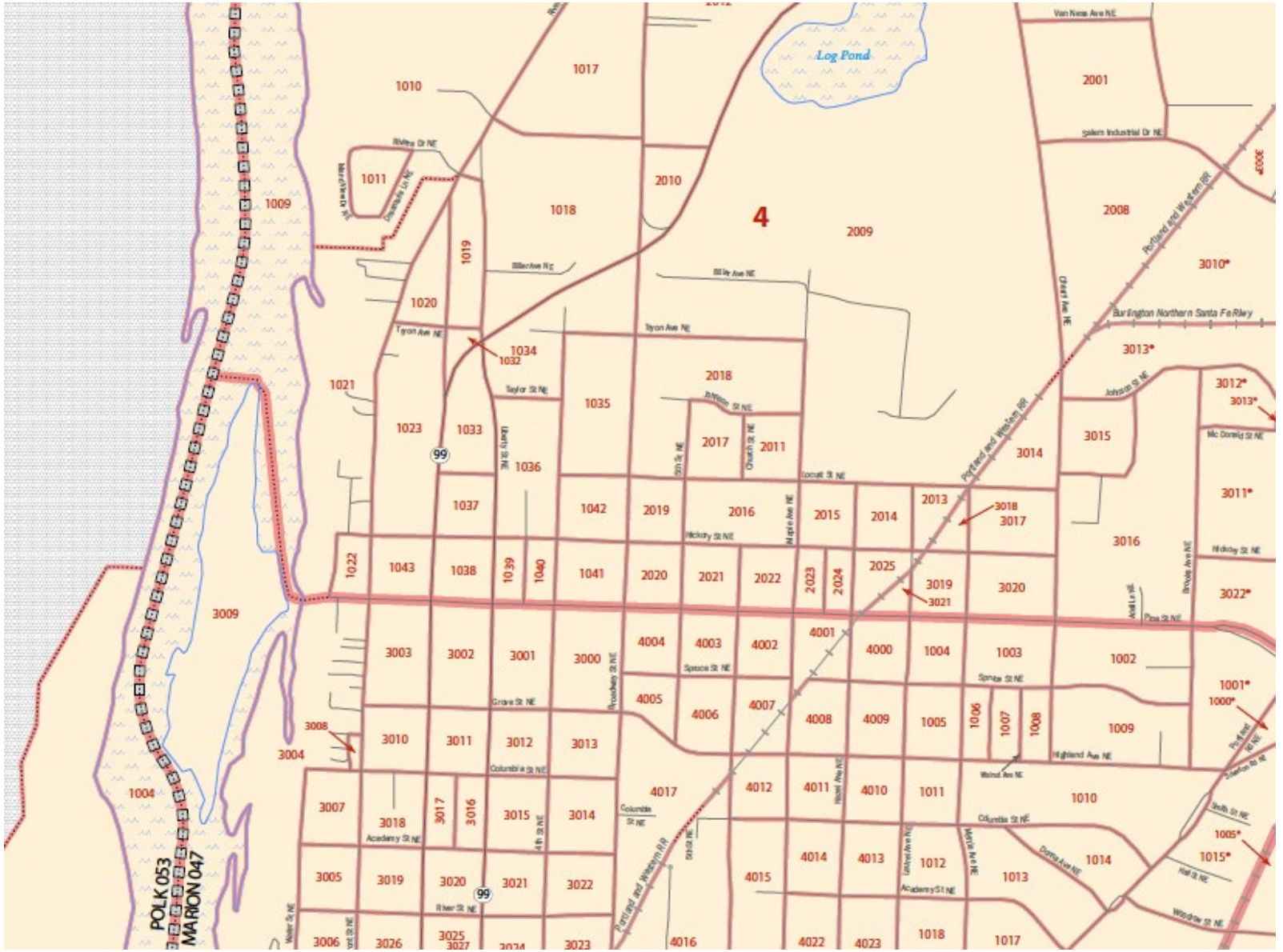
* Places (426 total; 240 cities; 1 defunct)
* Urban Growth Areas (219)
* Counties (36)
* Tribal Areas (11)

U.S. Census Bureau. (1994). *Geographic Areas Reference Manual*.

1.1 Census geographic boundaries: blocks

BLOCKS:
Small areas bounded by physical, political, right-of-way, or line-of-sight.
4-digit code unique within tract.
Significant changes each decade.

<u>Files:</u>
tl[VVVV]_41_tabblock[YY].gdb
tl[VVVV]_41_tabblock[YY].fgdc.xml
Format: file gdb + separate xml
Datum: GCS NAD83
Spatial accuracy: varies
Positional accuracy: up to 6 decimal places (typically lower).
Entity codes: ANSI (FIPS or GNIS)



Block data example: 2010 Census data elements

1.2 Data: blocks

Data elements (table within gdb):

- Geographic ID (FIPS),
- Physical geography (area, internal point);
- Resident population (by age/sex or race/ethnicity or housing/group quarters);
- Households (by type);
- Housing units (by tenure/occupancy).

2010: 60 fields; 2020: 58 fields.

10-character field names (with aliases)
Decadal updates (DEC only)*
Files:
tl[VVVV]_41_tabblock[YY]_census_data
tl[VVVV]_41_tabblock[YY]_census_data.xml

NAME	THEME: LABEL	SOURCE
ALAND10	Other: land area (square miles)	TIGER/Line 2010
AREA10	Other: total area (square meters)	TIGER/Line 2010
AWATER10	Other: water area (square miles)	TIGER/Line 2010
INTPTLAT10	Other: internal point latititude	TIGER/Line 2010
INTPTLON10	Other: internal point longitude	TIGER/Line 2010
UR10	Other: urban/rural designation	TIGER/Line 2010
B01PO0110C	2010 Census: Total population	2010 Census SF1
B01PO0210C	2010 Census: Total population: female	2010 Census SF1
B01PO0310C	2010 Census: Total population: Age < 5	2010 Census SF1
B01PO0410C	2010 Census: Total population: Age 5 17	2010 Census SF1
B01PO0510C	2010 Census: Total population: Age <=17	2010 Census SF1
B01PO0610C	2010 Census: Total population: Age >=18	2010 Census SF1
B01PO0710C	2010 Census: Total population: Age >=65	2010 Census SF1
B01PO0810C	2010 Census: Total population: Age < 65	2010 Census SF1
B01PO0910C	2010 Census: Total population: median age	2010 Census SF1
B02RA0110C	2010 Census: Race: White alone	2010 Census SF1
B02RA0210C […] […] B03RE1610C	(additional race and ethnicity)	2010 Census SF1
B09CH0110C	2010 Census: Children: living in married couple family	2010 Census SF1
B11HH0110C	2010 Census: Households: with single mother heads	2010 Census SF1
B11HH0210C	2010 Census: Households: with single parent heads	2010 Census SF1
B11HH0310C	2010 Census: Households: single person households aged >=65	2010 Census SF1
B25HU0110C	2010 Census: Housing: total housing units	2010 Census SF1
B25HU0210C	2010 Census: Housing: housing units occupied by owner	2010 Census SF1
B25HU0310C	2010 Census: Housing: housing units occupied by renter	2010 Census SF1
B25HU0410C	2010 Census: Housing: total households (occupied units)	2010 Census SF1
B25HU0510C	2010 Census: Housing: vacant units, other than seasonally vacant	2010 Census SF1
B25HU0610C	2010 Census: Housing: total population in households	2010 Census SF1
B25HU0710C	2010 Census: Housing: average household size	2010 Census SF1
B26GQ0110C	2010 Census: Group Quarters: total population	2010 Census SF1
B26GQ0210C	2010 Census: Group Quarters: population in institutions	2010 Census SF1
PDENS10C	2010 Census: Other: Population per square mile of land area	2010 Census SF1

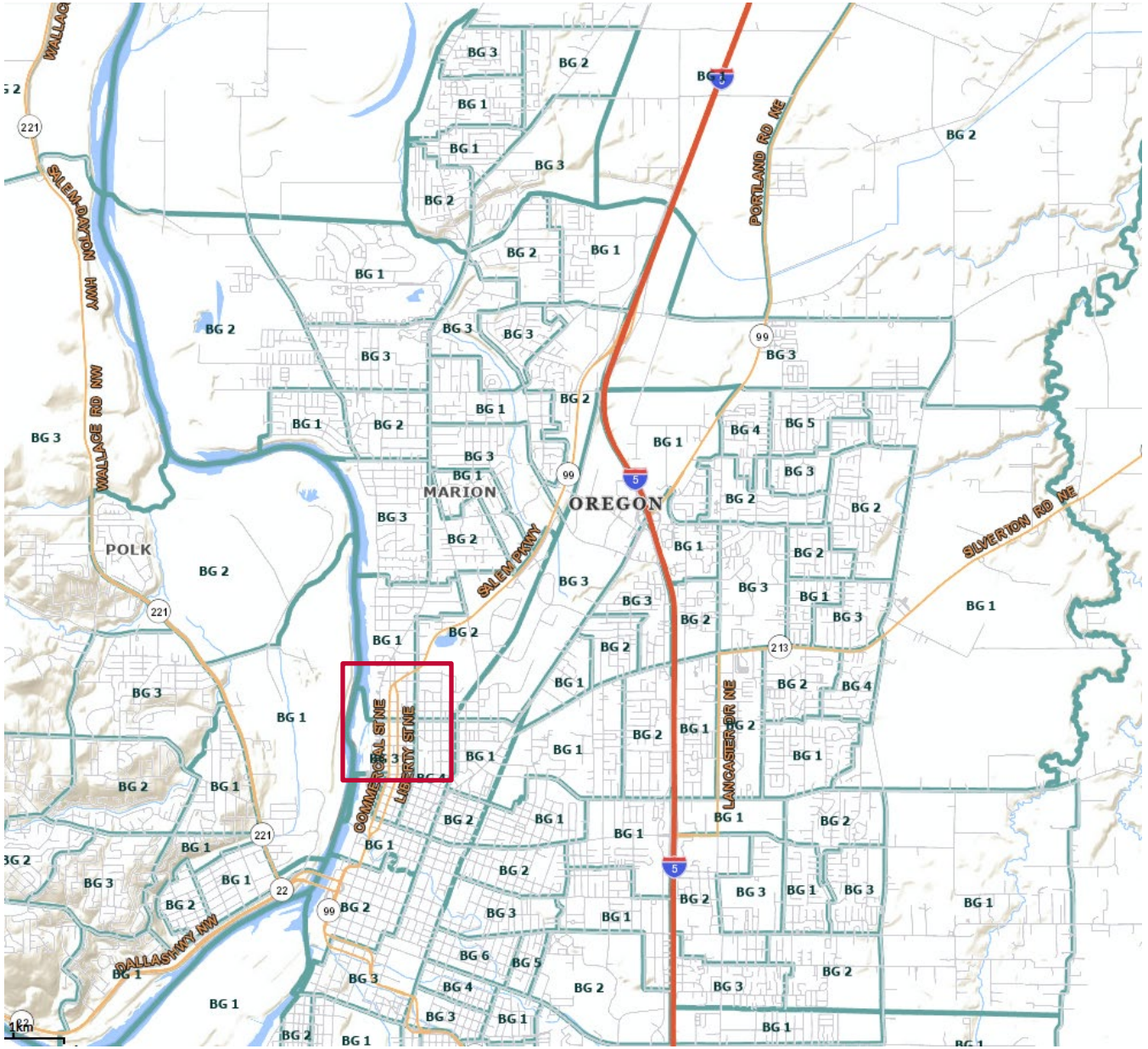
Block data example: 2010 Census data elements

1.1 Census geographic boundaries: block groups

BLOCK GROUPS:
Smallest statistical areas with rich socioeconomic data published from ACS, but low reliability. Population of 600-3,000. 1-digit ID within tract (first digit of block). Redrawn each decade with local participation.*

File naming:
tl[VVVV]_41_BG[YY].gdb
tl[VVVV]_41_BG[YY]. fgdc.xml

Metadata: same as BLOCK



2020 block groups in western Marion County (North Salem)

1.2 Data: block groups

Data elements (table within gdb):

- Same as BLOCKS*, but also:
- Additional population/housing;
- Commute;
- Children;
- Education;
- Language;
- Income;
- Industry/Occupation.

2010: 284 fields; 2020: 291 fields

Includes 90% MOE (num) + REL (text)
Decadal/5-year updates (DEC/ACS)*
Files:
tl[VVVV]_41_bg[YY]_census_data
tl[VVVV]_41_bg[YY]_census_data.xml

NAME	THEME: LABEL	SOURCE
ALAND20	Other: land area (square miles)	TIGER/Line 2020
AREA20	Other: total area (square meters)	TIGER/Line 2020
AWATER20	Other: water area (square miles)	TIGER/Line 2020
B01PO0120C	2020 Census: Total population	2020 Census DHC
B01PO0120E	ACS 2016-20: Total population	ACS 2016-20 Detailed Tables
B01PO0120M	ACS 2016-20: Total population (MOE)	ACS 2016-20 Detailed Tables
B01PO0120R	ACS 2016-20: Total population (REL)	ACS 2016-20 Detailed Tables
B25HU1520E	ACS 2016-20: Housing: median gross rent	ACS 2016-20 Detailed Tables
B25HU1520M	ACS 2016-20: Housing: median gross rent (MOE)	ACS 2016-20 Detailed Tables
B25HU1520R	ACS 2016-20: Housing: median gross rent (REL)	ACS 2016-20 Detailed Tables
B25HU1620E	ACS 2016-20: Housing: median house value	ACS 2016-20 Detailed Tables
B25HU1620M	ACS 2016-20: Housing: median house value (MOE)	ACS 2016-20 Detailed Tables
B25HU1620R	ACS 2016-20: Housing: median house value (REL)	ACS 2016-20 Detailed Tables
B26GQ0220C	2020 Census: Group Quarters: population in institutions	2020 Census DHC
B28CO0120E	ACS 2016-20: Computers: households with internet access	ACS 2016-20 Detailed Tables
B28CO0120M	ACS 2016-20: Computers: households with internet access (MOE)	ACS 2016-20 Detailed Tables
B28CO0120R	ACS 2016-20: Computers: households with internet access (REL)	ACS 2016-20 Detailed Tables
B15ED0720E	ACS 2016-20: Education: persons age 25+ attended HS but no diploma	ACS 2016-20 Detailed Tables
B15ED0720M	ACS 2016-20: Education: persons age 25+ attended HS but no diploma (MOE)	ACS 2016-20 Detailed Tables
B15ED0720R	ACS 2016-20: Education: persons age 25+ attended HS but no diploma (REL)	ACS 2016-20 Detailed Tables
B16LA0120E	ACS 2016-20: Language: limited english proficient (LEP) households	ACS 2016-20 Detailed Tables
B16LA0120M	ACS 2016-20: Language: limited english proficient (LEP) households (MOE)	ACS 2016-20 Detailed Tables
B16LA0120R	ACS 2016-20: Language: limited english proficient (LEP) households (REL)	ACS 2016-20 Detailed Tables
B25HU0620C	2020 Census: Housing: total population in households	2020 Census DHC
B25HU0620E	ACS 2016-20: Housing: total population in households	ACS 2016-20 Detailed Tables
B25HU0620M	ACS 2016-20: Housing: total population in households (MOE)	ACS 2016-20 Detailed Tables
B25HU0620R	ACS 2016-20: Housing: total population in households (REL)	ACS 2016-20 Detailed Tables
B25HU0720E	ACS 2016-20: Housing: average household size	ACS 2016-20 Detailed Tables
B25HU0720M	ACS 2016-20: Housing: average household size (MOE)	ACS 2016-20 Detailed Tables
B25HU0720R	ACS 2016-20: Housing: average household size (REL)	ACS 2016-20 Detailed Tables
B25HU0820E	ACS 2016-20: Housing: crowded units: >1 persons per room	ACS 2016-20 Detailed Tables

Block group data example: 2020 Census + 2016-20 ACS data elements

1.2 Interlude: reliability

ACS replaced long form of the decennial census in 2010. Rolling response, smaller sample size, lower response rate all translate to less reliability: “warm [but] fuzzy” (Macdonald 2006).

“many [planners] do not understand the statistical uncertainty in ACS data, find it difficult to communicate statistical uncertainty to stakeholders, and avoid reporting MOEs altogether.” (Jurjevich et al. 2018).

<u>To Increase Actionability of Uncertainty Information</u>

Include 90% MOE with data, and easily interpreted reliability indicators based on relative standard error.*

- *High reliability (CV<20%)*
- *Medium reliability (CV between20-40% - be careful)*
- *Low reliability (CV>40% - extreme caution).*

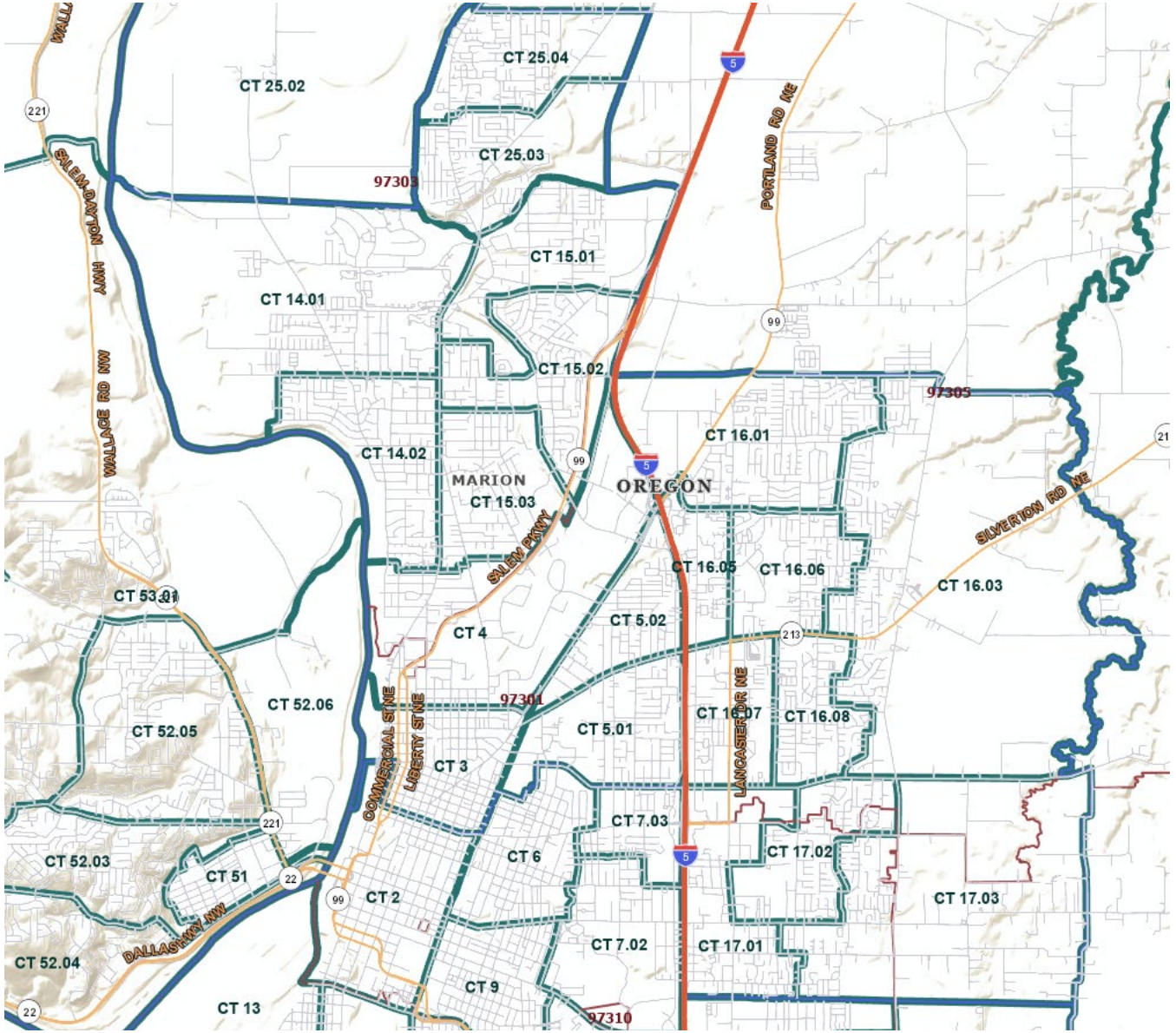
Spielman SE, Folch D, Nagle N. Patterns and causes of uncertainty in the American Community Survey. Appl Geogr. 2014;46:147–157. doi:10.1016/j.apgeog.2013.11.002
Jason R. Jurjevich, Amy L. Griffin, Seth E. Spielman, David C. Folch, Meg Merrick & Nicholas N. Nagle (2018) Navigating Statistical Uncertainty: How Urban and Regional Planners Understand and Work With American Community Survey (ACS) Data for Guiding Policy, Journal of the American Planning Association, 84:2, 112-126, DOI: 10.1080/01944363.2018.1440182

1.1 Census geographic boundaries

TRACTS:
Relatively small, stable statistical subdivisions of a county. Extensive socioeconomic data published from ACS, improved reliability. Population size of 1,200 to 8,000 people (average 4,000). 6-digit codes unique within county. Reviewed each decade with local input.*

File naming:
tl[VVVV]_41_TRACT[YY].gdb
tl[VVVV]_41_TRACT[YY].fgdc.xml

Metadata: same as BLOCK



2020 tracts in western Marion County (North Salem)

1.2 Data: tracts

TRACTS (data table w/in gdb):
Data elements:

- Same as BG*, but also:
- Additional population/housing;
- Health insurance;
- Census response rate;
- Labor force;
- Disability;
- Migration.

2010: 388 fields; 2020: 409 fields

Includes 90% MOE (num) + REL (text)
Decadal/5-year updates (DEC/ACS).*
Files:
tl[VVVV]_41_tract[YY]_census_data
tl[VVVV]_41_tract[YY]_census_data.xml

NAME	THEME: LABEL	SOURCE
ALAND20	Other: land area (square miles)	TIGER/Line 2020
AREA20	Other: total area (square meters)	TIGER/Line 2020
AWATER20	Other: water area (square miles)	TIGER/Line 2020
B01PO0120C	2020 Census: Total population	2020 Census DHC
B01PO0120E	ACS 2016-20: Total population	ACS 2016-20 Detailed Tables
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B01PO0120R	ACS 2016-20: Total population (REL)	ACS 2016-20 Detailed Tables
B25HU1520E	ACS 2016-20: Housing: median gross rent	ACS 2016-20 Detailed Tables
B25HU1520M	ACS 2016-20: Housing: median gross rent (MOE)	ACS 2016-20 Detailed Tables
B25HU1520R	ACS 2016-20: Housing: median gross rent (REL)	ACS 2016-20 Detailed Tables
B25HU1620E	ACS 2016-20: Housing: median house value	ACS 2016-20 Detailed Tables
B25HU1620M	ACS 2016-20: Housing: median house value (MOE)	ACS 2016-20 Detailed Tables
B25HU1620R	ACS 2016-20: Housing: median house value (REL)	ACS 2016-20 Detailed Tables
B26GQ0220C	2020 Census: Group Quarters: population in institutions	2020 Census DHC
B28CO0120E	ACS 2016-20: Computers: households with internet access	ACS 2016-20 Detailed Tables
B28CO0120M	ACS 2016-20: Computers: households with internet access (MOE)	ACS 2016-20 Detailed Tables
B28CO0120R	ACS 2016-20: Computers: households with internet access (REL)	ACS 2016-20 Detailed Tables
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B25HU0620M	ACS 2016-20: Housing: total population in households (MOE)	ACS 2016-20 Detailed Tables
B25HU0620R	ACS 2016-20: Housing: total population in households (REL)	ACS 2016-20 Detailed Tables
B25HU0720E	ACS 2016-20: Housing: average household size	ACS 2016-20 Detailed Tables
B25HU0720M	ACS 2016-20: Housing: average household size (MOE)	ACS 2016-20 Detailed Tables
B25HU0720R	ACS 2016-20: Housing: average household size (REL)	ACS 2016-20 Detailed Tables
B25HU0820E	ACS 2016-20: Housing: crowded units: >1 persons per room	ACS 2016-20 Detailed Tables

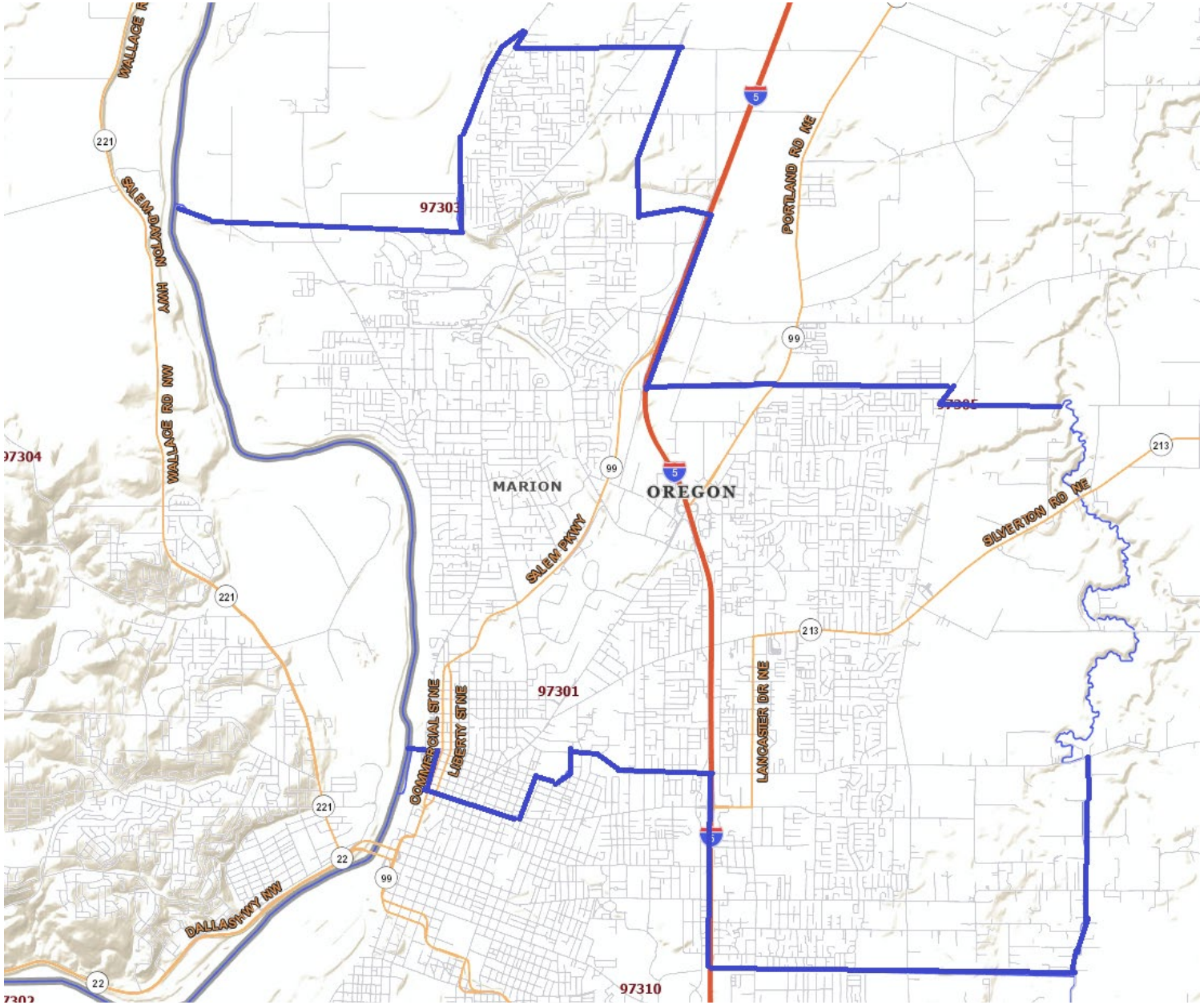
Block group data example: 2020 Census + 2016-20 ACS data elements

1.1Census geographic boundaries (candidates)

PUMAS:
Geographic areas containing at least 100,000 people. Maximum socioeconomic detail from ACS. Comprised of tracts. Redrawn each decade with state participation.*
Released 2 years after last census.

File naming:
tl[VVVV]_41_PUMA[YY].gdb
tl[VVVV]_41_PUMA[YY].fgdc.xml

Metadata: same as BLOCK
PUMA entity codes (no ANSI standard)



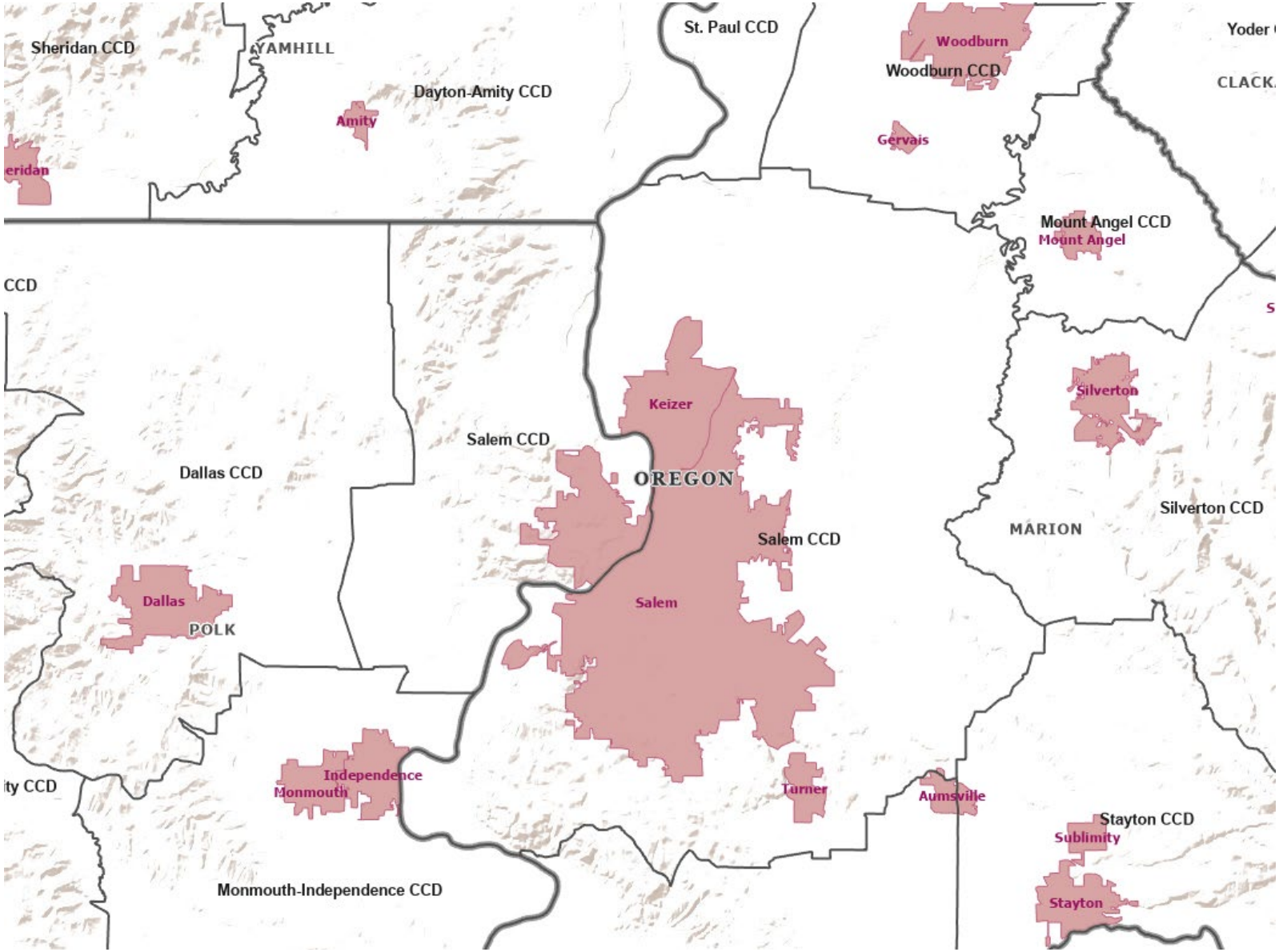
2020 PUMA in western Marion County (North Salem)

1.1Census geographic boundaries (candidates)

CENSUS COUNTY DIVISIONS: Stable statistical areas used since 1960 in states without functional sub-county civil divisions. Limited socioeconomic detail from ACS. 5-digit (FIPS) or 8-character (GNIS) code within county.

File naming:
tl[VVVV]_41_CCD[YY].gdb
tl[VVVV]_41_CCD[YY].fgdc.xml

Metadata: same as BLOCK



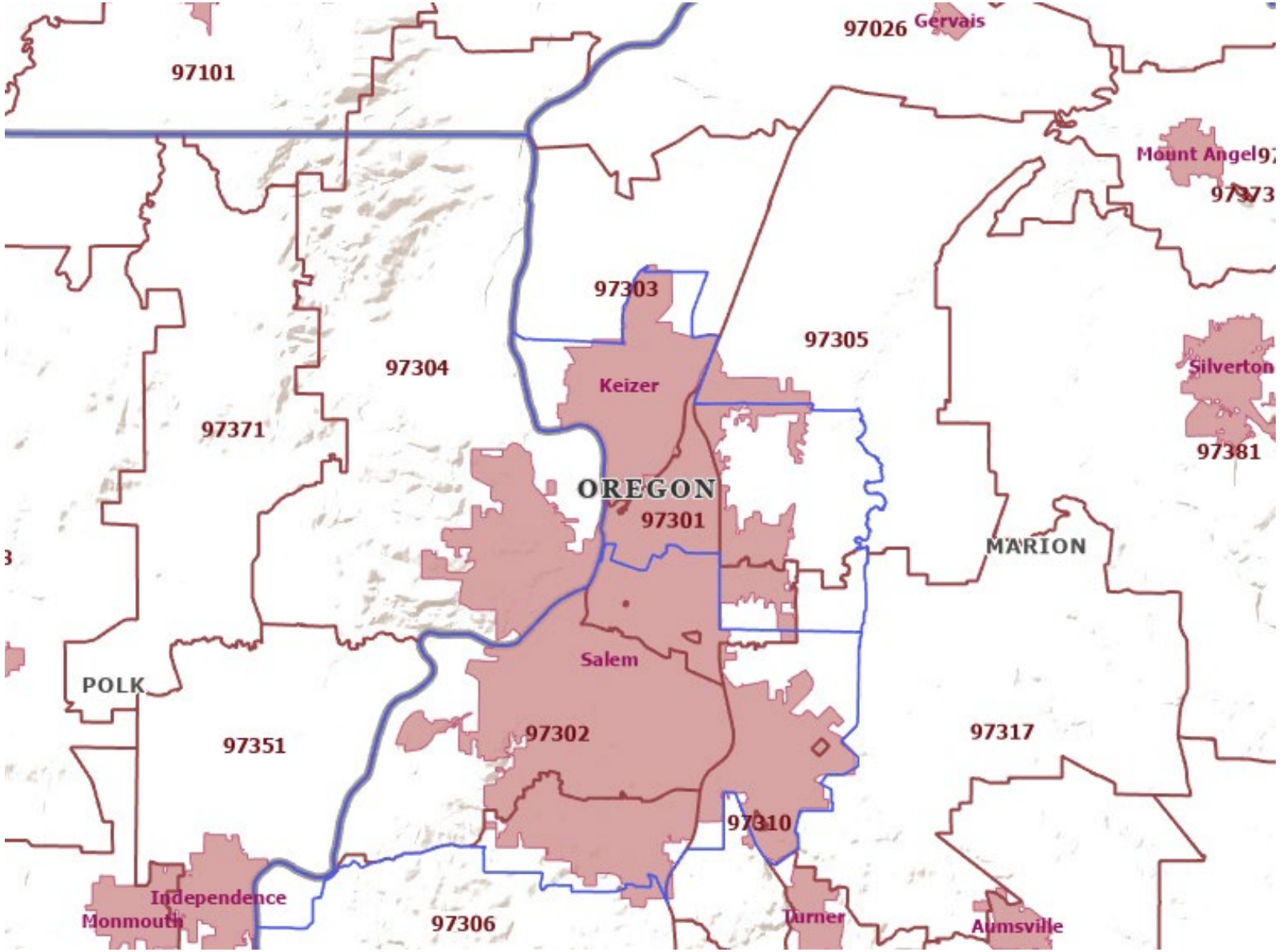
Census County Divisions near Salem, OR

1.1 Census geographic boundaries (candidates)

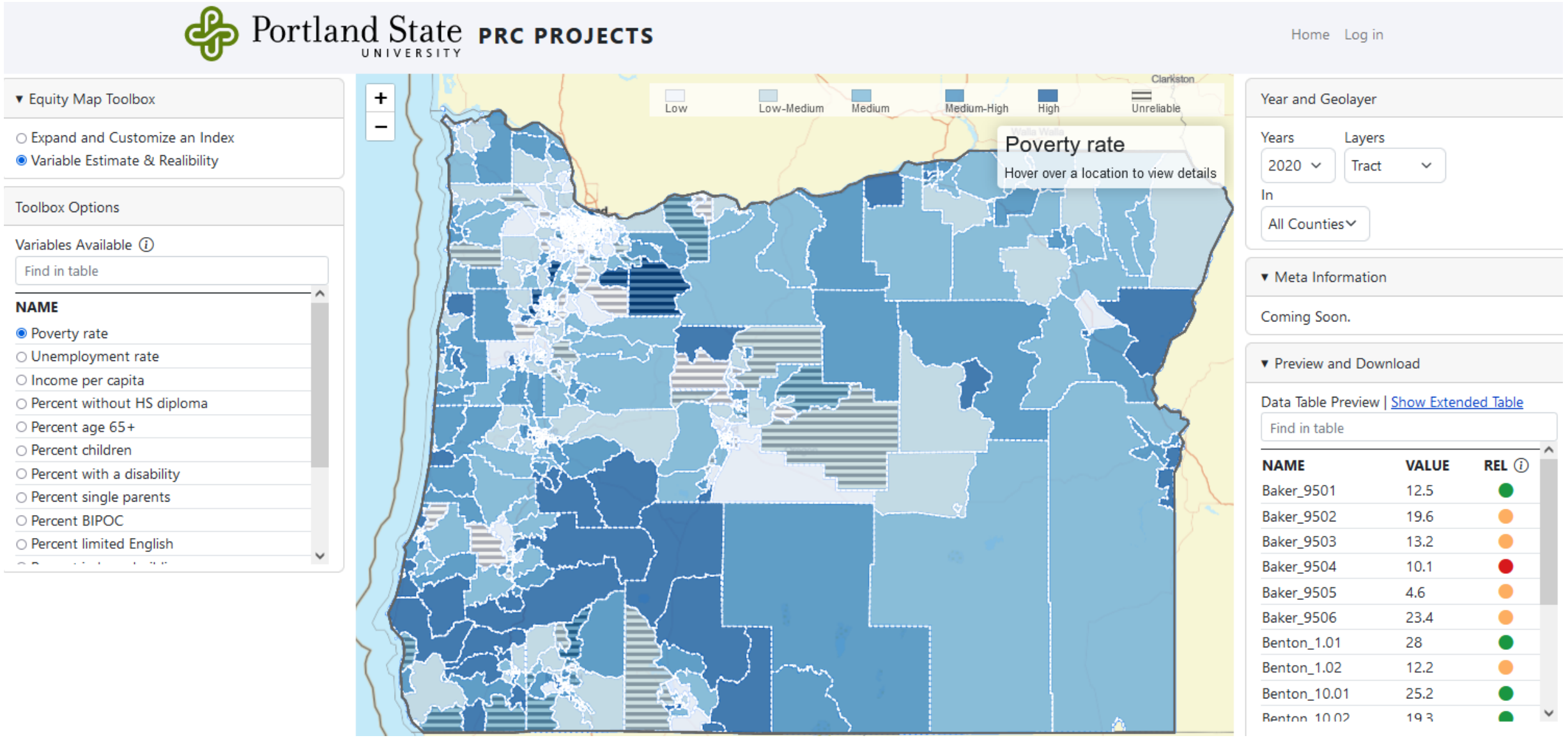
ZIP CODE TABULATION AREAS: Approximation of USPS ZIP codes made from census blocks. Limited socioeconomic detail from ACS. Incomplete coverage of unpopulated areas. 5-digit code within nation.* Released 1 years after last Census.

File naming:
tl[VVVV]_41_ZCTA[YY].gdb
tl[VVVV]_41_ZCTA[YY].fgdc.xml

Metadata: same as BLOCK



2020 ZCTAs near Salem, OR (Blue lines: PUMAs)



1.3 Interactive map

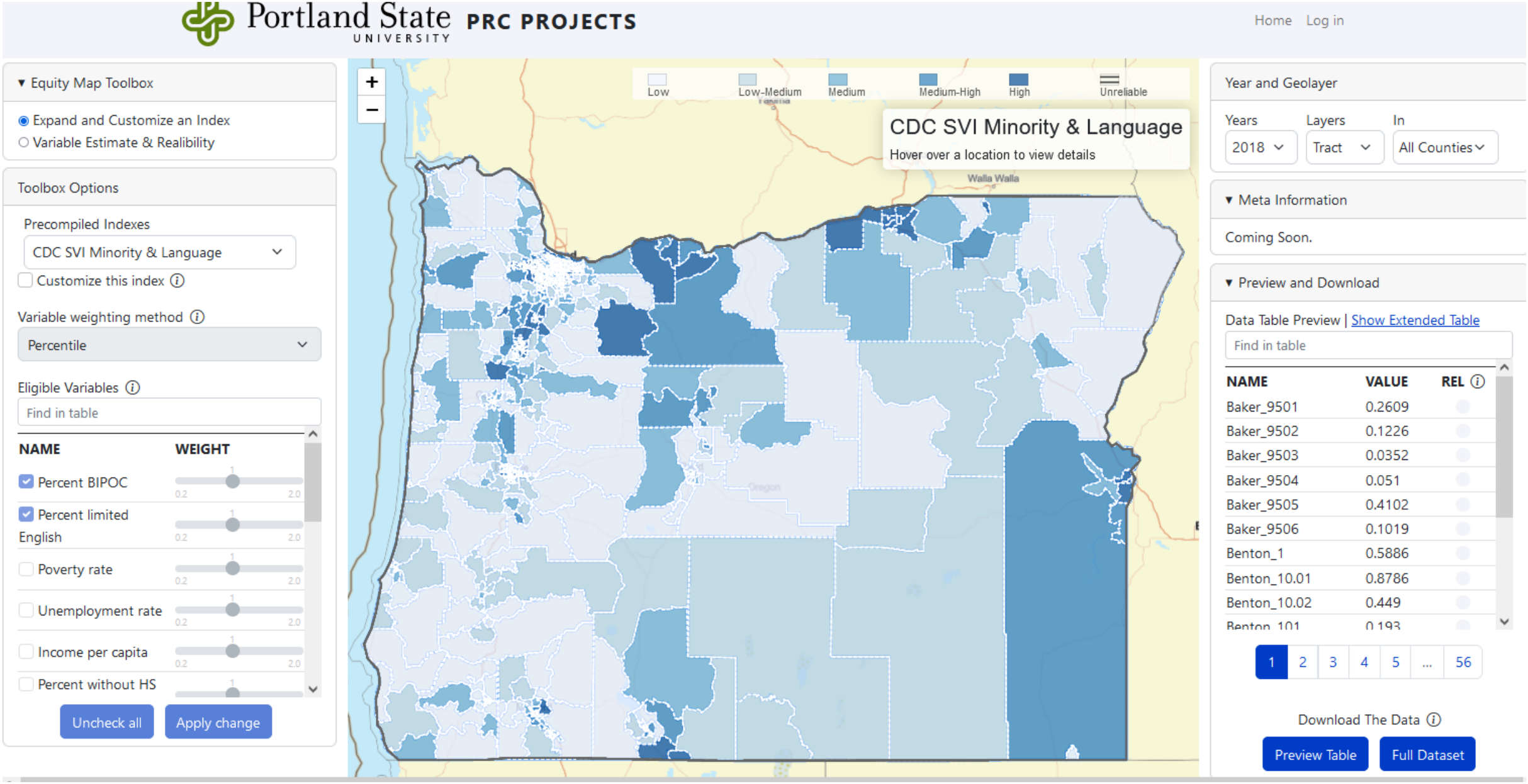
https://www.prcprojects.us/equity

1.3 Interactive map (data + reliability)

Features:

- ACS data for 2010-2021
- County, CCD, tract, or place level (more in progress)
- Visual indications of data reliability
- All variables from CDC SVI (more to come)
- Download selected data

https://www.prcprojects.us/equity



1.3 Interactive map

https://www.prcprojects.us/equity

1.3 Interactive map (index generation)

Features:

- County, CCD, tract, or place level (more in progress)
- Add/remove variables from an index (more in progress)
- Adjust weights
- Select percentile or z-score based ranks
- Download selected index and associated data
- Save generated indexes for later (in progress)

https://www.prcprojects.us/equity

Framework Standard : Census Data

Framework Layers + Metadata (DRAFT)
https://arcg.is/0qyO9a

Q&A
Thank you!

Interactive Map (PUBLIC BETA)
https://www.prcprojects.us/equity

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