

# Using Margins of Error (MOEs) in Maps to Aggregate and Strengthen Reliability

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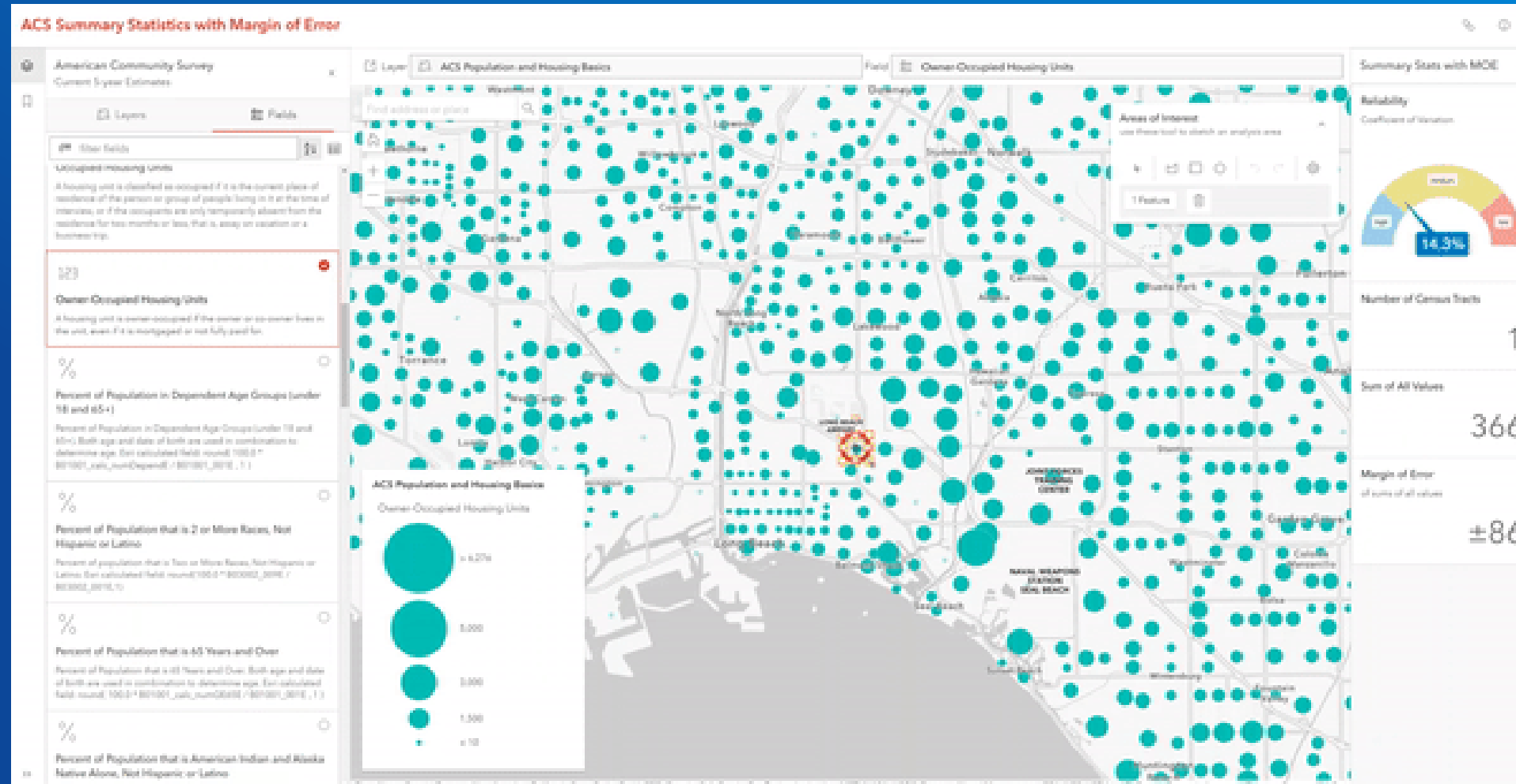
ACS Data Users Conference 2023

# ACS aggregates across time to produce granular geographic detail (5-year estimates)

- Viewing margins of error for a specific estimate for a specific tract can erroneously lead users to dismiss the entire ACS.
- We can also aggregate across *space*
  - Typical geographic analysis of ACS data *increases* the data reliability.
  - Need for data disaggregated by race/ethnicity, age, sex, income, etc.

# Introducing: the ACS Summarization App

Get a quick sense of how much you'll need to aggregate to meet your desired reliability.

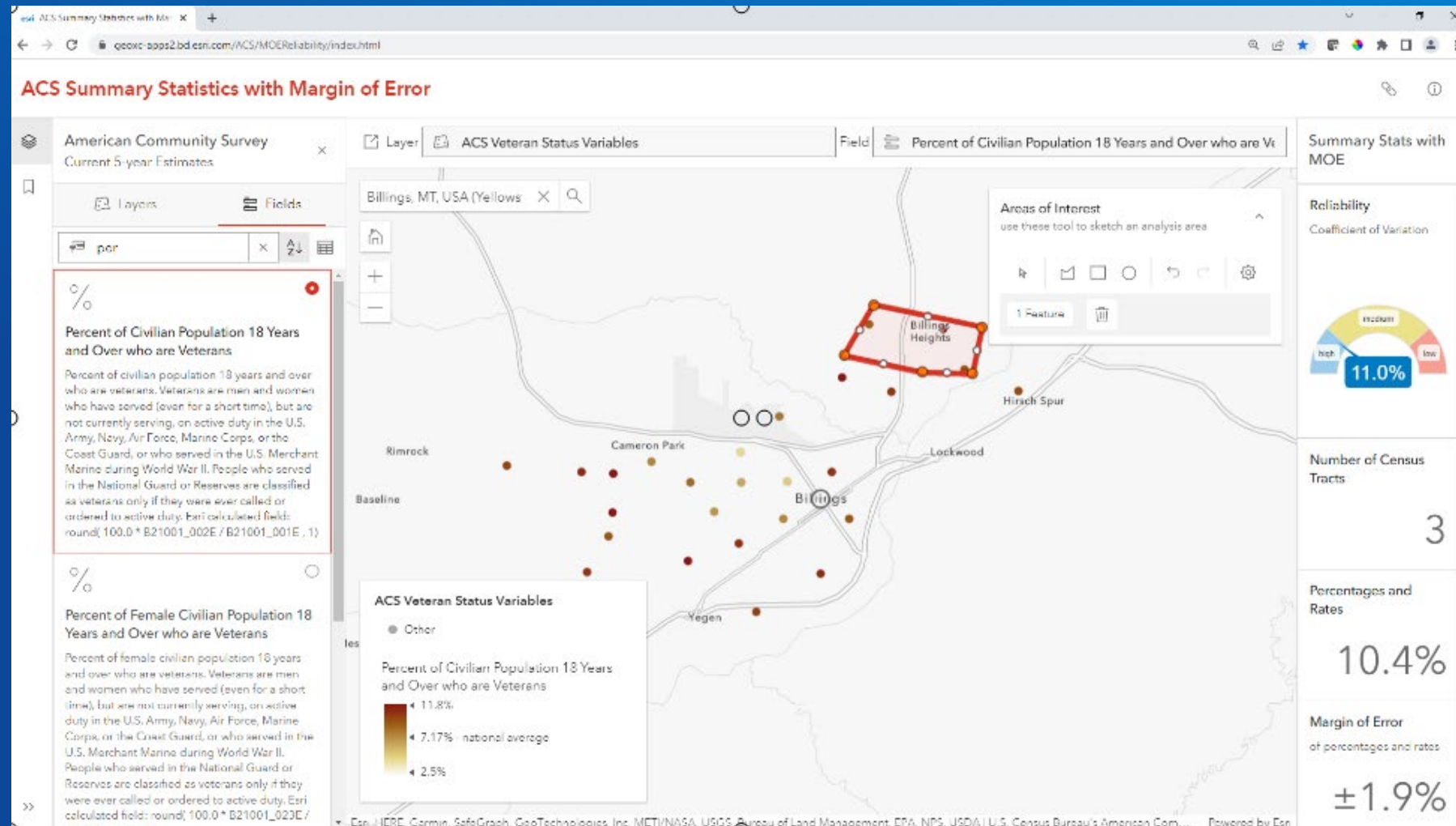


Uses ArcGIS Living Atlas layers that contain ACS data for tract centroids.

Counts symbolized by size.

# Another example: small populations

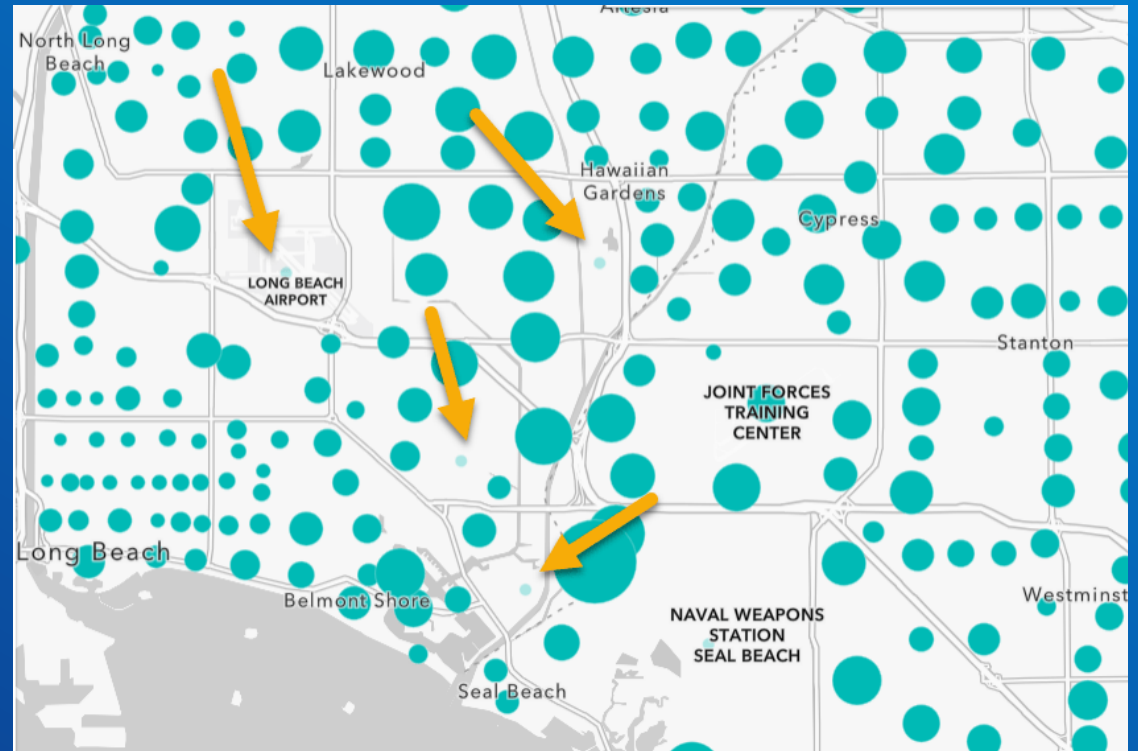
Aggregating just 3 tracts yields a reliable estimate of the percent of adults who are veterans in Billings Heights.



Percentages symbolized by continuous or unclassed color.

# Summarization Best Practices

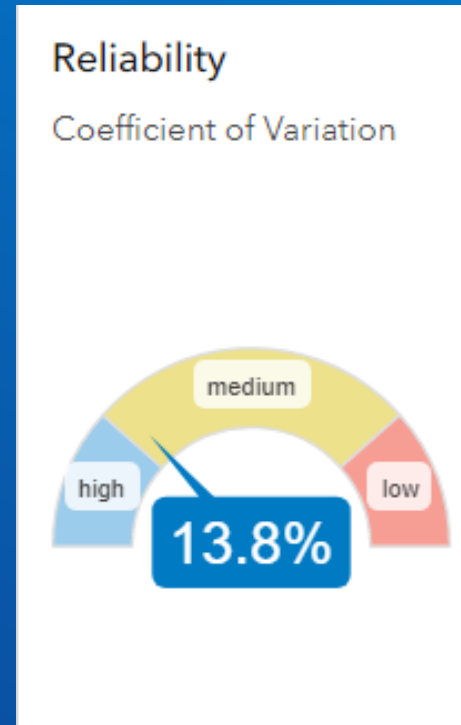
- Use official estimates when available
- Preserve patterns in the map
- Try to avoid tracts with estimate of zero
  - Small & transparent symbols
  - Airports, cemeteries, open land, etc.



# The Coefficient of Variation Gauge

The CV calculated on-the-fly is shown in the gauge, so you can determine if the CV works for you.

Coefficient of Variation (CV)	Reliability
$CV \leq 12$	high
$12 < CV \leq 40$	medium
$40 > CV$	low



The lower the coefficient, the higher the reliability.



Blog and 5-min video about this app:

<https://www.esri.com/arcgis-blog/products/arcgis-living-atlas/analytics/acs-summarization-app/>

Thank you to John Grayson and Jim Herries for input and implementation.

