

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

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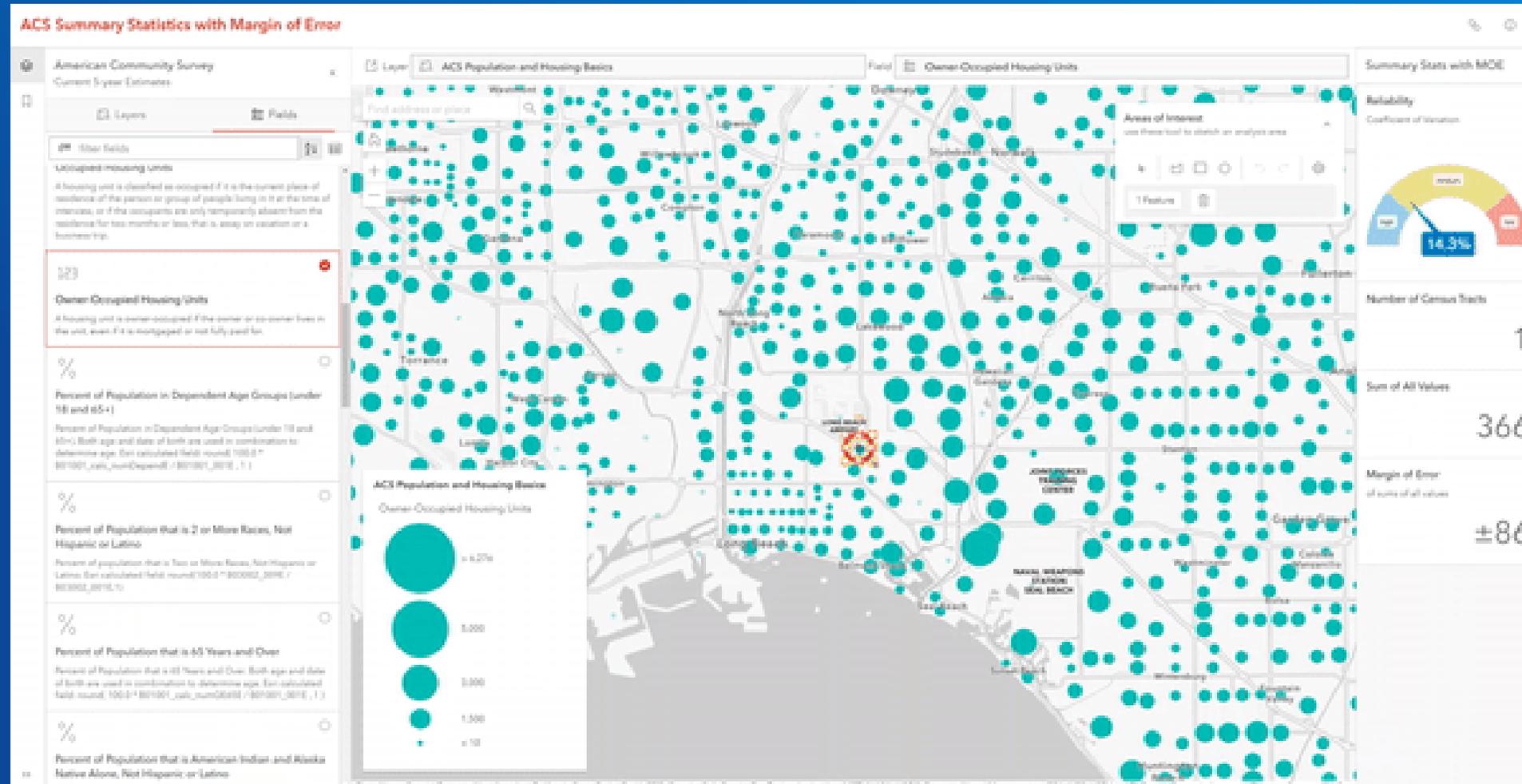
ACS Data Users Conference 2023

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.

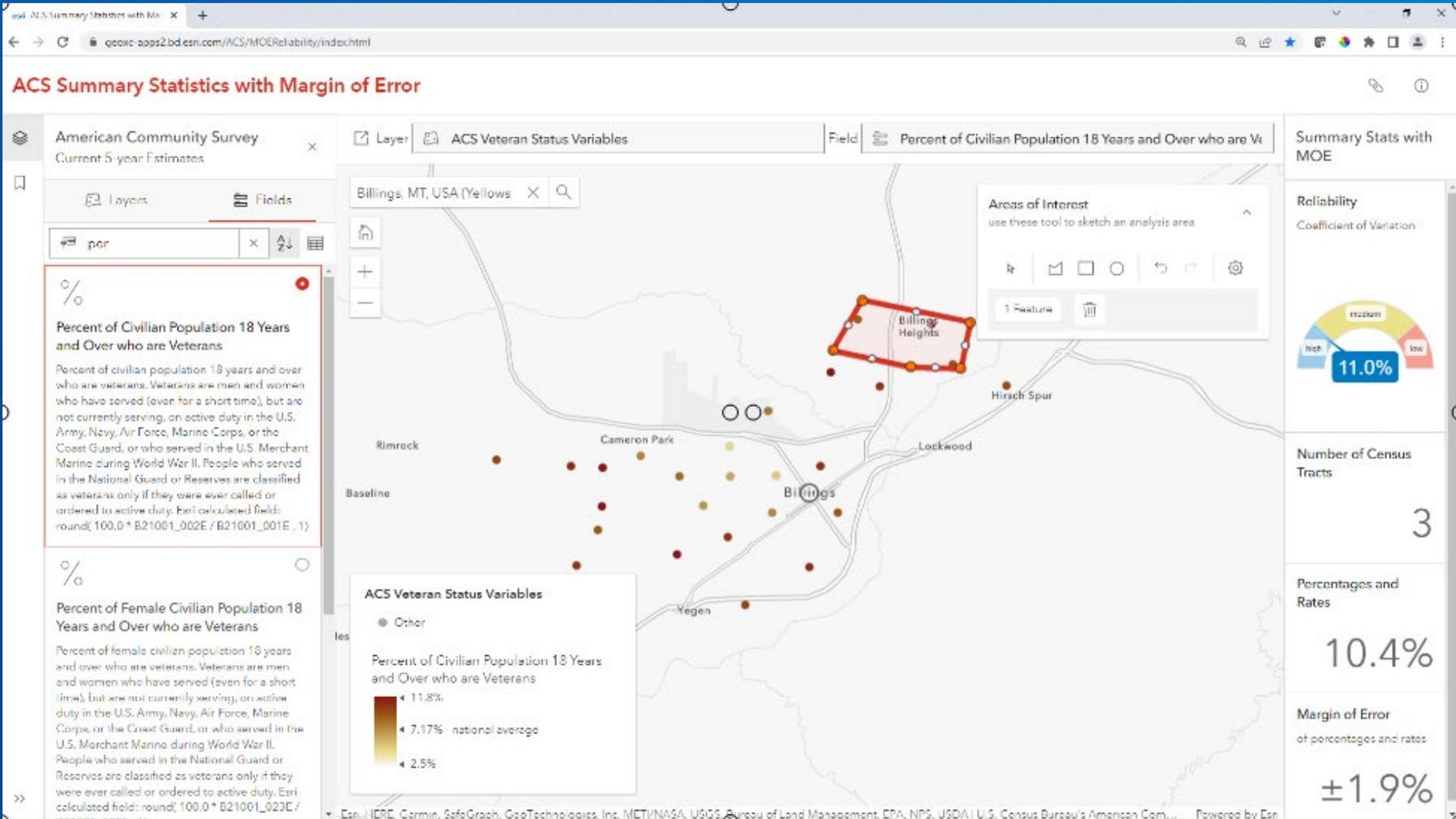


Uses ArcGIS Living Atlas layers that contain ACS data for tract centroids.

Counts symbolized by size.

Another example: small populations

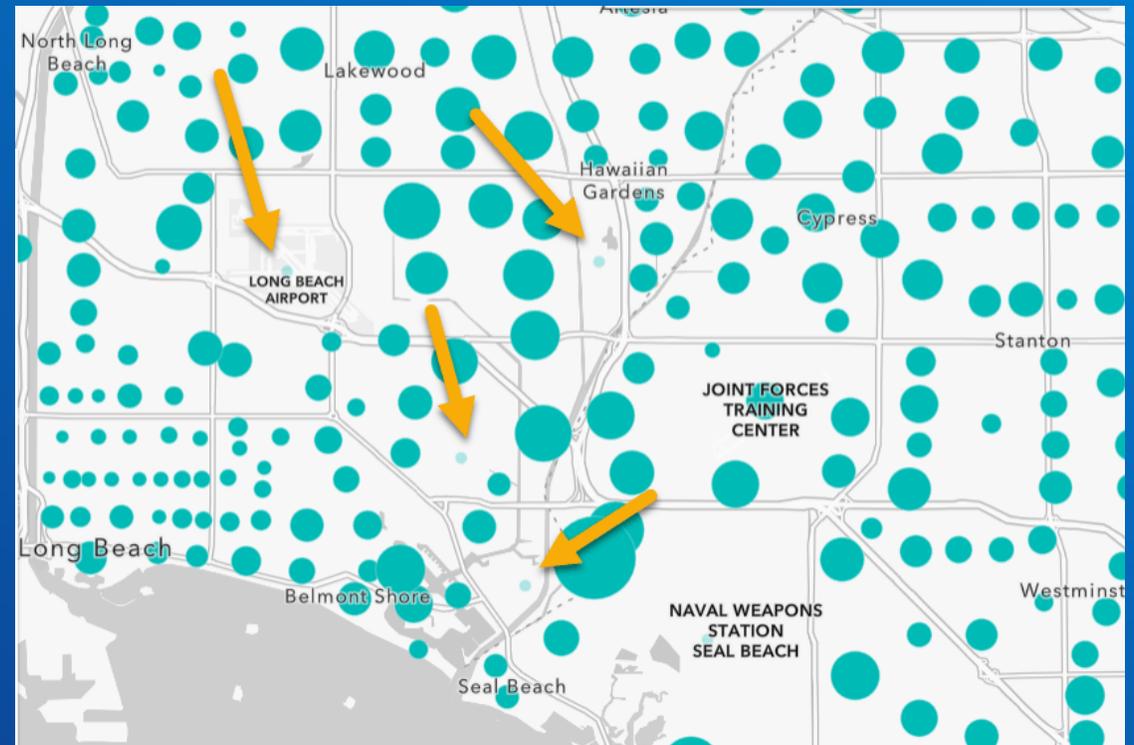
Aggregating just 3 tracts yields a reliable estimate of the percent of adults who are veterans in Billings Heights.



Percentages symbolized by continuous or unclassed color.

Summarization Best Practices

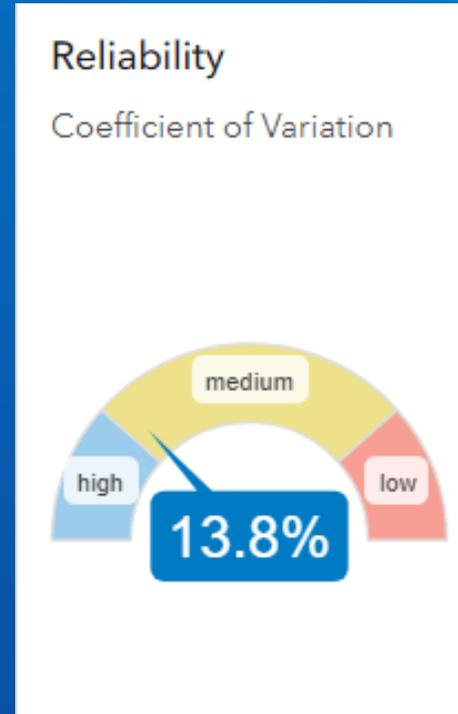
- Use official estimates when available
- Preserve patterns in the map
- Try to avoid tracts with estimate of zero
 - Small & transparent symbols
 - Airports, cemeteries, open land, etc.



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.



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