

Using 2010 Census Coverage Measurement Results to Better Understand Possible Administrative Records Incorporation in the Decennial Census

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Outline

- Administrative Records (AR) Modeling Background
- Evaluating AR Models
- Census Coverage Measurement (CCM)
- AR Modeling Simulation
- **Use CCM for Evaluation of AR Modeling**

AR Modeling Background

- 2010 Census
 - 136 million addresses
 - 50 million Nonresponse Followup (NRFU) Operation addresses (\$2 billion cost)
- Reduce cost of the NRFU operation while maintaining data quality
- Identify vacant and occupied units using AR
 - Remove from the NRFU field workload
 - Enumerate using AR data

How Do We Evaluate AR Modeling Results?

- Evolving Development
 - Incorporate New Data
 - Refine Models Used
 - Extent of AR Usage
- Mechanisms for evaluating AR Models
 - Mid-decade census tests
 - 2010 Census
 - **2010 CCM**

2010 Census

- Try out AR methods on 2010 Census data
- National-scale effect of changes to methods
- Compare modeling results against 2010 Census 'truth'
- Modeling impact on missing data
- How do I account for errors in the 2010 Census?

Purpose of the 2010 CCM

- Provide estimates of
 - net coverage
 - components of census coverage

For

- persons in housing units
(not people in group quarters)
- housing units

Net Coverage of the Census

Net census coverage (defined as)

$$= \text{estimate of population from survey} \\ - \text{census count}$$

if positive (>0), referred to as net undercount
if negative (<0), net overcount

Components of Coverage for Persons

Census Count

1. Correct enumerations
2. Erroneous enumerations
 - due to duplication
 - others
3. Census imputations

2010 Census Simulation w/ AR

- 2010 NRFU universe – 49.8 million NRFU addresses
- From 49.8 million NRFU units, identify
 - AR Vacant (5.1 million, ≈10.3%)
 - AR Occupied (7.1 million, ≈14.2%)
 - AR No Determination (37.6 million, ≈75.5%)
- ***This is one simulation – we can vary AR models, data, thresholds***

Simulation Evaluation – AR Vacant

- Out of the 5.1 million AR Vacant addresses, compare to 2010 NRFU Results
 - 10% occupied (containing 987 thousand people)
 - 79% vacant
 - 11% non-existent (not a housing unit)
- How do I know NRFU was correct? Apply CCM component estimation methods

Simulation Evaluation – AR Vacant (2)

- Estimate components on all 987 thousand persons enumerated in those occupied households
- Census 2010
 - 95% correct
 - 3% erroneous
 - 2% imputations
- AR Vacant
 - 71% correct
 - 10% erroneous
 - 19% imputations

Simulation Evaluation – AR Occupied

- Out of the 7.1 million AR Occupied addresses, compare to 2010 NRFU Results
 - 90% occupied
 - 8% vacant
 - 2% non-existent (not a housing unit)
- How do I know NRFU was correct? Apply CCM net estimation methods

Person National 2010 Net Coverage Results

Estimate of the Population from CCM (Thousands)	300,667
- Census Count of the Population (Thousands)	<u>300,703</u>
Undercount (Thousands)	-36
Percent Net Undercount (SE)	-0.01% (0.14%)

Person National Simulation Net Coverage Results

Estimate of the Population from CCM (Thousands)	300,667
Census Count of the Population (Thousands)	300,703
AR People in AR Occupied Units (Thousands)	+16,243
Census People in AR Occupied Units (Thousands)	-16,757
Census People in AR Vacant Units (Thousands)	-987
Simulation Count of the Population (Thousands)	300,230
Simulation Undercount (Thousands):	437
Simulation Percent Net Undercount (SE)	0.15% (0.14%)

Person National Simulation Net Coverage Results (2)

- 2010 Census: 0.01% overcount
- **AR Modeling Simulation: 0.15% undercount**

- Methods can be use to identify subnational changes

- Example: 50+ female
 - 2010 CCM: 2.35% overcount
 - **AR Modeling Simulation: 1.96% overcount**

Conclusions and Future Work

- AR Modeling process informed by mid-decade testing and 2010 Census data
- **Use 2010 CCM results as an additional tool to help AR model refinement**
- Future Work: Use 2010 CCM housing unit results to help AR model refinement

Thank you!

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