

# Incorporating Margins of Error in Maps

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Living Atlas Policy Maps

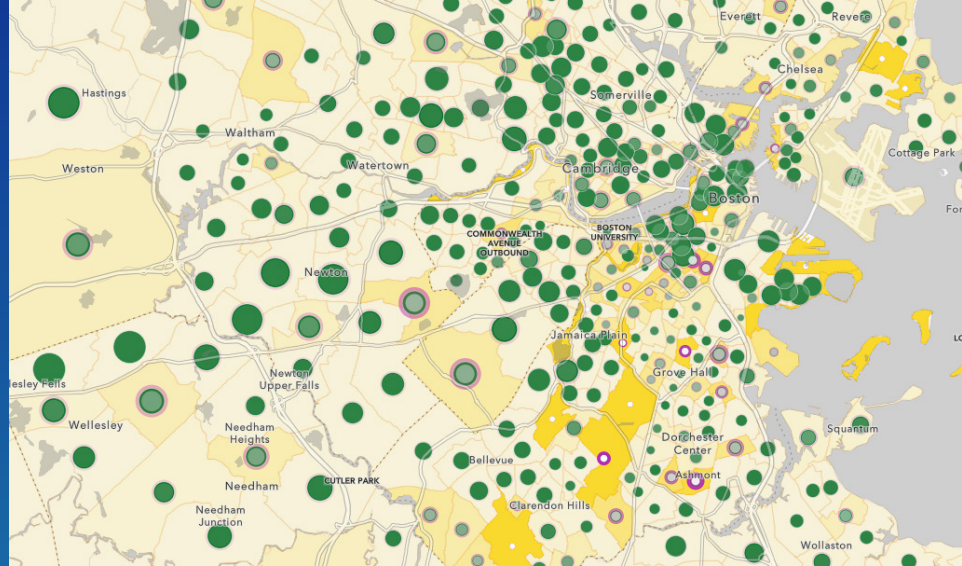
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**Coauthors:**

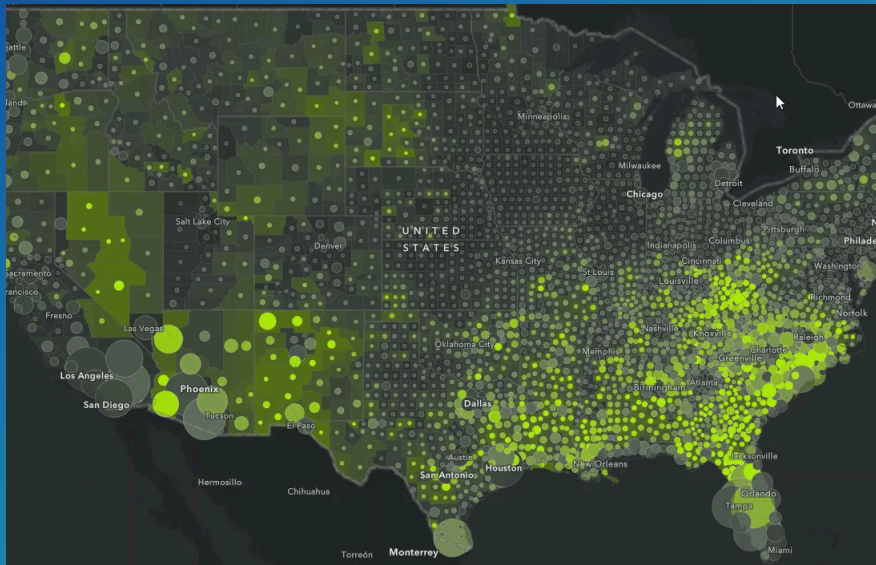
Steven Aviles, Lisa Berry, Jim Herries

# Ways to incorporate MOEs into Web Maps

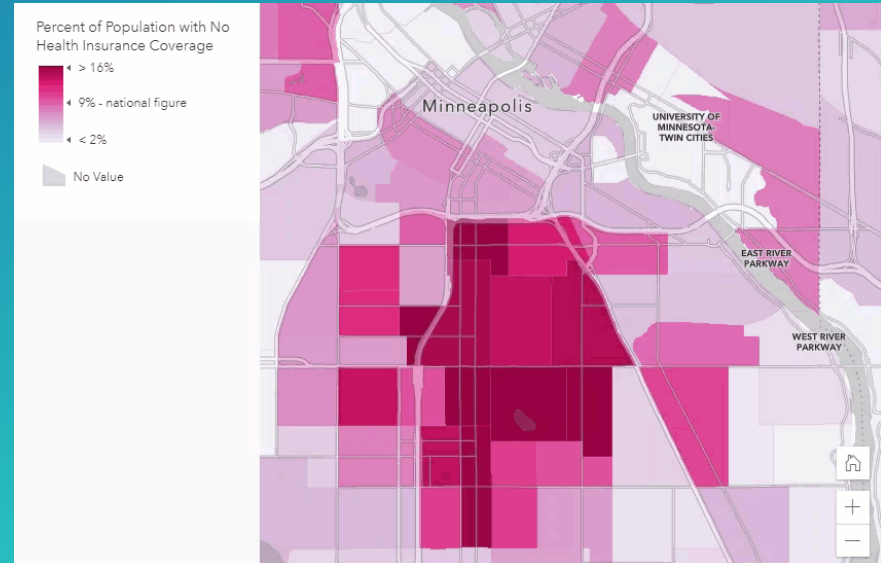
## Symbology:



## Pop-ups:



## Labels:



# MOEs in Symbology

- Outlines
- Transparency
- “Donut” with symbols for upper & lower bounds
- Polygons behind points



ACS Population Variables -  
Boundaries - Tract - Reliability

Reliability

Low reliability

ACS Population Variables -  
Boundaries - Tract

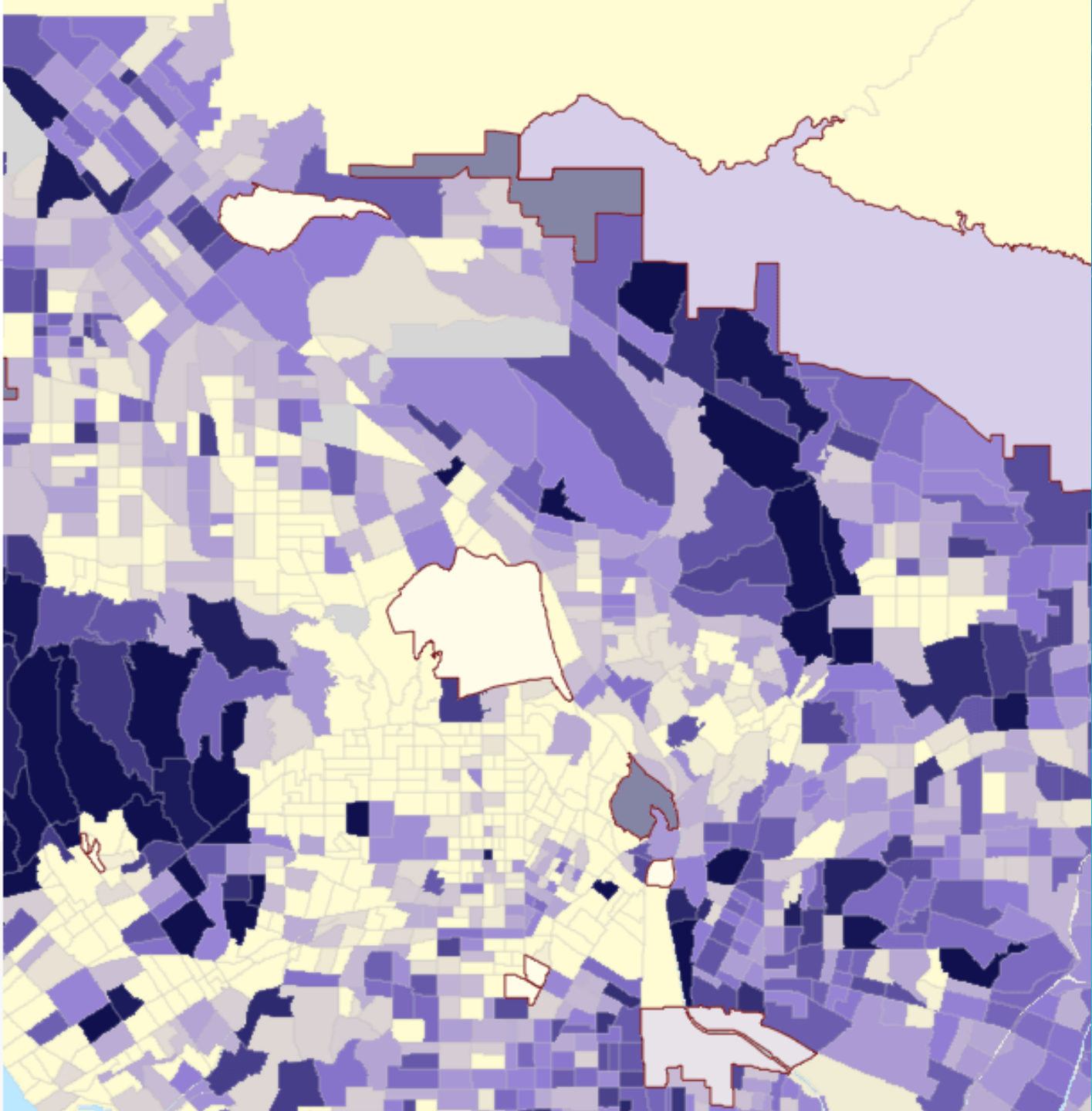
Percent of Population in  
Dependent Age Groups (under  
18 and 65+)

> 46%

38% - national figure

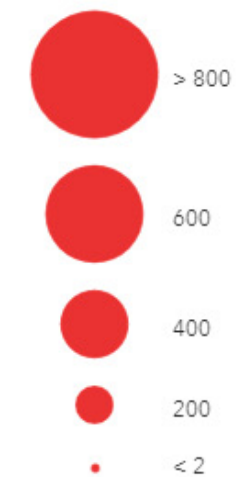
< 30%

No Value

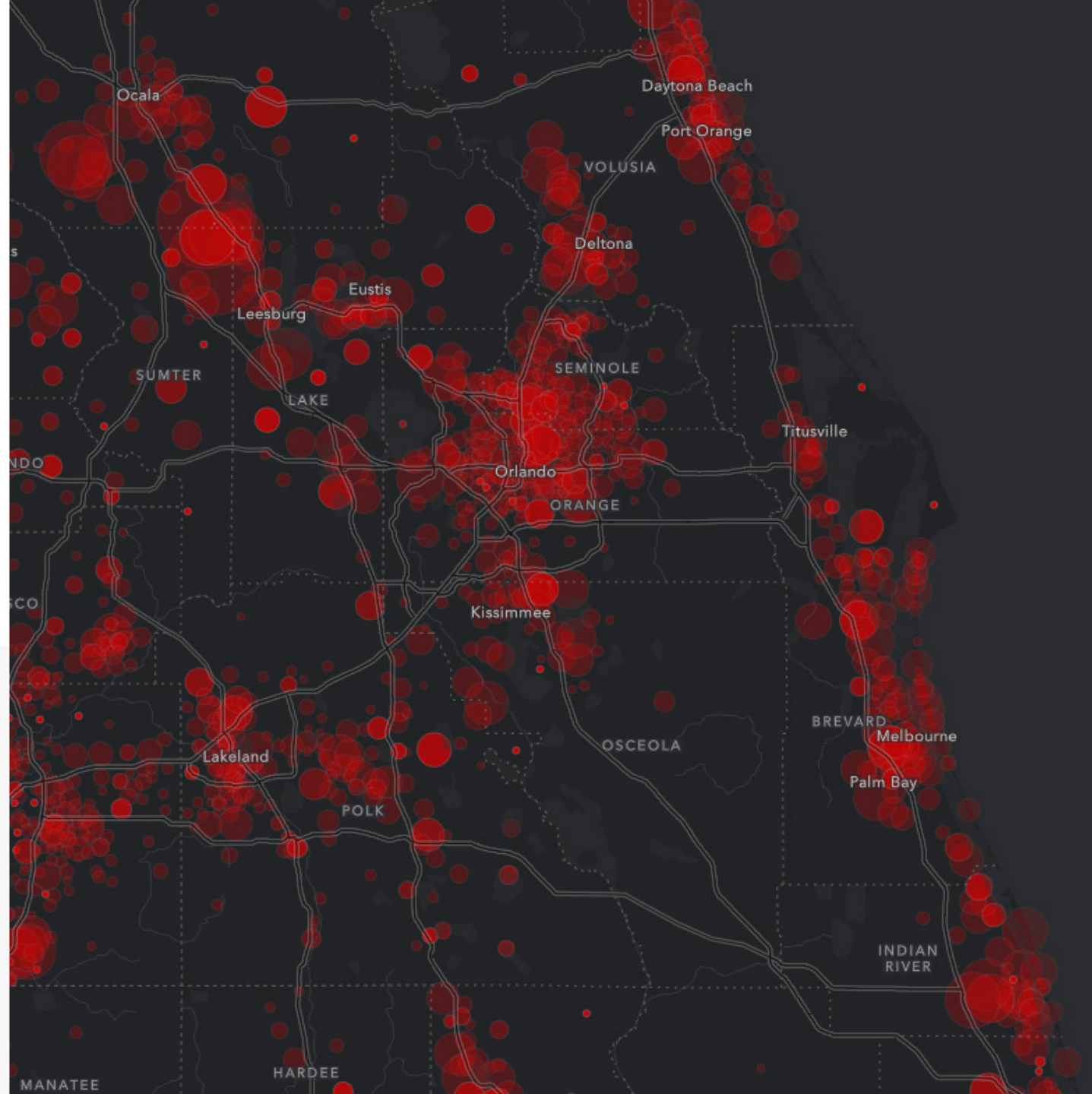


Outlines  
show tracts  
with low  
reliability

Female 75 years and over with a disability

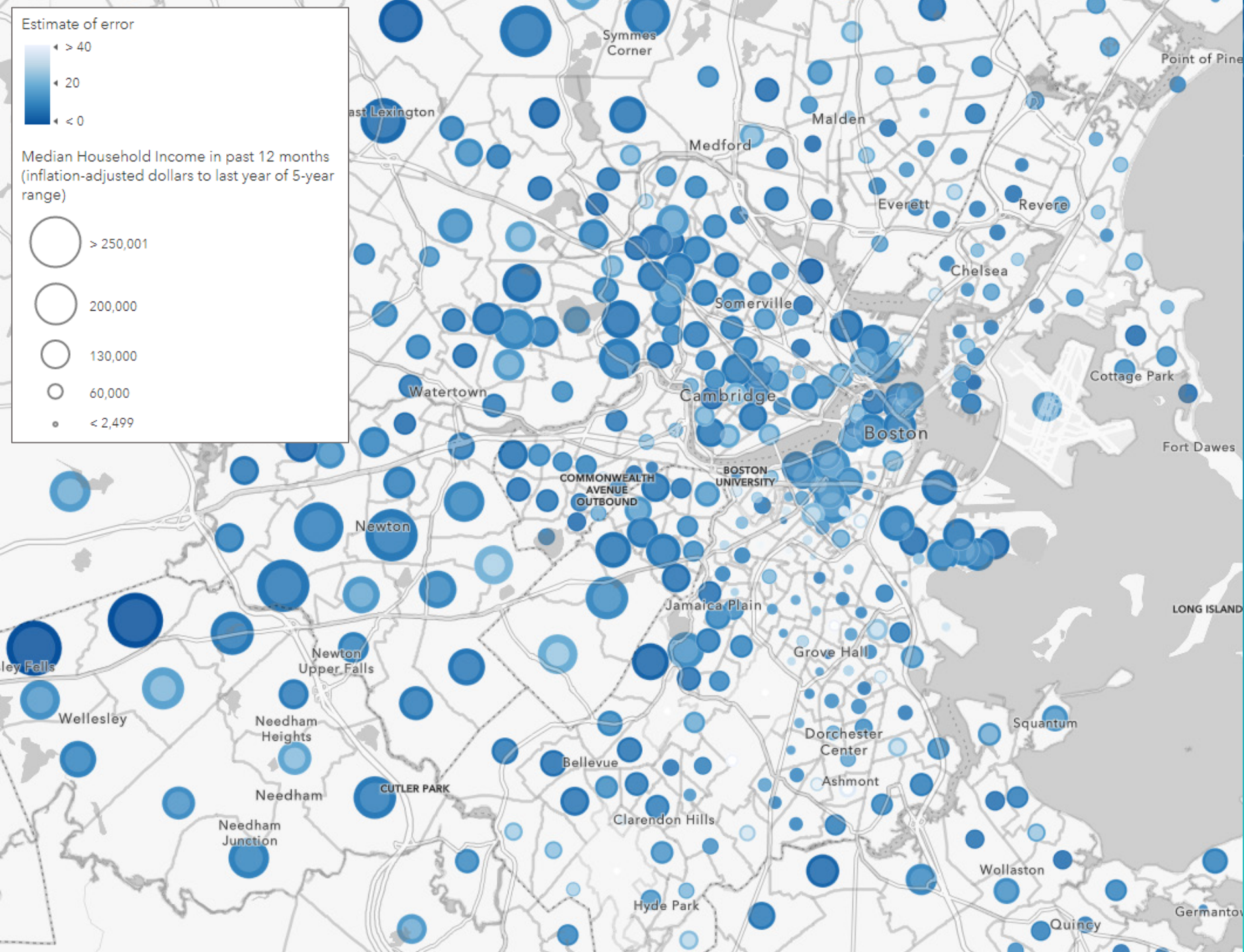


MOE as a percentage of estimate



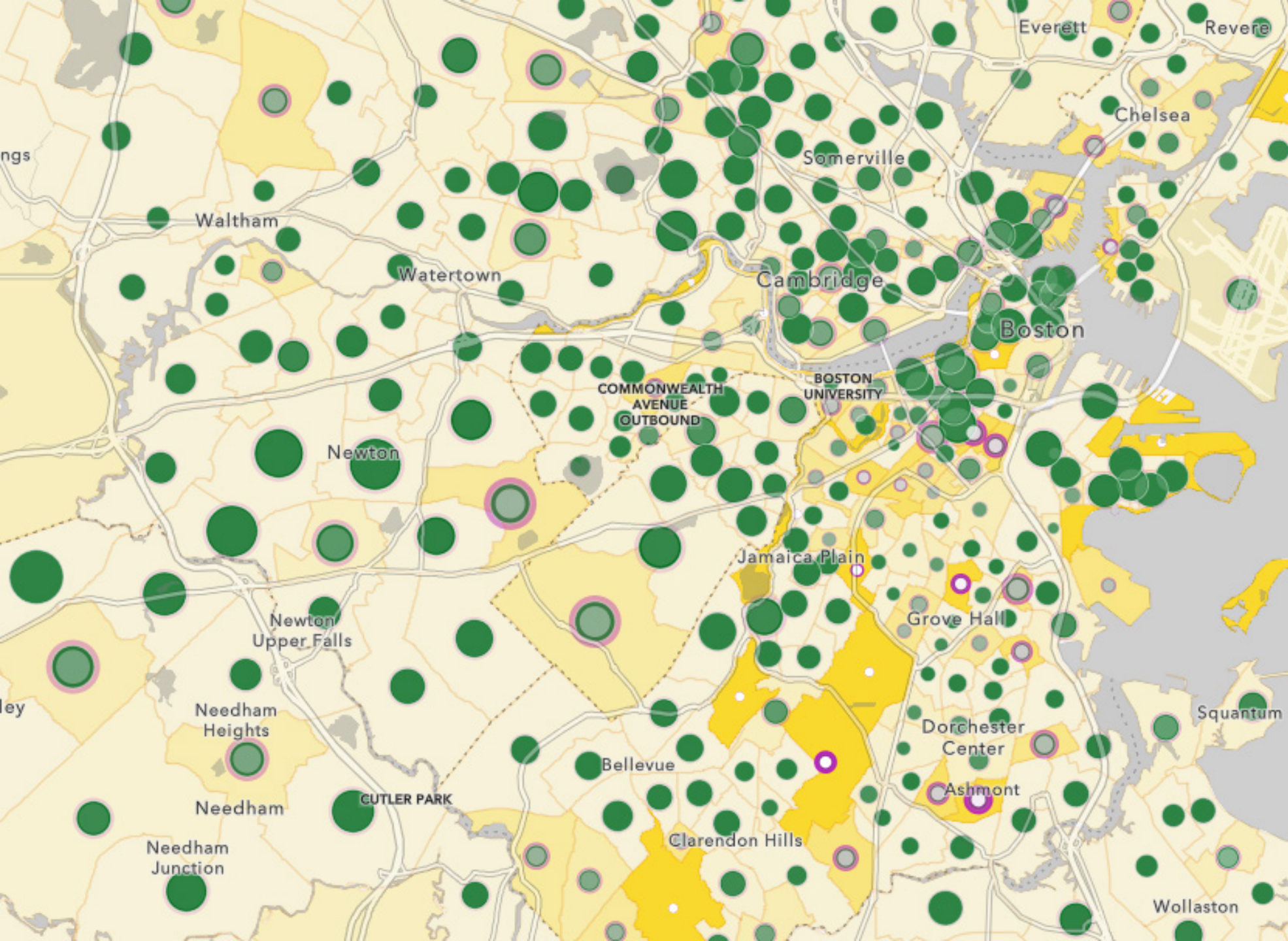
Estimates  
with low  
reliability are  
more  
transparent





Map both upper  
and lower  
bounds to  
create a donut  
symbol





**Polygons  
behind point  
symbols  
show  
reliability**

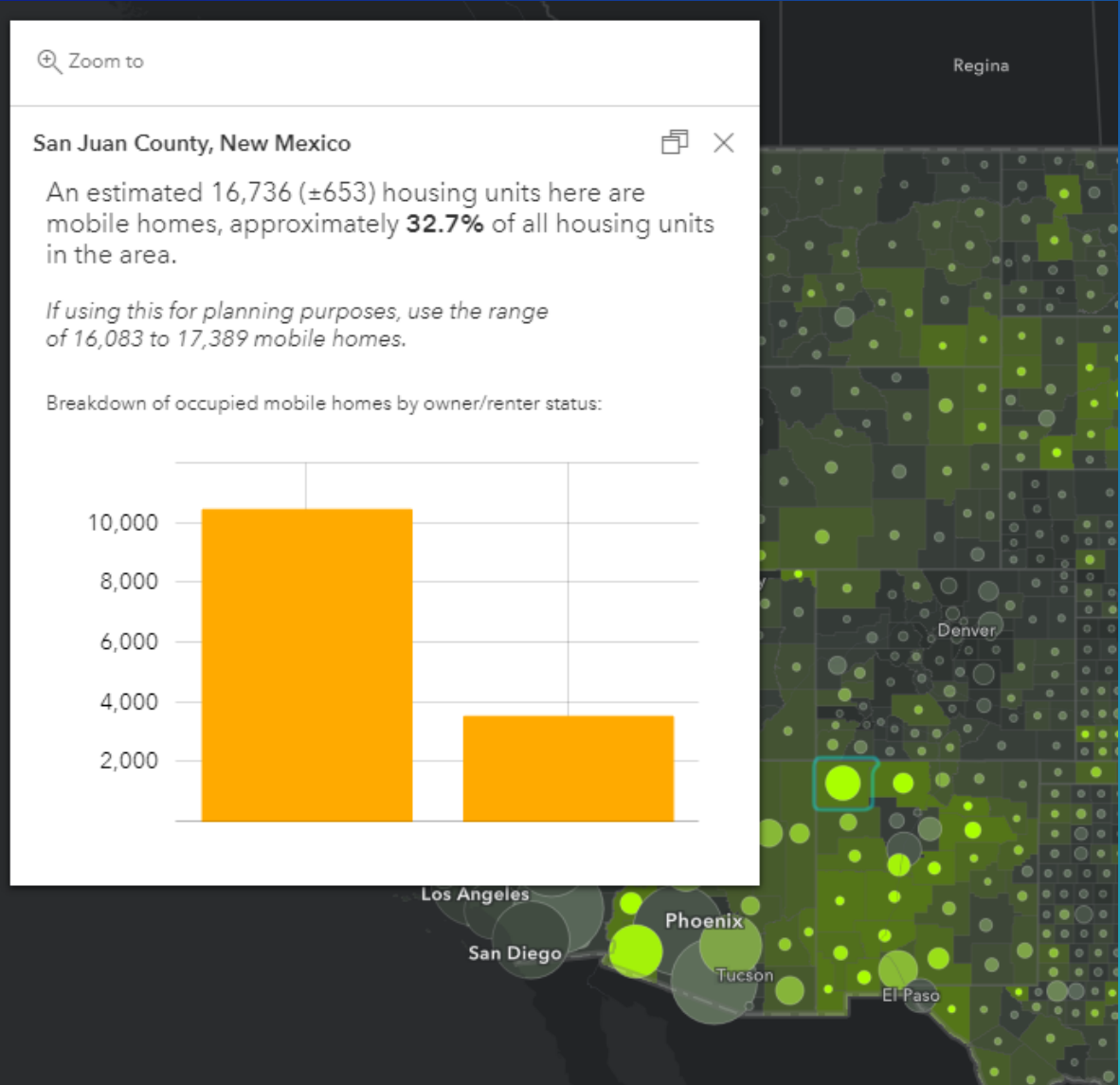
Brighter yellow =  
higher concern

# MOEs in Pop-ups

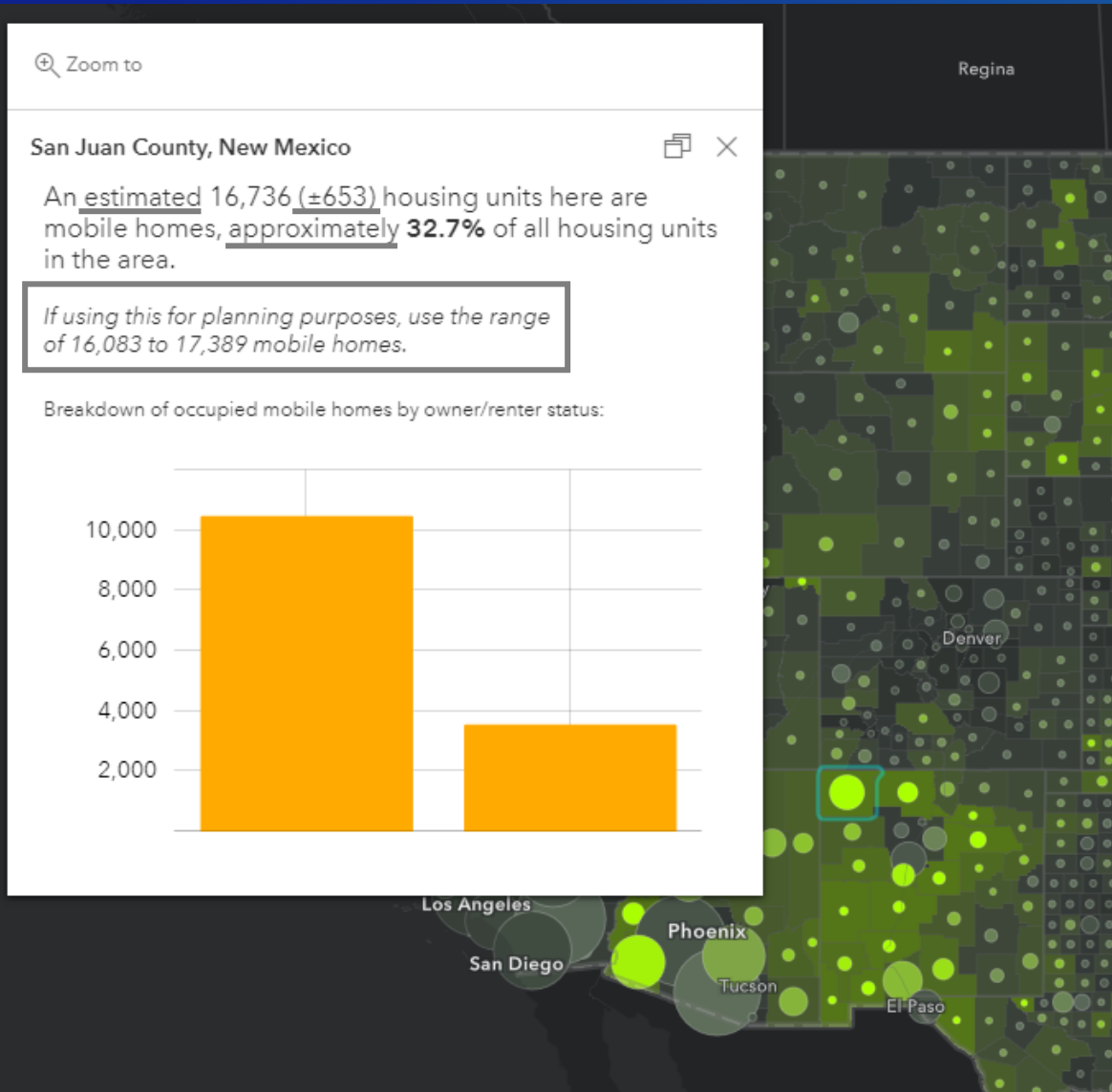
- Language such as “estimated” or “approximately”
- State the MOE
- State the full range



# MOEs in Pop-ups



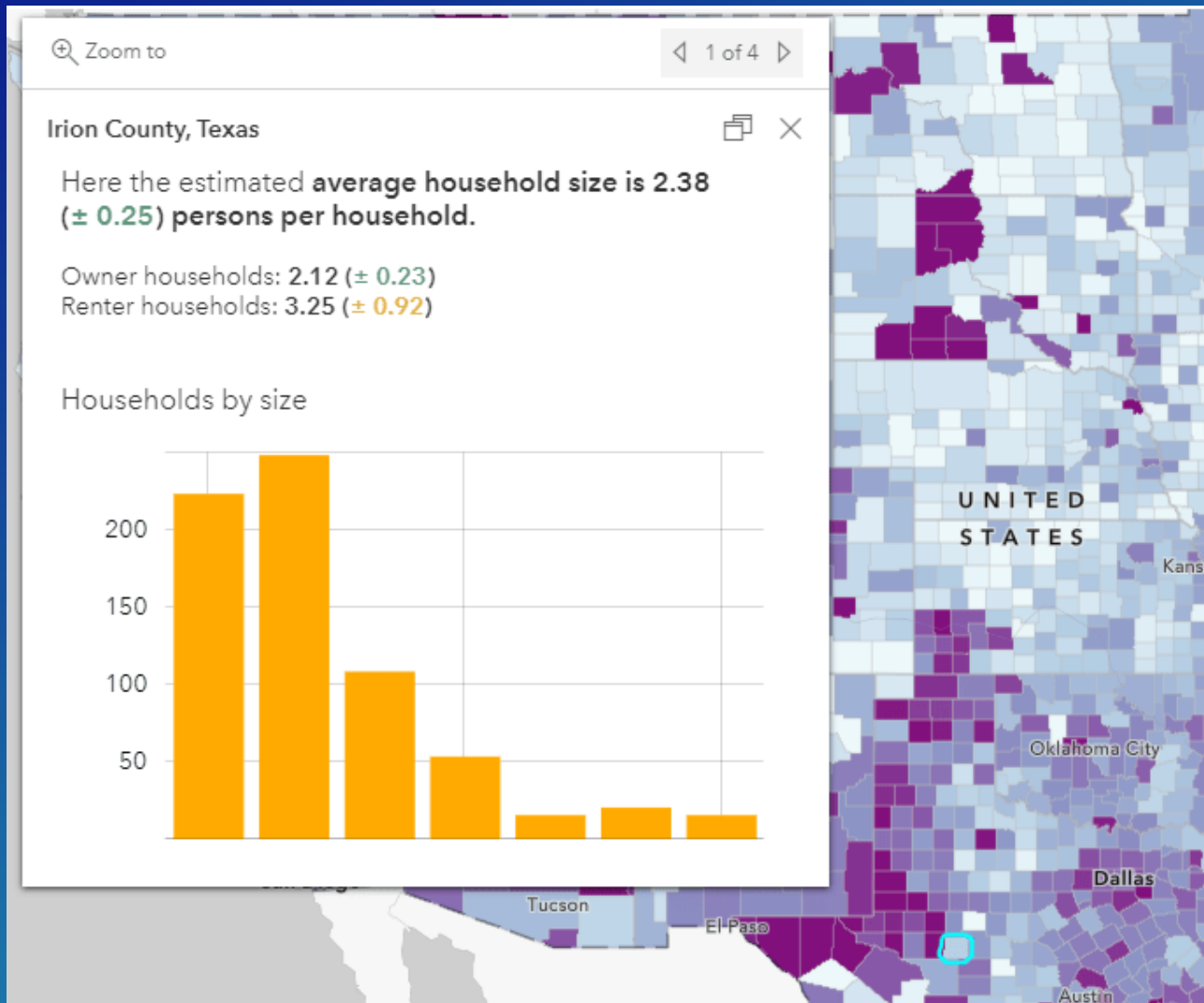
# MOEs in Pop-ups



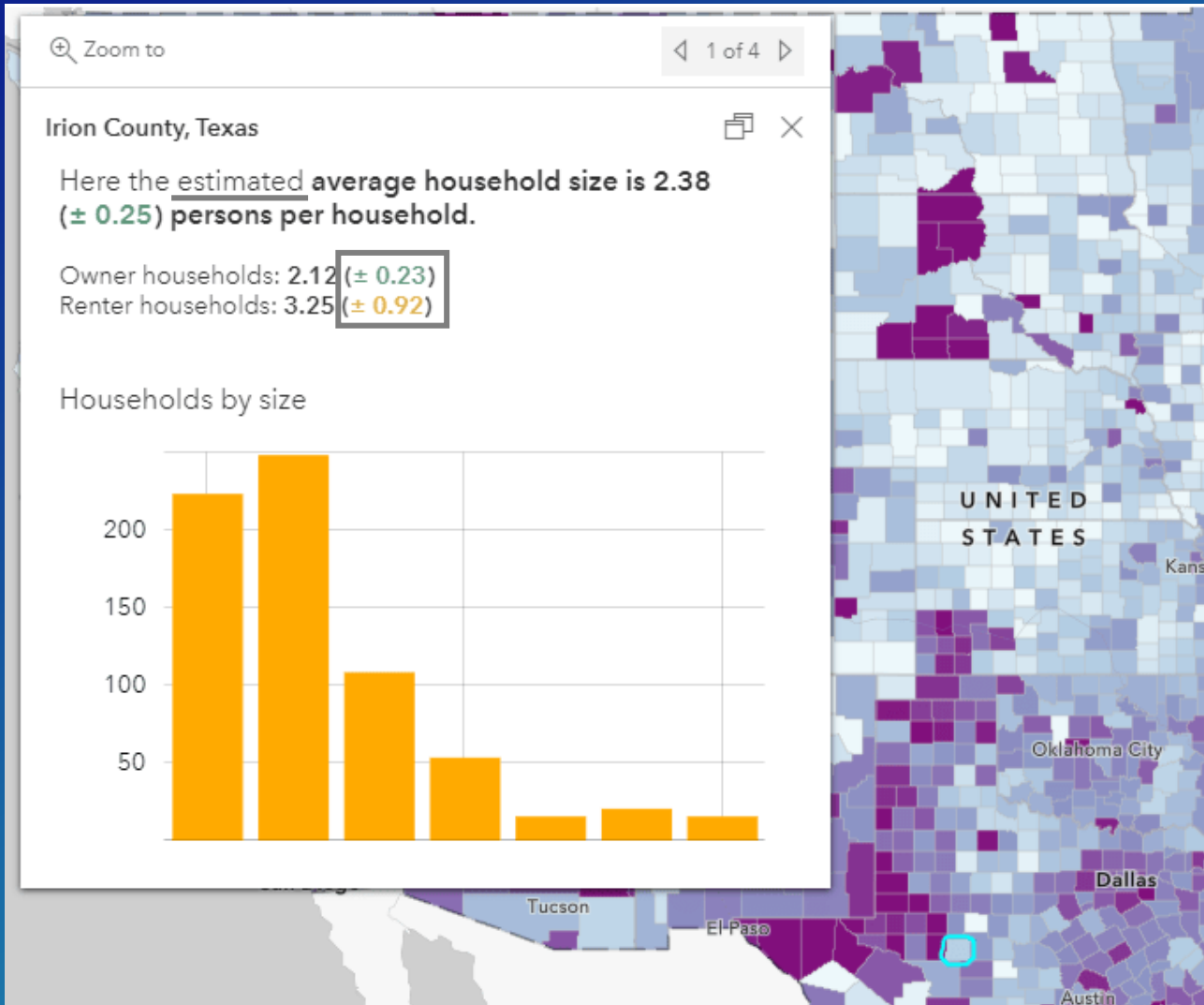
- *Estimated & Approximately*
- Present the MOE
- Presents the full range



# MOEs in Pop-ups



# MOEs in Pop-ups



- *Estimated*
- Present the MOEs
- Use text color to show reliability:
  - High (CV  $\leq 12$ )
  - Medium ( $12 < \text{CV} \leq 40$ )
  - Low ( $40 < \text{CV}$ )



# MOEs in Labels

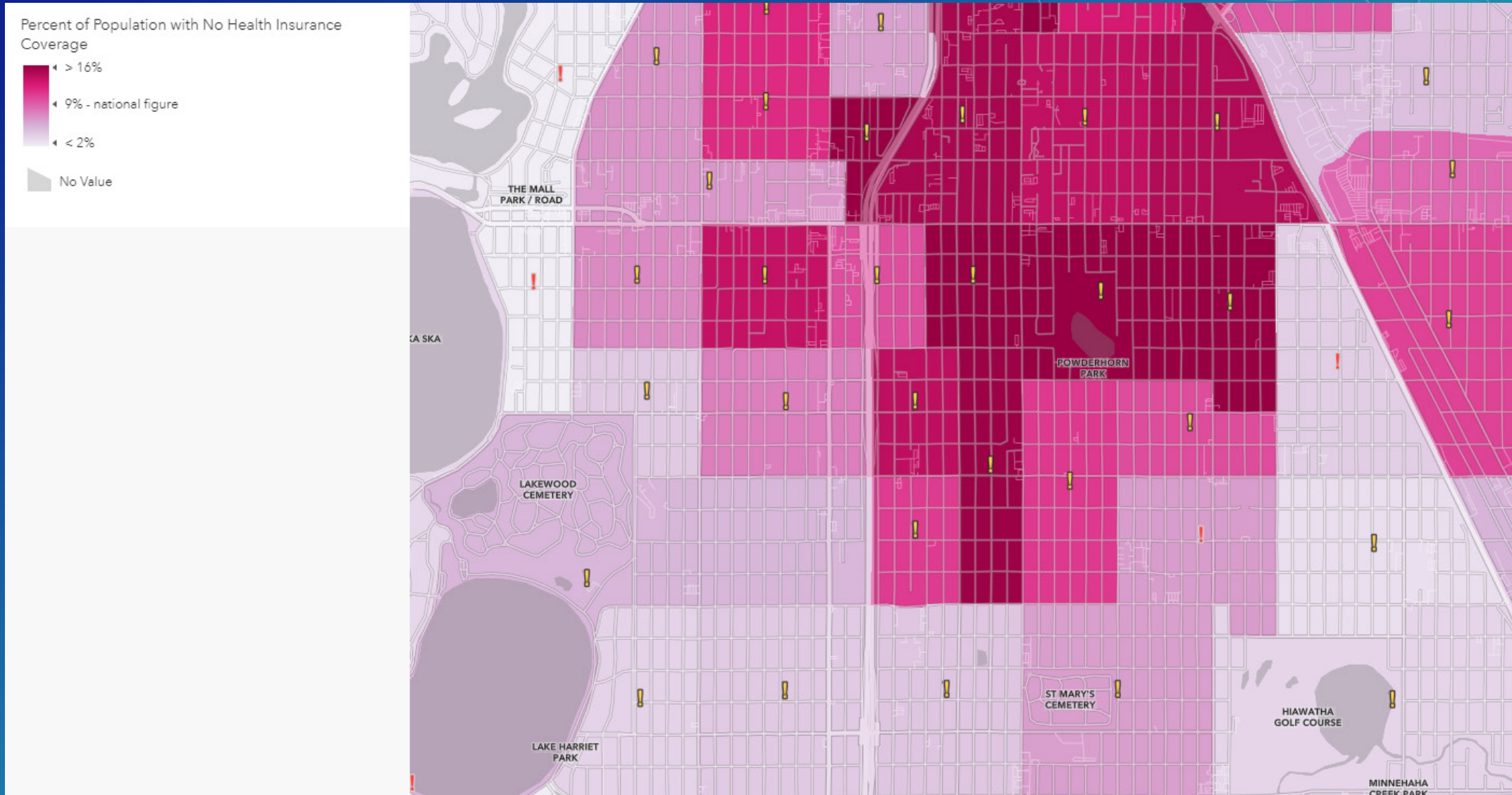
- Reliability
- Warning symbols only if it's unreliable
- State the MOE

# MOEs in Labels – Reliability

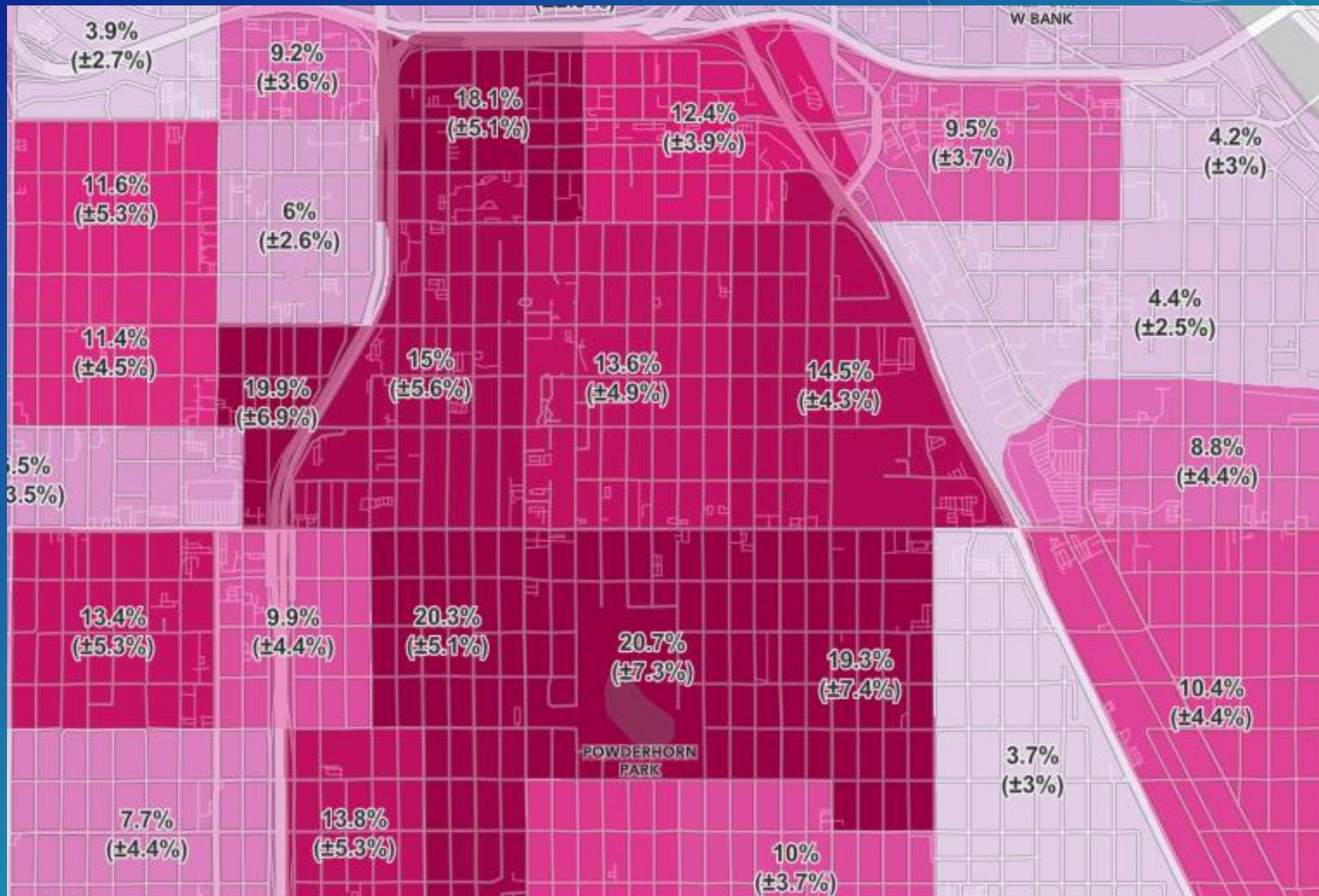




# MOEs in Labels – Warning Symbols



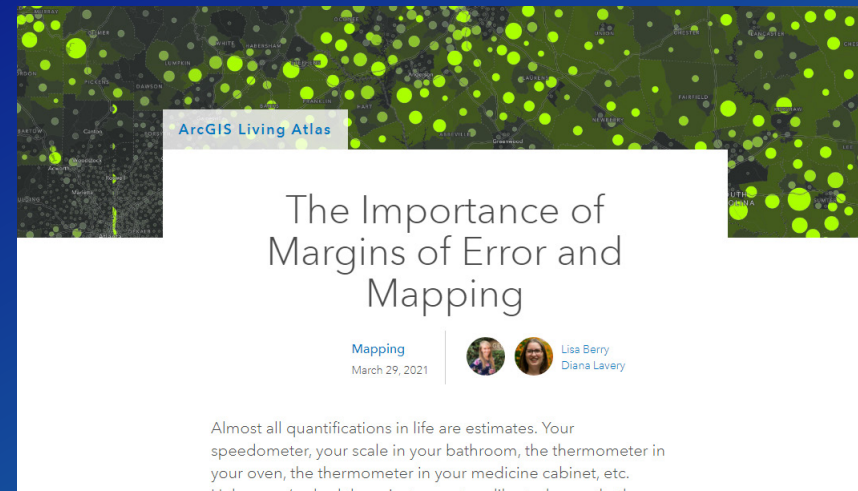
# MOEs in Labels – State the MOE



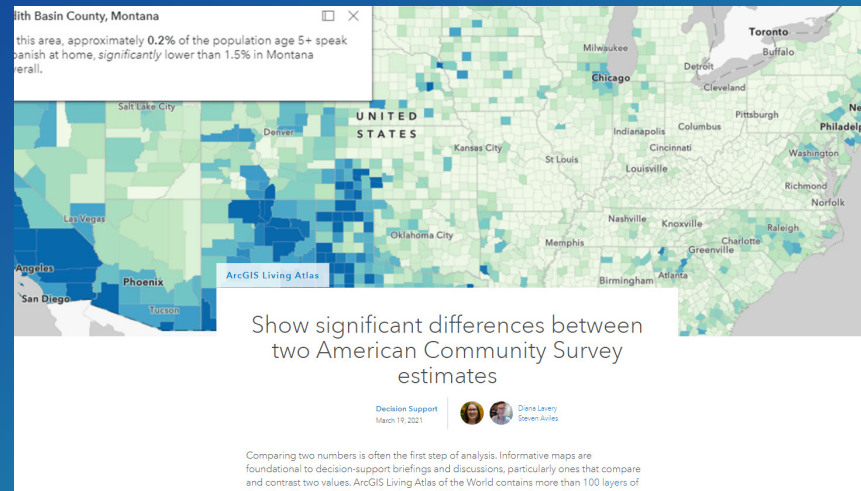


# More Resources for Incorporating MOEs in Maps

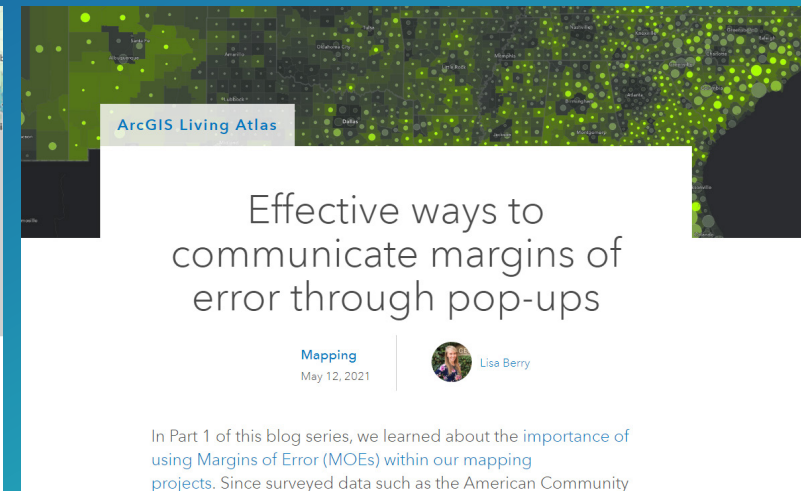
<https://esriurl.com/MOEsInMaps>



Importance of Margins of Error and Mapping



Significant Differences between Two Estimates



Communicate MOEs Through Pop-ups

*Check the [ArcGIS Blog](https://esriurl.com/MOEsInMaps) for more posts to come!*



esri

THE  
SCIENCE  
OF  
WHERE