

# Geo-Statistical Analysis and Getting to a Decision on Targeted Address Canvassing

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# 2010 Census Address Canvassing

- Covered the entirety of the U.S. and Puerto Rico
  - (except Remote Alaska and northern Maine, which account for nearly 12% of the US land area, but less than 1% of housing units)
- Canvassers traversed every road
  - verified and updated the address list
  - added new features
  - collected GPS points for housing units
- Created a critical baseline set of information
- One of the most expensive decennial census field operations

# Targeted Address Canvassing

## General Questions:

- Is a traditional, on-the-ground canvassing operation necessary to ensure a complete and accurate address list for the decennial census?
- Are there areas of the country in which the address list and locational information can be kept current without canvassing?
- What characteristics identify an area that should be targeted for traditional canvassing?

# Targeted Address Canvassing

## Research Questions and Hypotheses

Research questions include:

- Where does change in the address list occur?
- Where is the MAF not accurate/complete?
- What causes the MAF to be inaccurate/incomplete?
- What correlates to MAF inaccuracies?
- Are small multi-unit dwellings more likely to contribute to undercoverage in the MAF?
- Are areas with high percentages of single unit residential structures built between certain years more likely to be stable?
- Do areas near college campuses tend to have more unpredictable housing situations?

# Targeted Address Canvassing

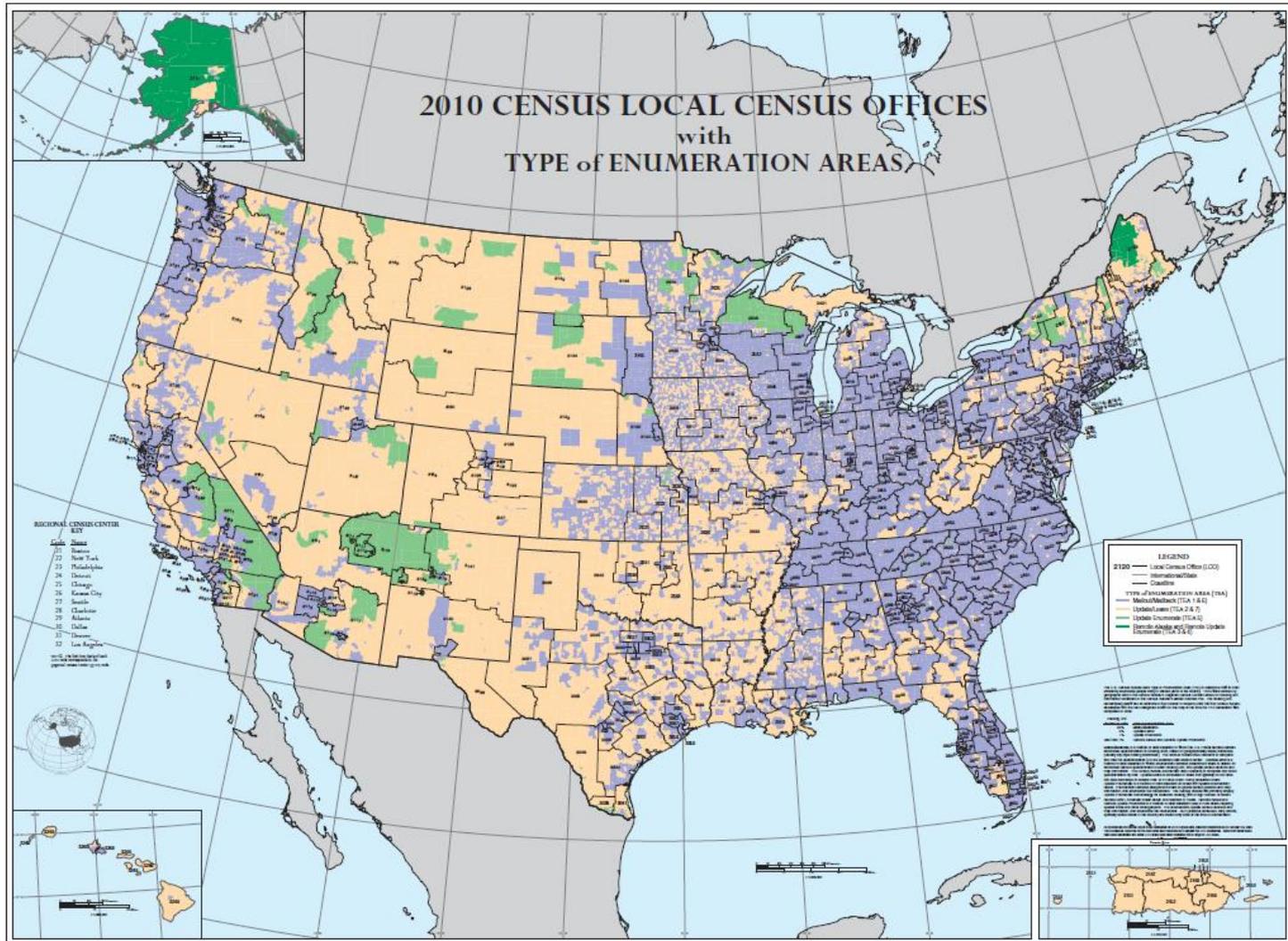
## Research Question:

- Will areas with non-city style addressing require canvassing?
  - For example, we canvassed areas with a high propensity for rural route or P.O. box addressing
  - Update/Leave and Update/Enumerate areas of the country accounted for:
    - Approximately 10% of housing units
    - Approximately 23% of US land area

# Address Indicators

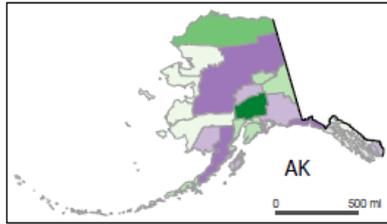
- Overall Address QIs
  - Address consistency
  - Mailability
  - Deliverability
  - Locatability
  - Geocode accuracy

# Type of Enumeration Areas

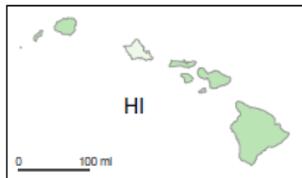
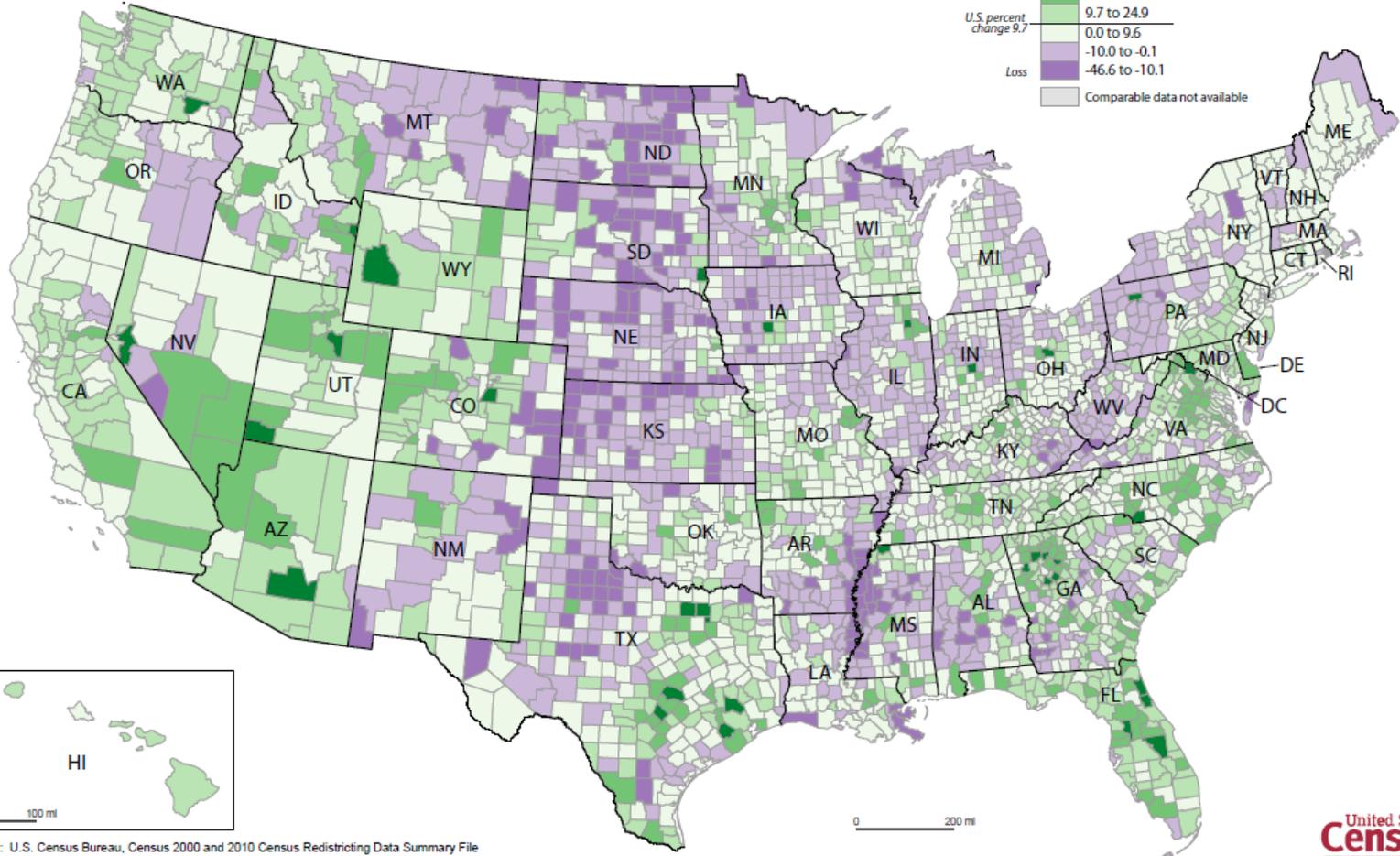
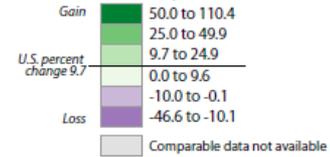


# 2010 Census Results - United States

## Percent Change in Population: 2000 to 2010



### Percent Change by County or County Equivalent



Source: U.S. Census Bureau, Census 2000 and 2010 Census Redistricting Data Summary File  
For more information visit [www.census.gov](http://www.census.gov).

United States<sup>™</sup>  
**Census**  
Bureau

# Data for Analysis and Modeling

Examples of data sources include:

- MAF/TIGER Database
  - Quality indicators
- Delivery Sequence File
- 2010 Census operations
  - Address Canvassing adds, deletes
  - Non-Response Follow-Up adds, deletes
  - Non-ID adds
- 2010 Census housing unit counts
- Population Estimates Program
  - Housing unit estimates (county level)
- Building Permits Survey

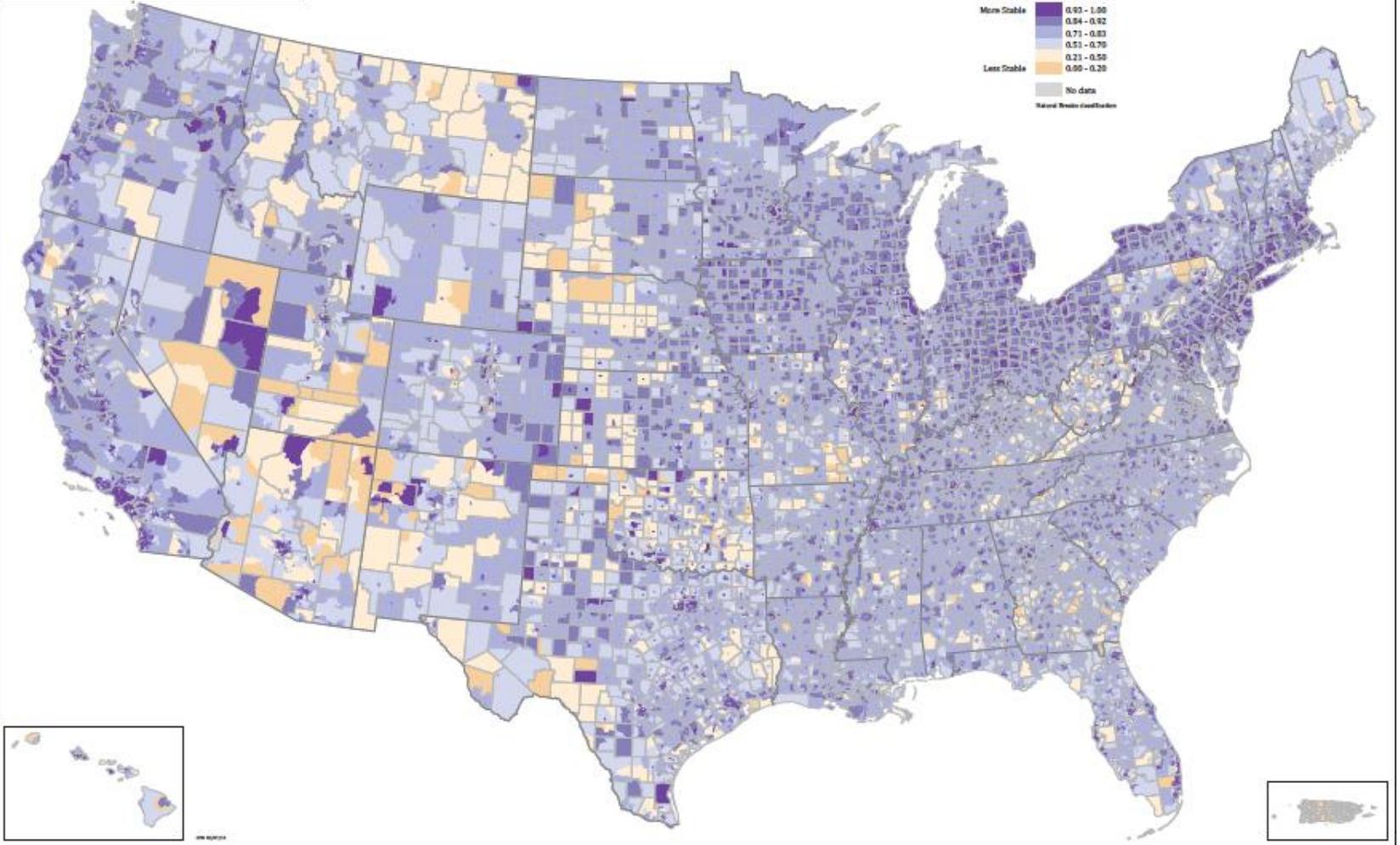
# Targeted Address Canvassing Continuum

- Identifies characteristics and conditions that may play a role in determining whether an area needs to be canvassed.
- Four general categories:
  - Current State
  - 2010 Base
  - Change Detection
  - Predictive Change

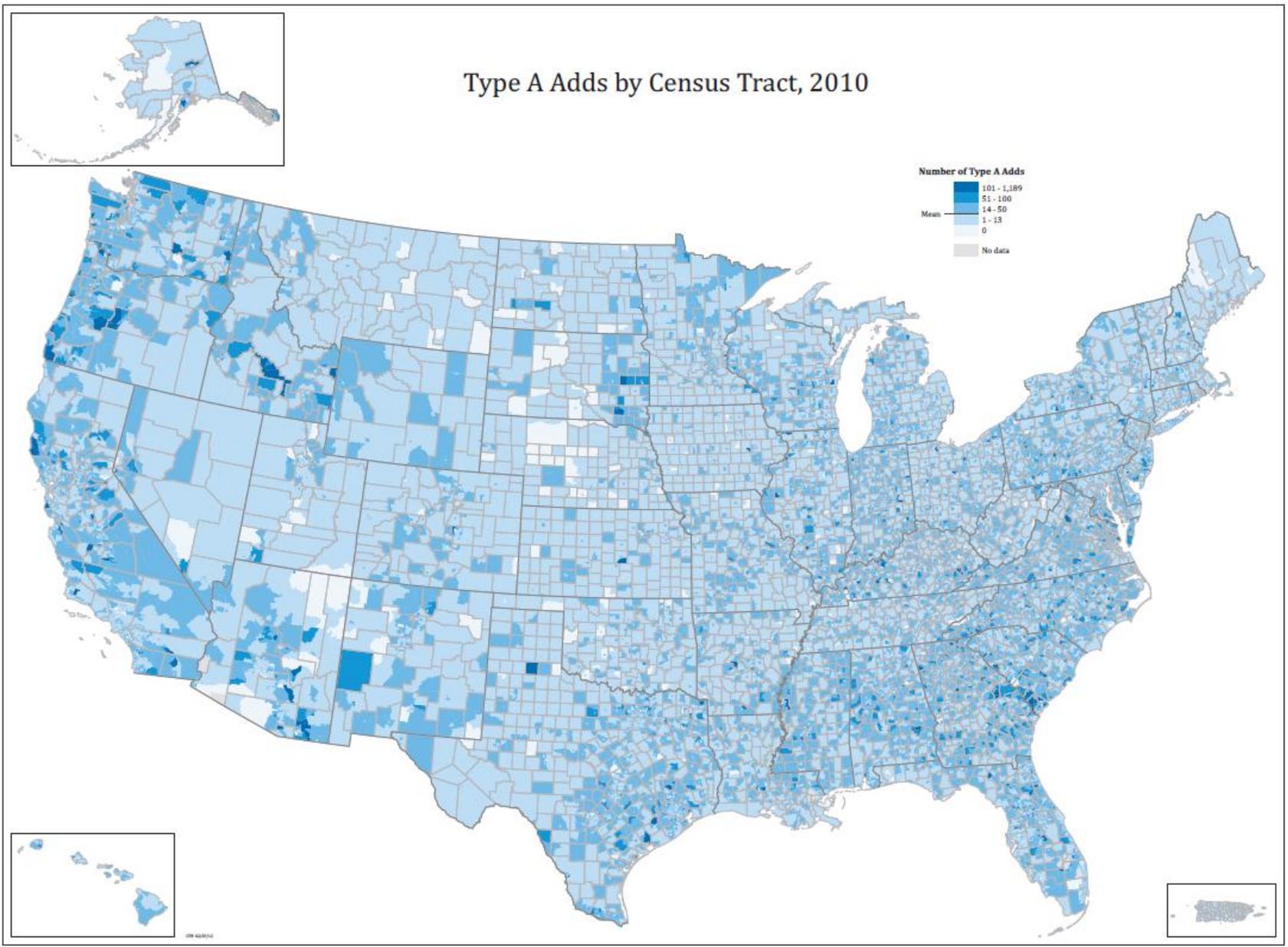
# Targeted Address Canvassing Continuum

- 2010 Base elements include:
  - No changes/substantial changes (adds, deletes, changes) during 2010 operations
  - Census HU counts = residential MAF unit counts
  - Substantial difference between HU counts and residential MAF unit counts
  - Area governments participated/did not participate in 2010 Census geographic programs
  - No Type A non-ID adds/substantial number of Type A non-ID adds
  - Delivery Sequence File (DSF) stability index

# DSF Stability by Census Tract, 2010



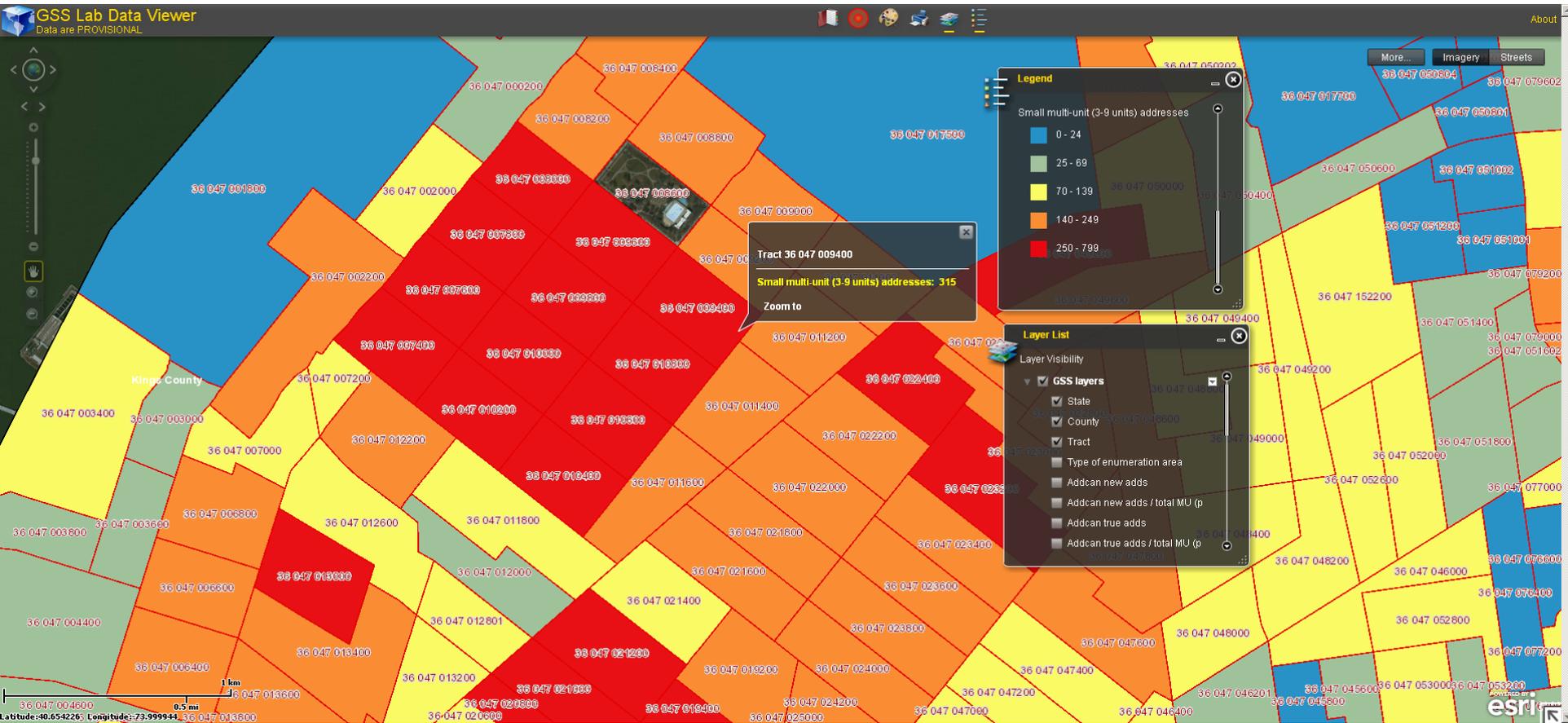
# Type A Adds by Census Tract, 2010



# Targeted Address Canvassing Continuum

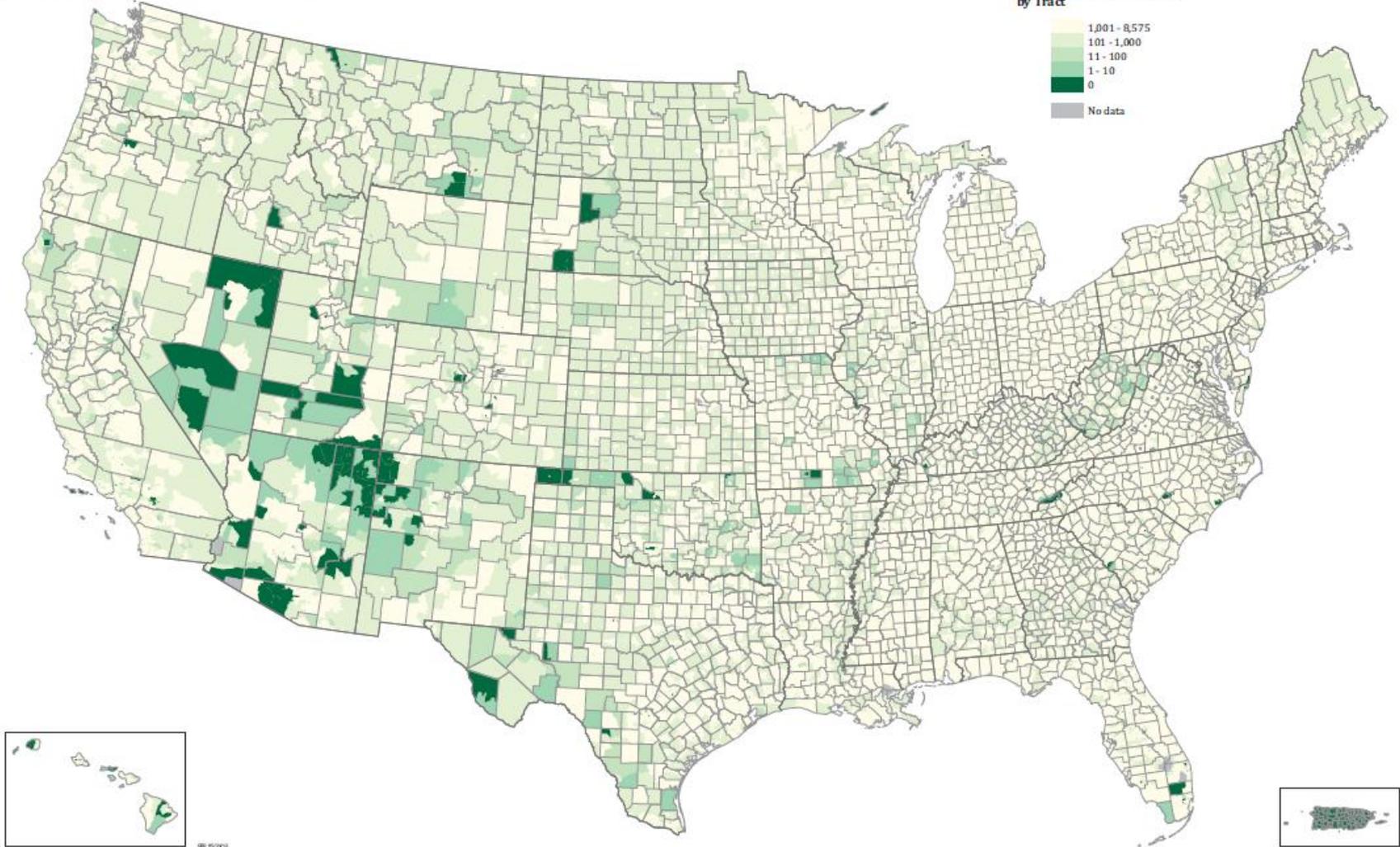
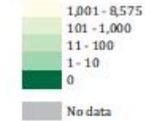
- Current State elements include:
  - Address QI Scores
  - 100% city style addresses/no city style addresses
  - Area known/not known to have hidden housing units, informal housing, unique housing situations
  - Presence of small multi-unit structures
  - Area known/not known to have single- to multi-unit conversions or vice versa
  - Percentage of city-style residential MAF units with MAF structure points
  - DSF coverage and DSF Stability Index

# Distribution of small multi-unit structures in Brooklyn



# DSF Coverage by Census Tract, Spring 2011

Residential Units in the DSF,  
by Tract





# Data Analysis

- How might we use the Targeted Address Canvassing Continuum categories and associated data to understand characteristics for individual tracts and inform decision-making?

Targeted Address  
Canvassing  
Continuum Scores,  
Census Tract 6069.04,  
Howard County,  
Maryland

2010 Base  
Overall Score = 93.7

2010 Base: Category	Score
Ratio of 2010 HU counts to 2010 MAF units	81.5
Percentage of area governments participating in LUCA (one local government)	100.0
Type A non-ID adds as percent of total housing units (Score = 100 – Percent Type A non-ID adds)	99.5
Mail back rate	81.2
No successful CQR cases (no cases = score of 100)	100.0
Undeliverable as Addressed (UAA) as a percentage of total housing units (Score = 100 – Percent UAA)	91.4
DSF Stability Index	97.3
Ratio of Spring 2010 DSF to 2010 Census housing unit count	98.5
Total Points	749.4
Overall Score	93.7

Targeted Address  
Canvassing  
Continuum Scores,  
Census Tract  
6069.04, Howard  
County, Maryland

Current State  
Overall Score = 95.5

Current State: Category	Score
Quality Indicator Score	83.1
Percent City Style Addresses	100.0
Lack of/presence of hidden units	99.0
Lack of/presence of informal or unique housing situations	100.0
Lack of/presence of seasonal housing (Score = 100 = pct seasonal vacant HUs)	99.5
Conversion from single to multi-unit or multi-unit to single (Score = 100 – conversions as pct of all housing units)	100.0
Lack of/presence of hard to count populations	99.0
Percent MAF TIGER agreement on geocodes	98.0
Percent MAF address confirmation rate (matching rate) with admin records	
Percentage of city-style address MAF units preferred MSPs	76.3
DSF Stability Index, Spring 2011-Spring 2012	99.9
GEO Change detection processes indicate no changes have occurred	
Overall Score	95.5

# High Stability Census Tracts

Tract 3406, Harris County, TX

Category	Value
00-10 DSF Stability	1.0
Ratio Fall 09 DSF to 2010 Census HU Count	1.0
Ratio Spring 09 DSF to 2010 Census HU Count	1.0
Type A adds	3
UAA	7
2010 HU	988
DSF Spring 11	988
DSF Fall 10	988
Census 2000 HU	989
Ad Can True Adds	0
Ad Can Deletes	3

Tract 4302.03, Fairfax County, VA

Category	Value
00-10 DSF Stability	1.0
Ratio Fall 09 DSF to 2010 Census HU Count	1.0
Ratio S09 DSF to 2010 Census HU Count	1.0
Type A adds	5
UAA	14
2010 HU	910
DSF spring 11	910
DSF fall 10	910
Census 2000 HU	911
Ad Can True Adds	1
Ad Can Deletes	17

# Questions?

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