

Simulating ACS Housing Estimates Using Administrative Data

Research Findings for the
Joint Statistical Meeting
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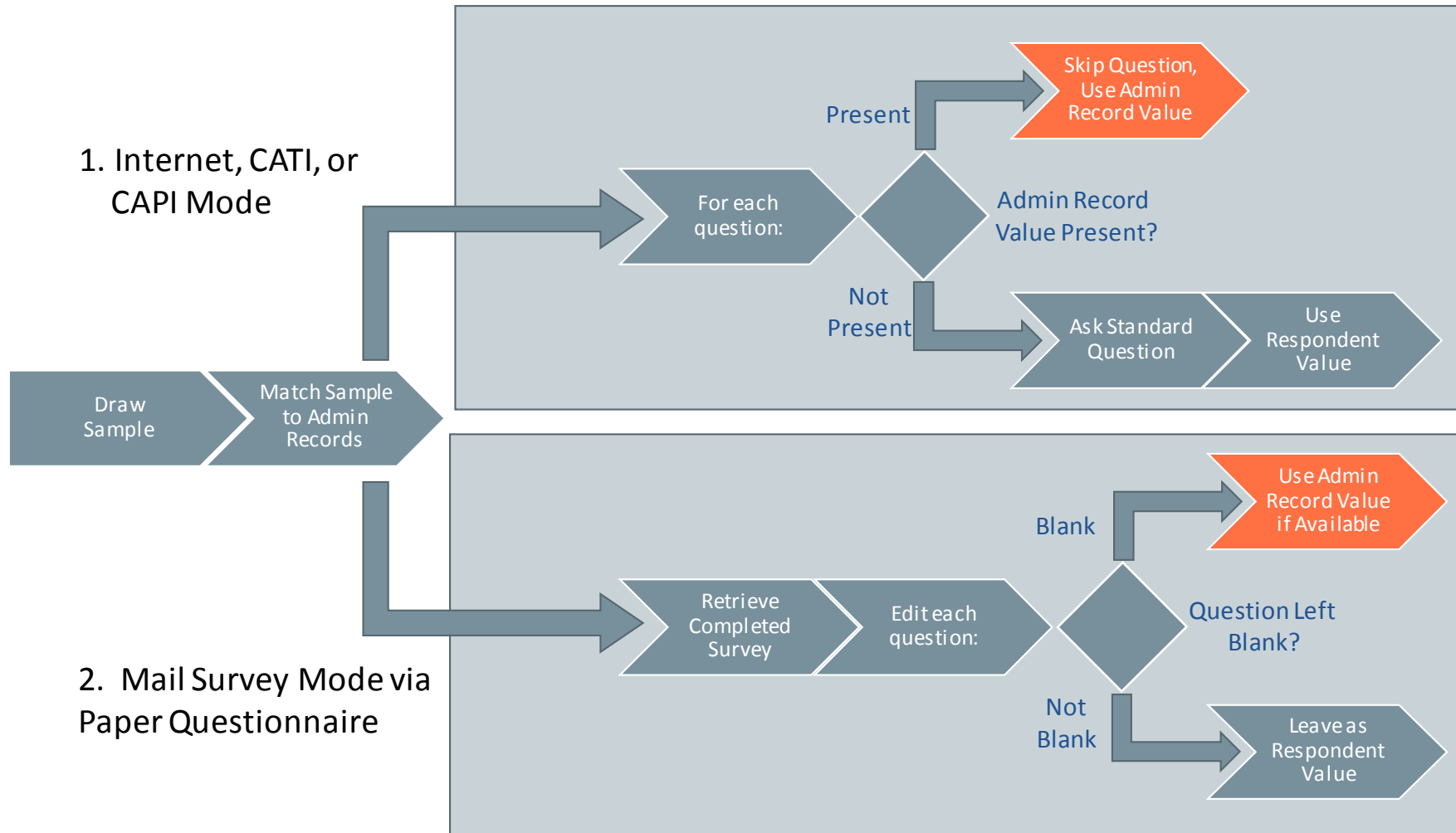
Special Thanks

- Amanda Klimek
- Christopher Mazur
- William Chapin
- Ellen Wilson

Introduction

- Research goals
 - Simulate use of administrative records (ARs) in ACS
 - Study impact on data products
 - Test feasibility of implementing methods
 - Learn effects on production process
- ACS is a perfect platform for simulating the use of Administrative Records
 - Huge sample
 - Spans multiple geographic areas
 - covers many topics
 - High profile
- Satisfy ACS program goals to be reputable, researched, and responsive

Adaptive Design



Simulating this Design

- Used 2015 ACS Responses
- Direct substitution for the four most promising housing items:
 - Year built
 - Acreage
 - Real estate taxes
 - Property value

Property tax records from vendor CoreLogic

Modeled admin data from CoreLogic's Automated Valuation Model (AVM)
- For housing units that have:
 - ACS Internet, CATI, or CAPI return
 - ACS mail return and ACS response is missing
- Produced “**Simulated**” version to compare to “**Published**” 2015 ACS

Simulated vs Published Estimates

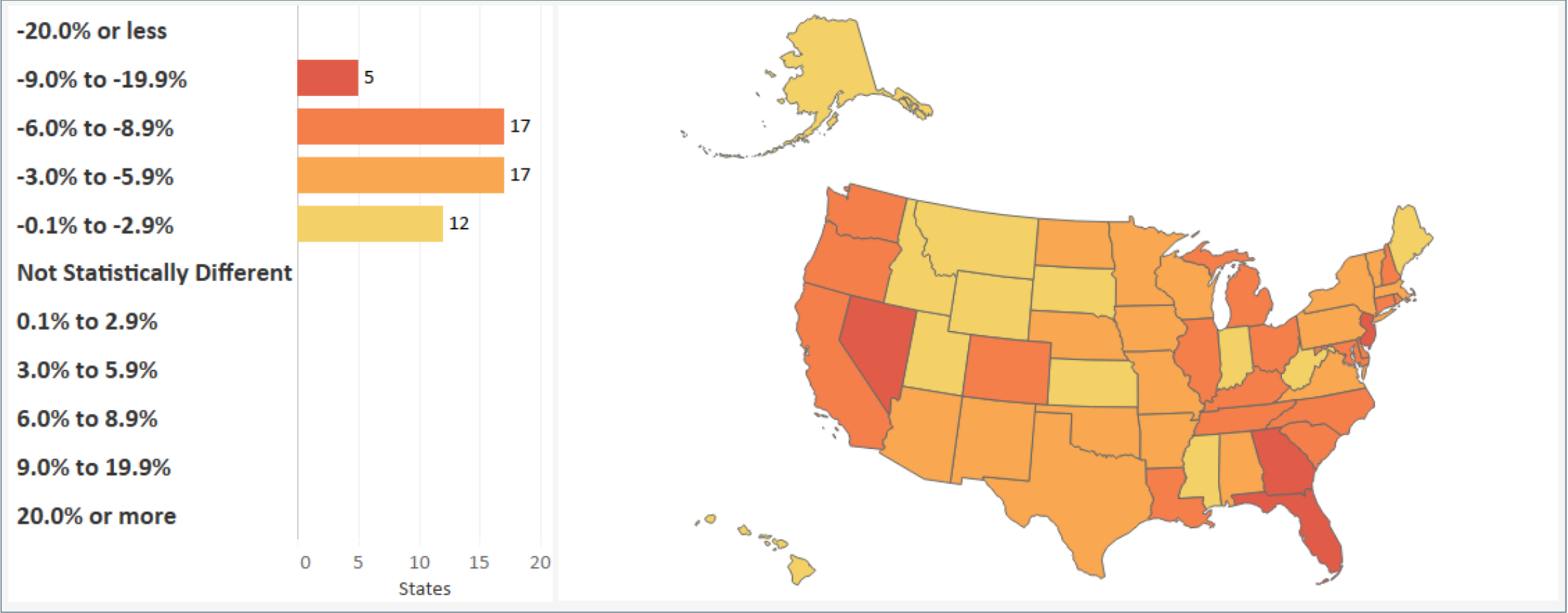
Calculated summary metrics and key measures

- Approx. **79%** of 575 US level estimates statistically different
- Direction of differences varied, but for many items **Simulated** was lower than **Published**
- **Simulated** item allocation rates significantly lower than **Published**

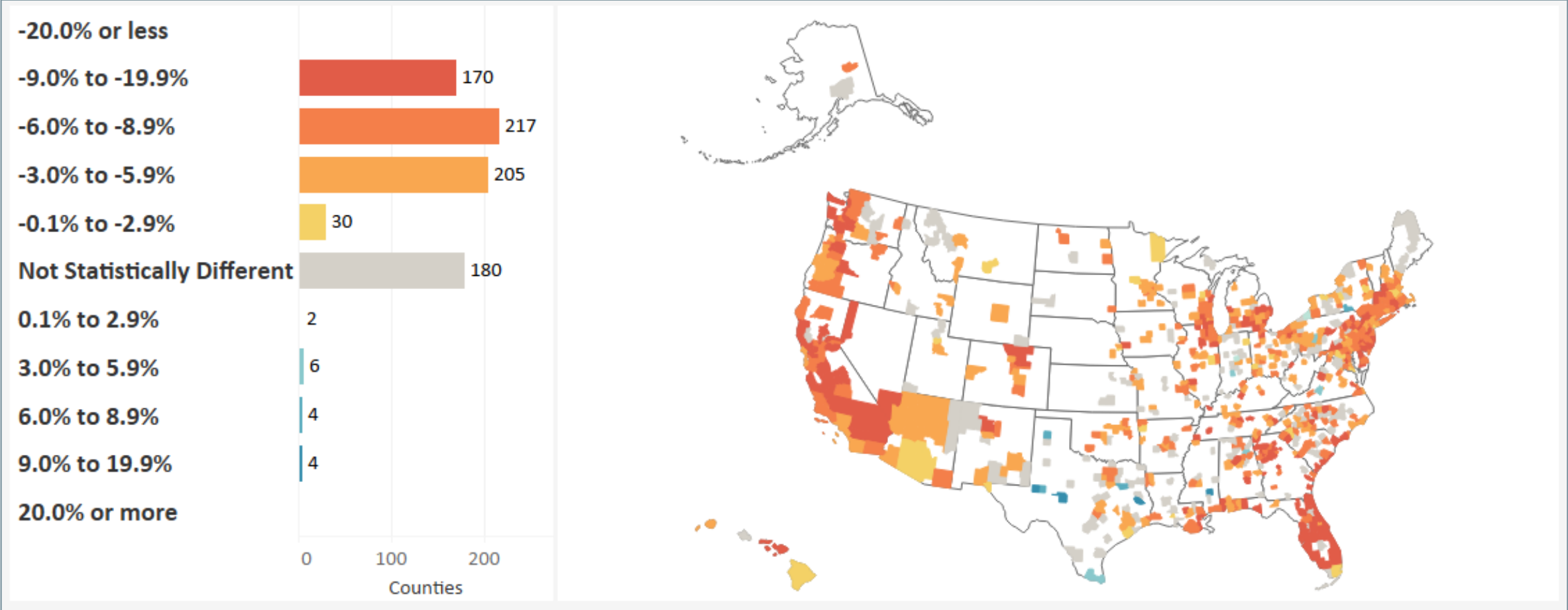
Item	Simulated	Published	Difference	MOE
Acreage	1.4	3.7	-2.3	0.1
Year Built	12.7	17.8	-5.2	0.2
Property Value	5.0	12.0	-7.0	0.1
Property Tax	4.5	16.9	-12.4	0.1

- Impacts other survey items besides 4 test items

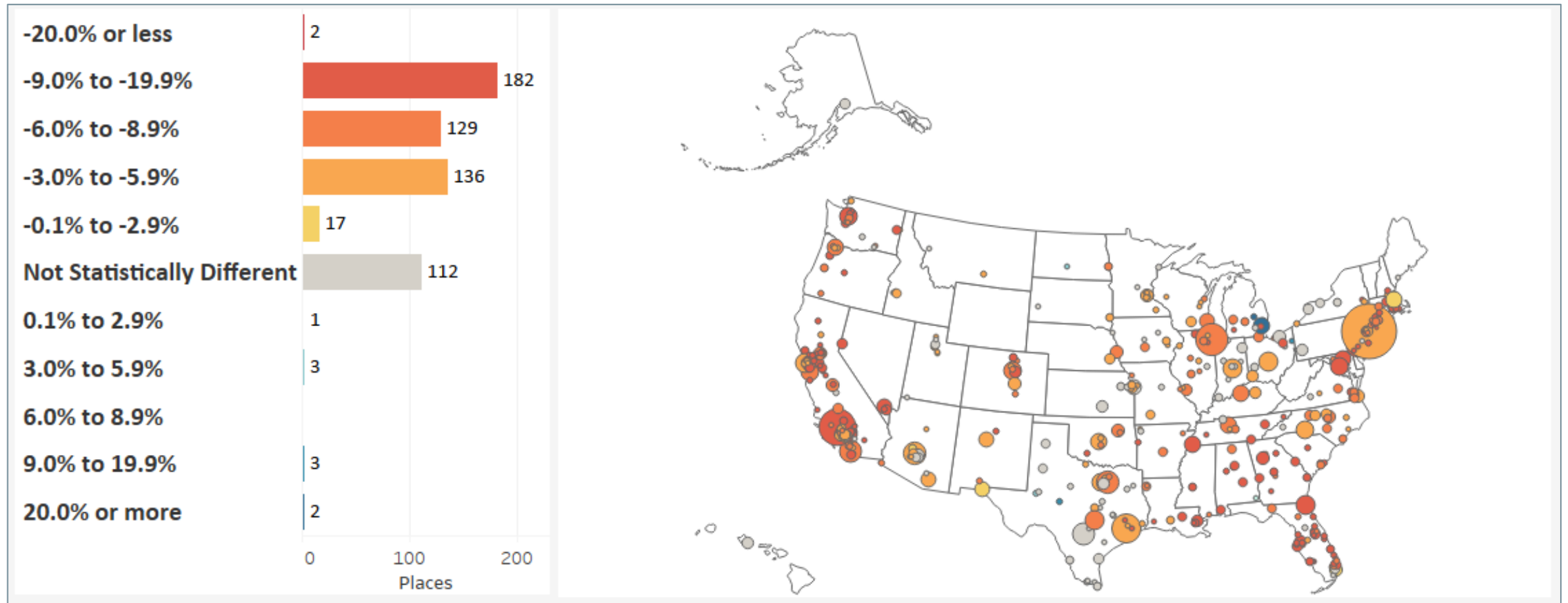
Percent Difference in Median Property Value: Simulated minus Published - State



Percent Difference in Median Property Value: Simulated minus Published - County



Percent Difference in Median Property Value: Simulated minus Published - Place

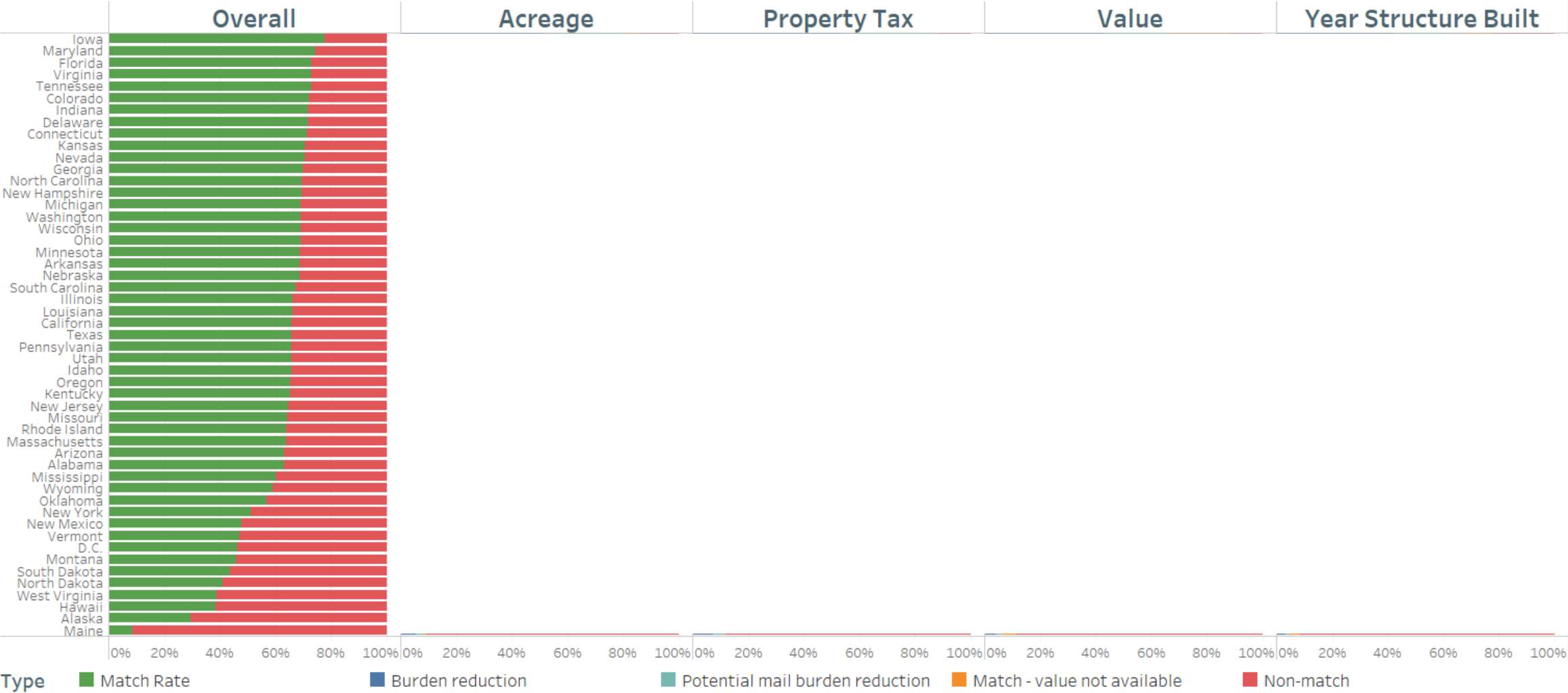


Match Status

Match = ACS responding household with a AR value for at least one of the 4 tested items

Non-match = ACS responding household that did NOT match to ARs

Match Status by State and Survey Question

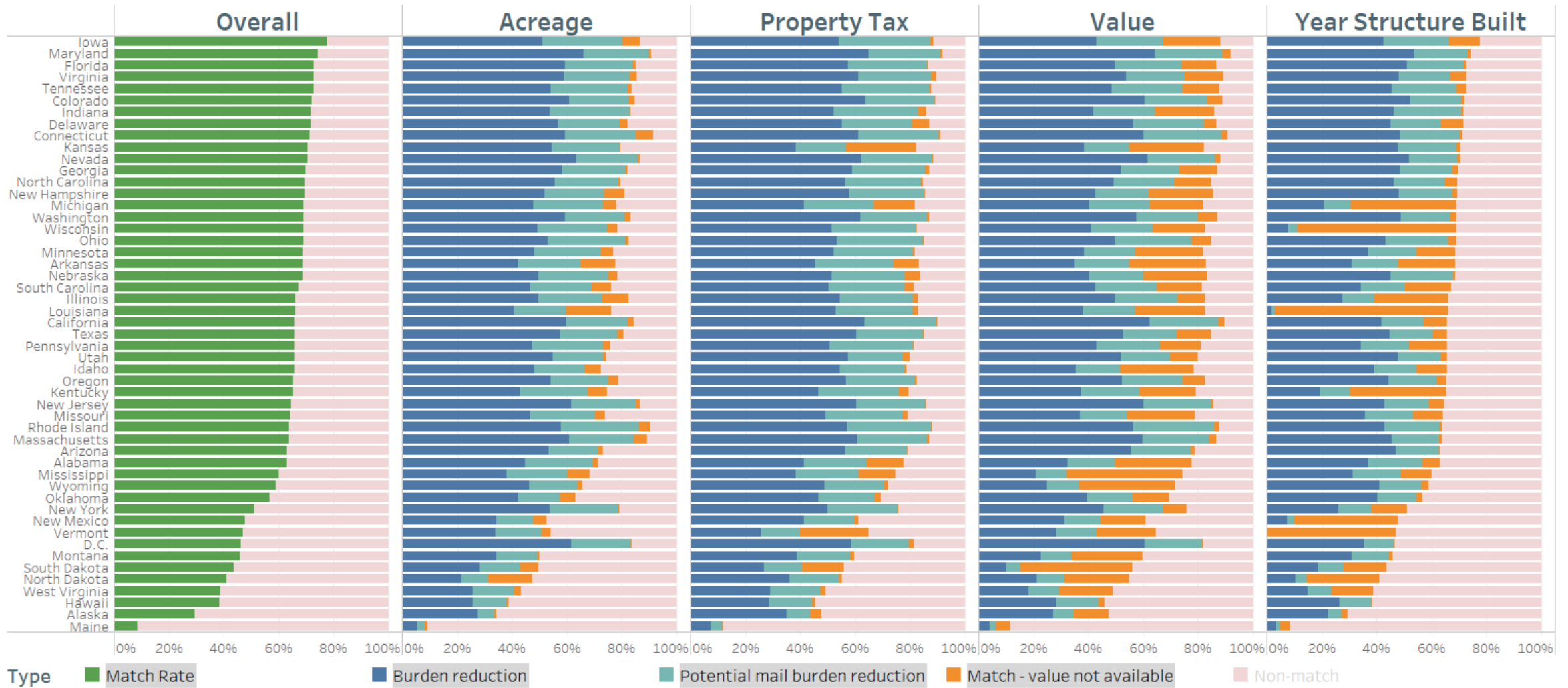


Type of Match

Match = ACS responding household with a AR value for at least one of the 4 tested items

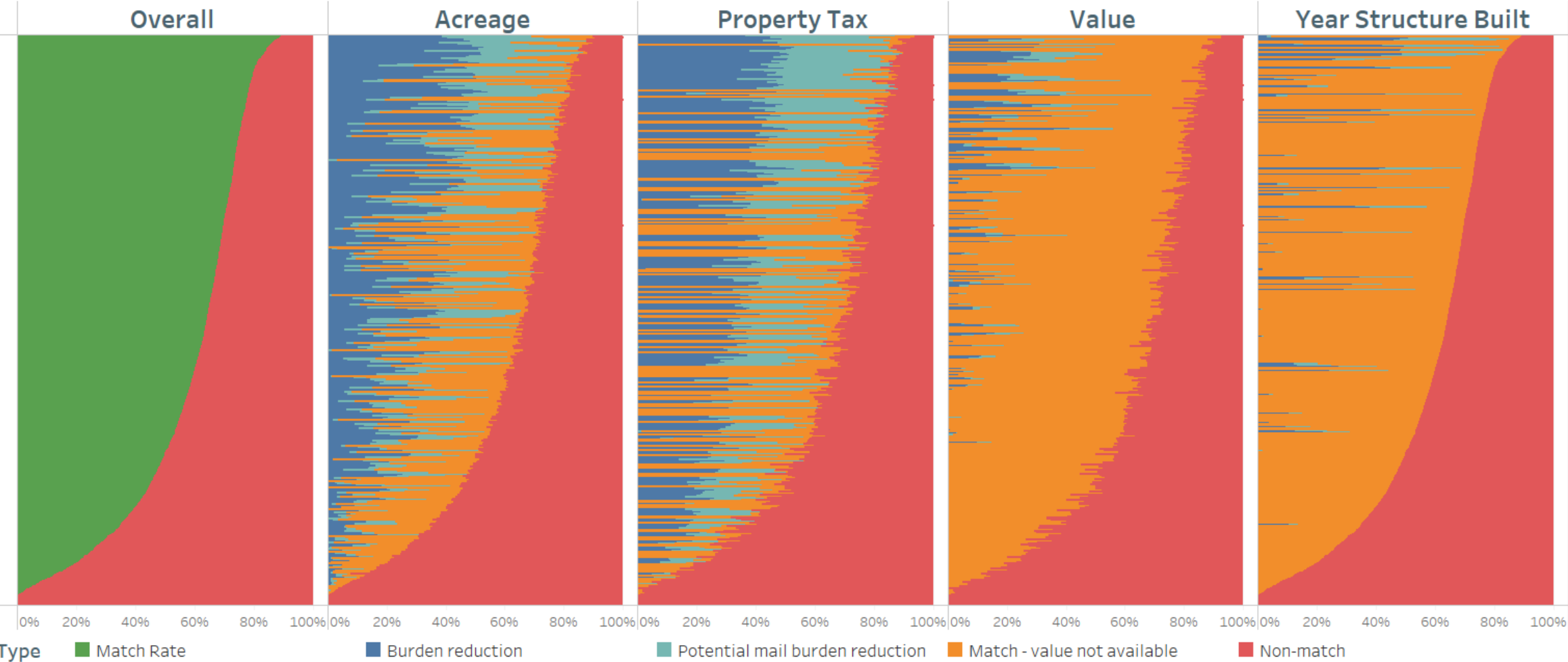
- **Burden reduction** = match that would not be asked question in our adaptive design
- **Potential mail burden reduction** = match that would not be asked question if we included the mail mode in our adaptive design
- **Match - value not available** = match but a value for question is not available

Match Status by State and Survey Question



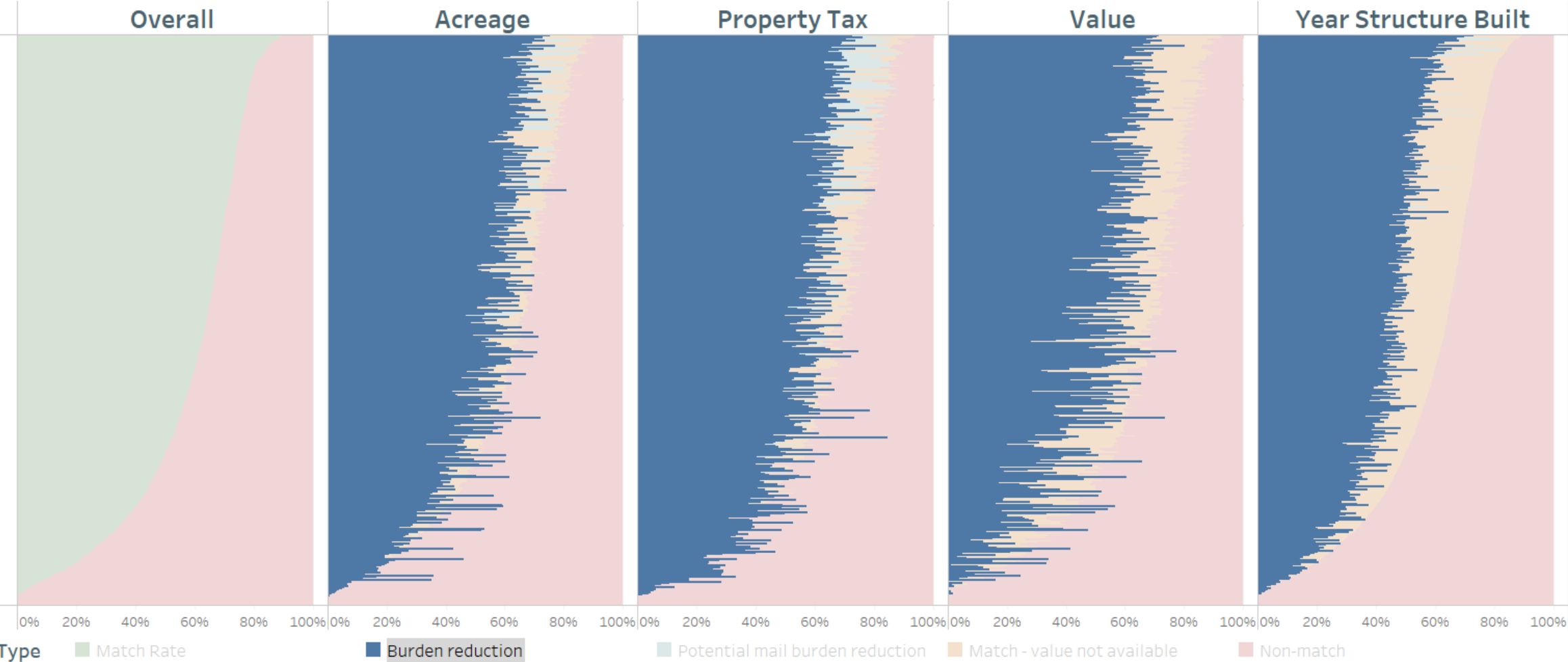
Match Status by County and Survey Question

Sorted by percentage of household with any admin record matches



Burden Reduction by County and Survey Question

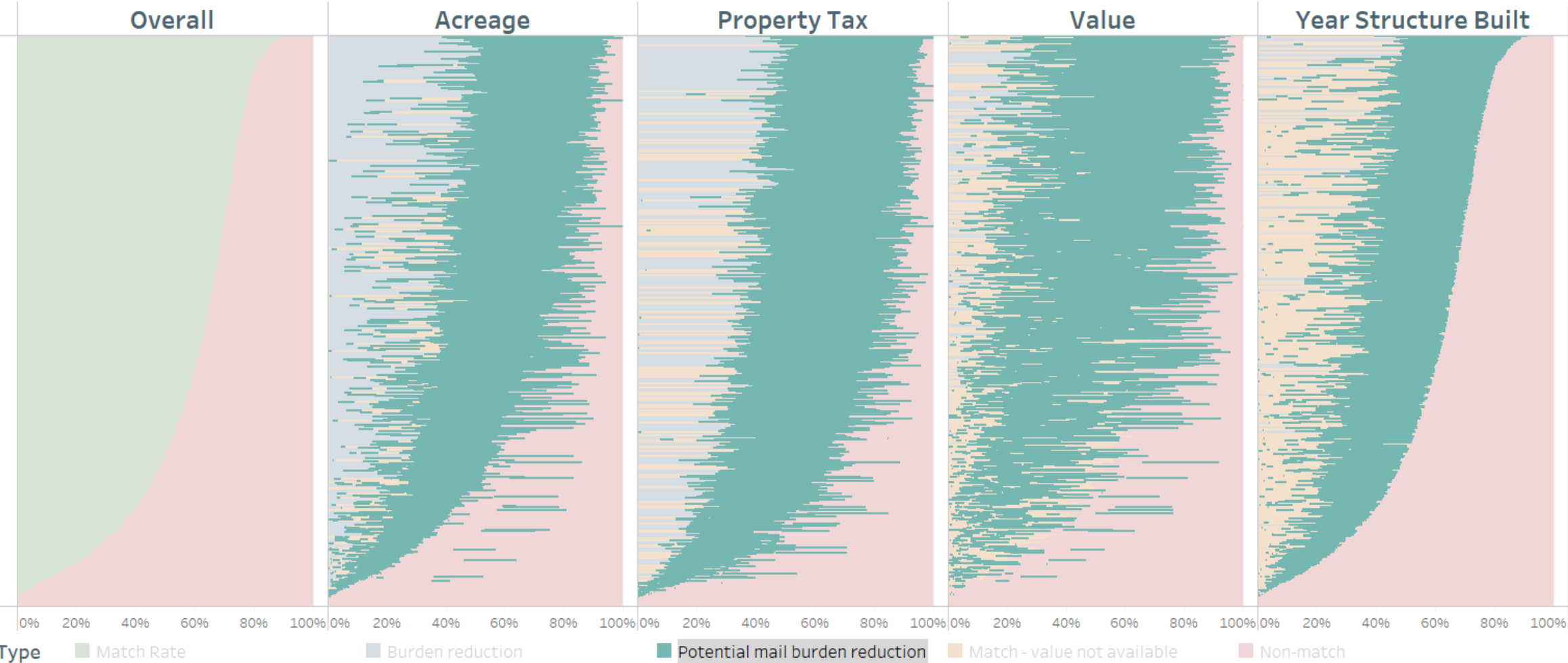
Sorted by percentage of household with any admin record matches



Overall Burden Reduction by Survey Question:
Acreage - 52% Real Estate Tax - 54% Property Value - 47% Year Built - 38%

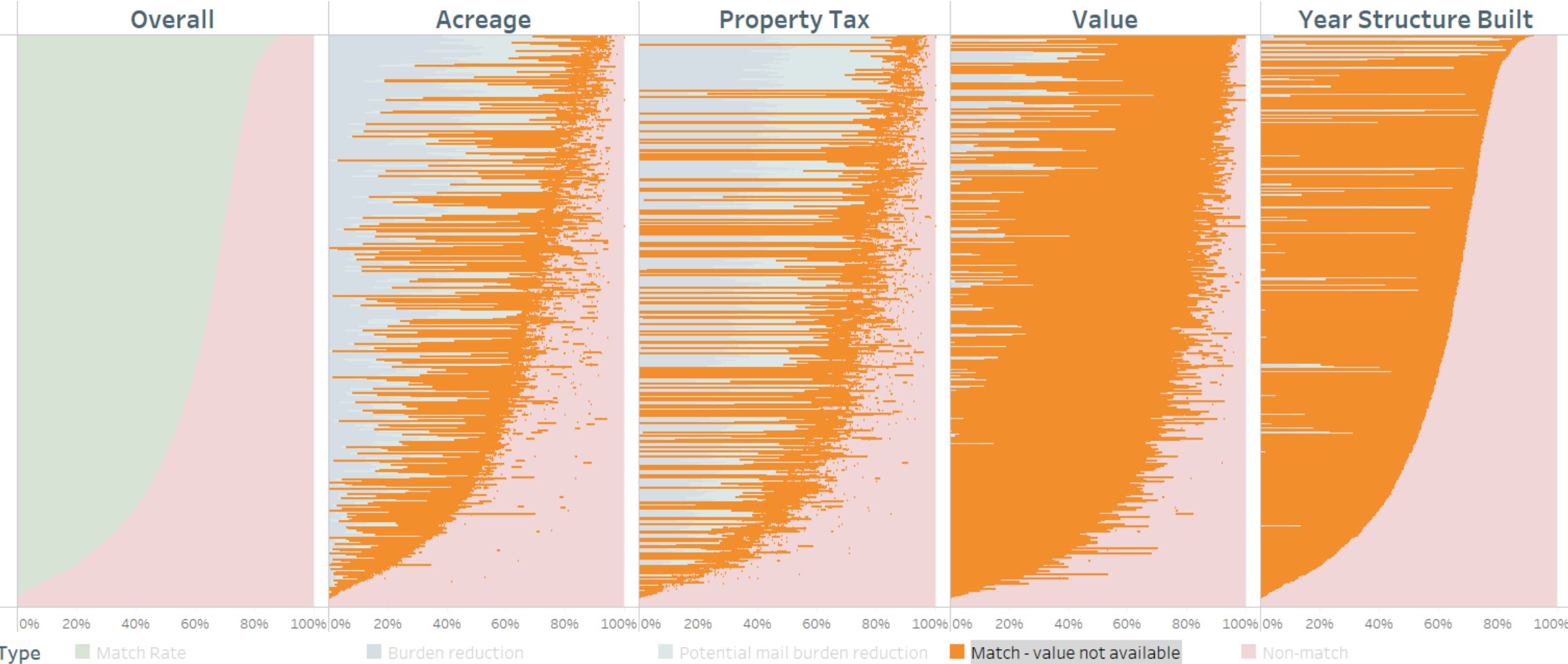
Potential Mail Burden Reduction by County and Survey Question

Sorted by percentage of household with any admin record matches

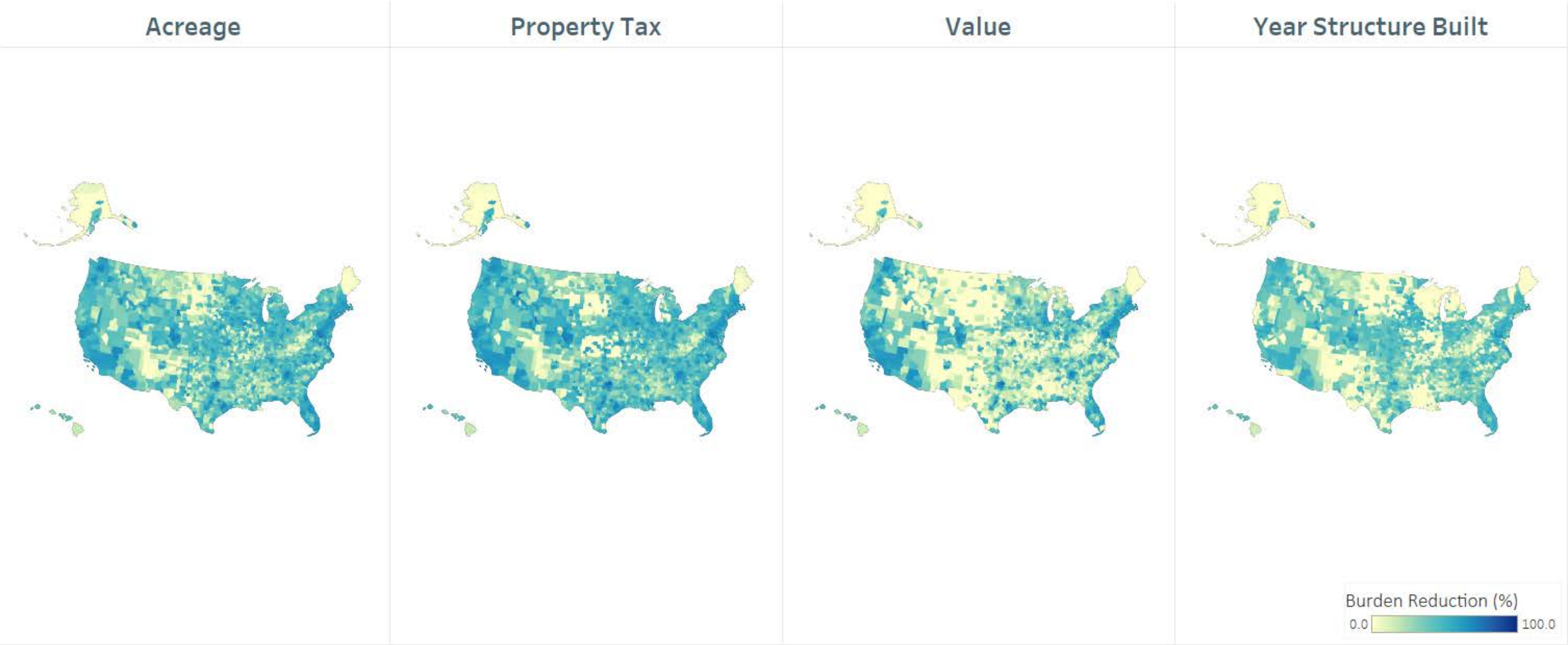


Match to AR but Question Item Not Available by County and Survey Question

Sorted by percentage of household with any admin record matches



Burden Reduction by County and Survey Question – Geographic View



This visualization shows the percentage of households that would have a reduction in burden because they would not be asked the question using the simple replacement method.

Challenges: Source of ARs

- Rely on outside vendor, CoreLogic (CL)
- Best source of property value data comes from CL's Automated Valuation Model (AVM) and the methodology is unknown
- Collection of AR data differs among jurisdictions
- Data not available for some areas and types of housing units
- Often a time lag between survey year and AR

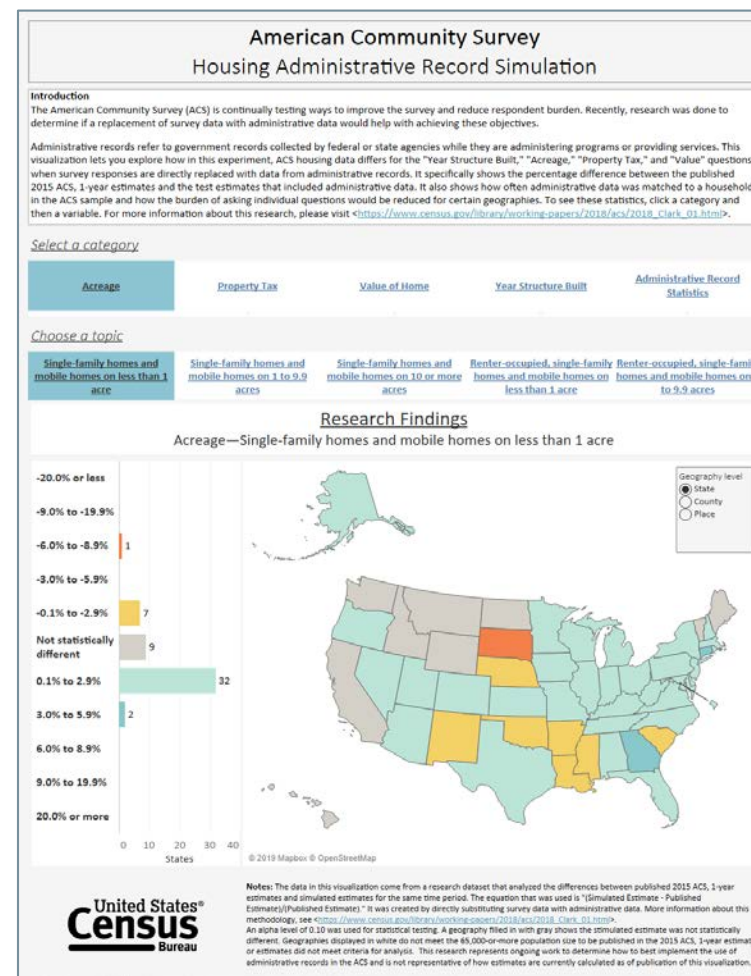
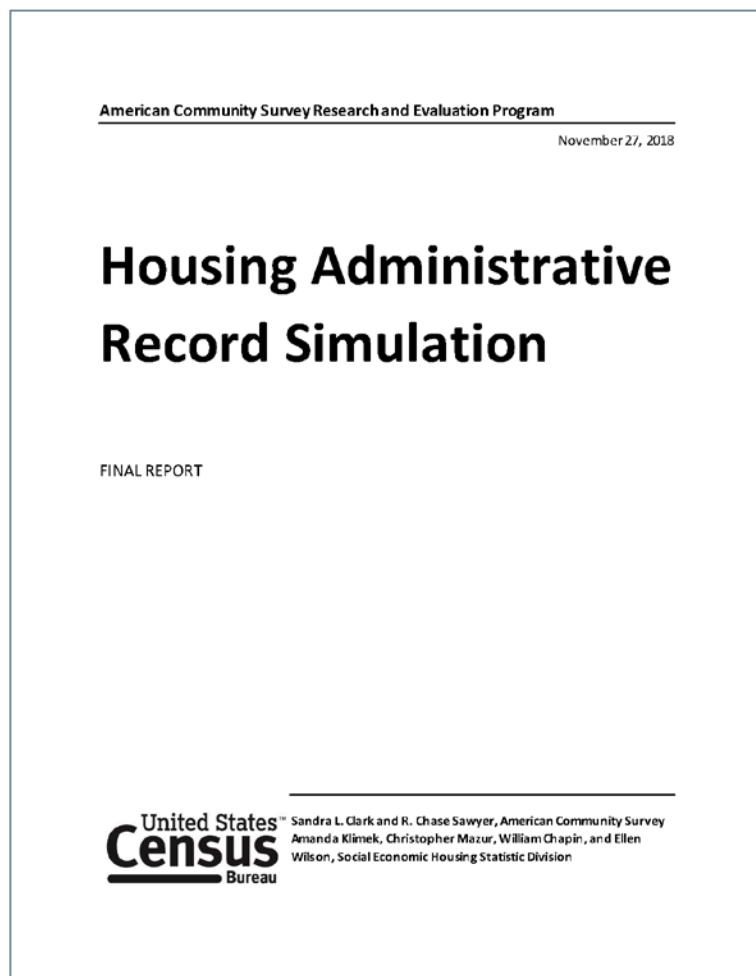
Challenges: Incorporating AR in the ACS

- Sometimes unable to match AR to ACS
- Adapting all modes – difficult for mail mode
- Involves changes to entire survey life cycle
 - Significant resources
 - Risky without thorough testing
- Using AR complicates data disclosure avoidance rules

Conclusions

- Significantly reduces respondent burden in terms of asking these survey items
- Significant improvement in item allocation rates
- Must overcome several challenges
 - Source of AR
 - Incorporating in ACS
- Admin data are different from ACS response data
 - Break-in series
 - Differences in coverage/availability of AR which could unfairly represent some geos
 - Inadvertently impacts other survey items

Research Products



Thank You!

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