A Closer Look at the Quality of Small Area Estimates from The American Community Survey

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The Charge for ACS

- To replace the decennial census sample
- To produce reasonable, accurate, reliable, and consistent data

Overview

- Background
- Survey Errors
- Results
- Conclusions

History of the Census Sample

Census	Sampling Rates	Expected Sample	Actual Sample
1940	5%	5%	N/A
1950	20%	20%	19.95%
1960	20% and 5%	25%	24.5%
1970	15% and 5%	20%	19.6%
1980	1:2 and 1:6	19.8%	18.4%
1990	1:2; 1:6; 1:8	17.6%	16.0%
2000	1:2; 1:4; 1:6; 1:8	17.3%	15.8%

The ACS Design

- Mirrors the Census 2000 differential systematic sampling
- Uses the best mail procedures
- Uses the best interviewing methods

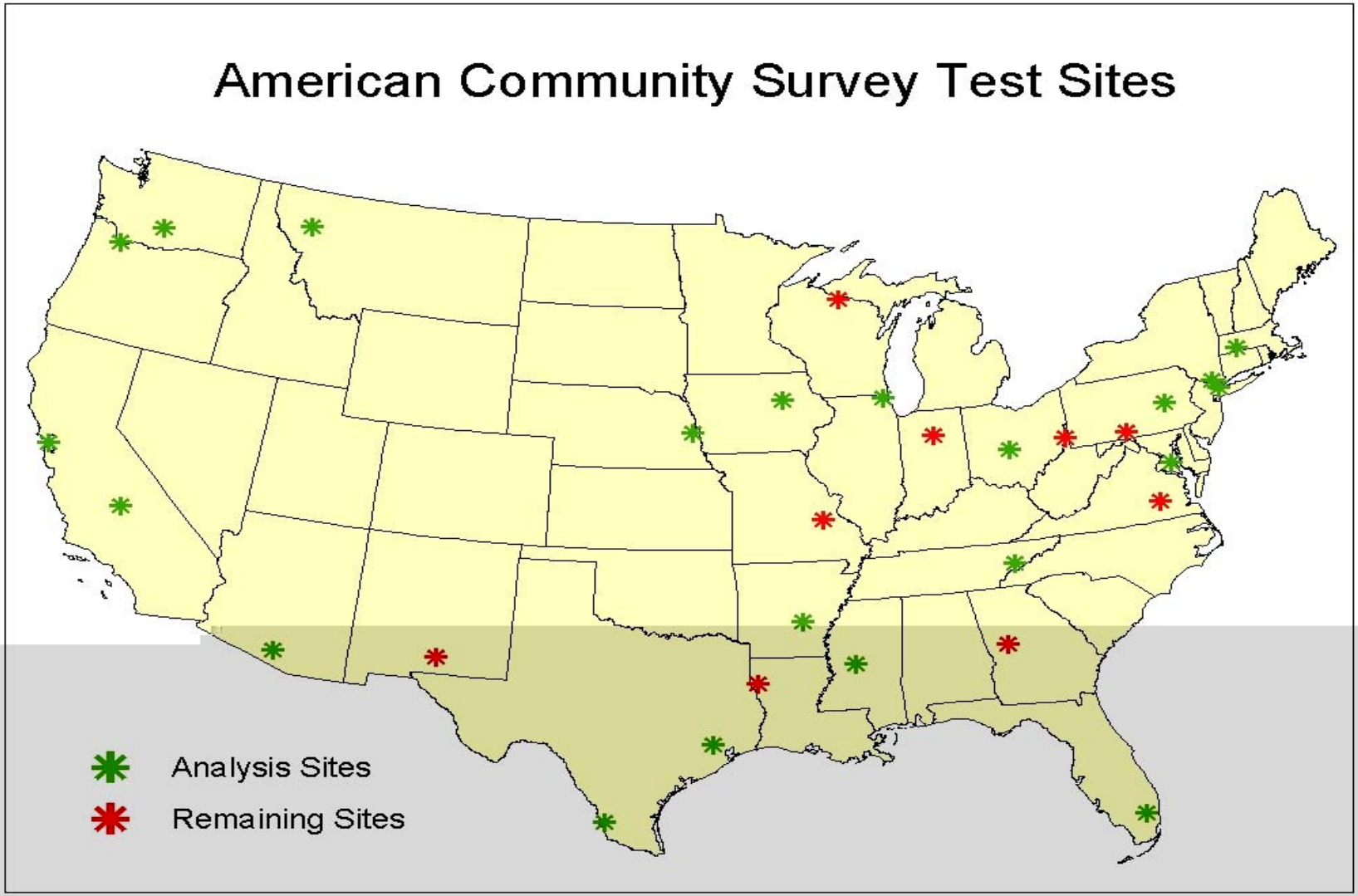
Sample Survey Error

- Sampling Error: affected by sample design, sample size, and the extent of nonresponse
- Nonsampling Error: affected by nonresponse, measurement, processing, and coverage
- Purpose: to establish the relationship between levels of nonresponse in ACS and the census sample

Measures for Comparison

- Unit Nonresponse to overall samples
- Item Nonresponse to individual questions
- Noninterview and Proxy rates for non-mail components
- Self-Response Rate

American Community Survey Test Sites



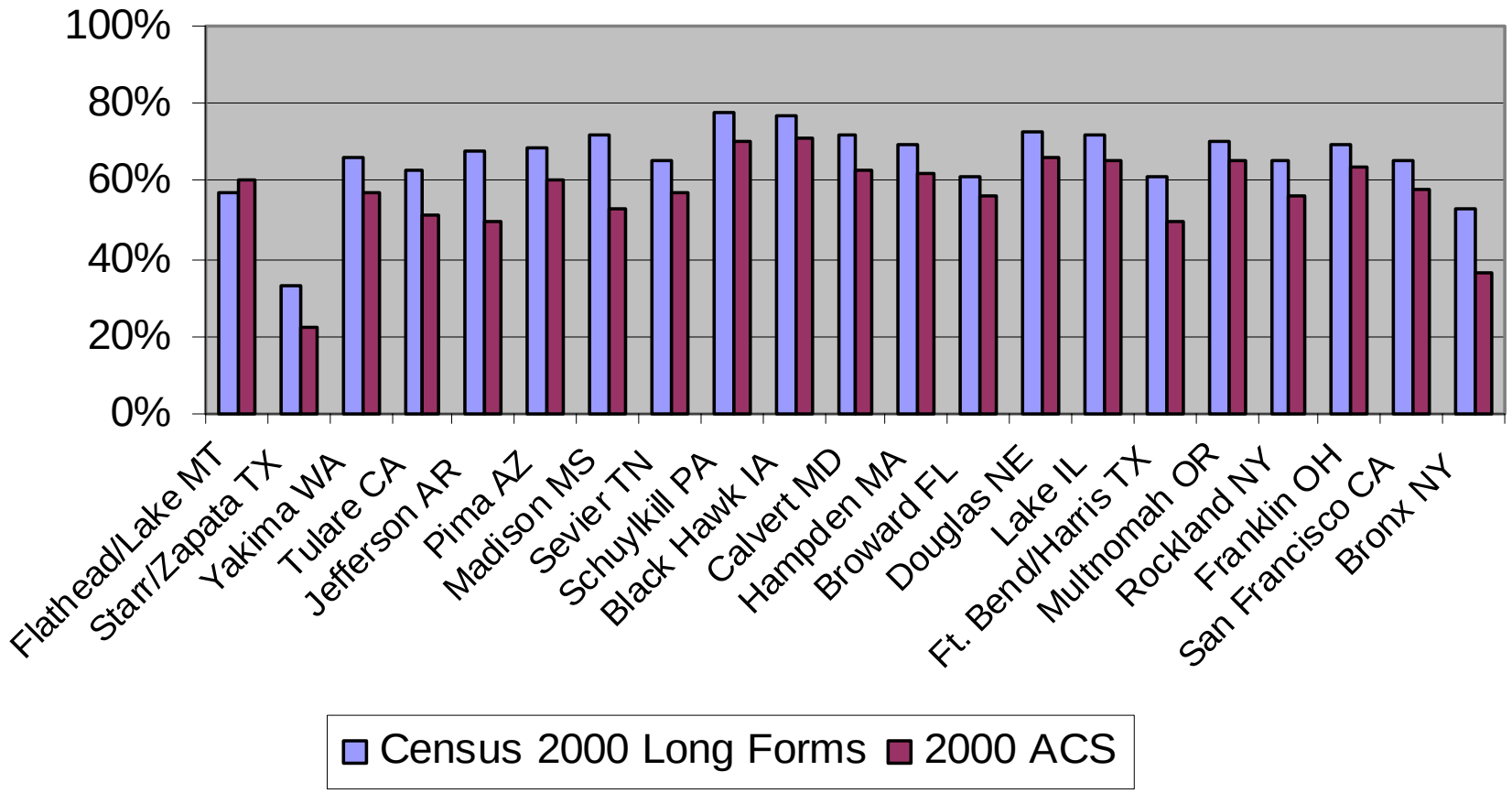
What to Look For

- How the levels of response and nonresponse in the ACS compare to the Census 2000 long form sample.
- How these levels vary across the sites

The Role of Self-Response

- To control the introduction of biases into the data by interviewers/enumerators
- To allow respondents to answer questions privately, with time to refer to records
- To reduce the cost of survey data collection

Self-Response Rates



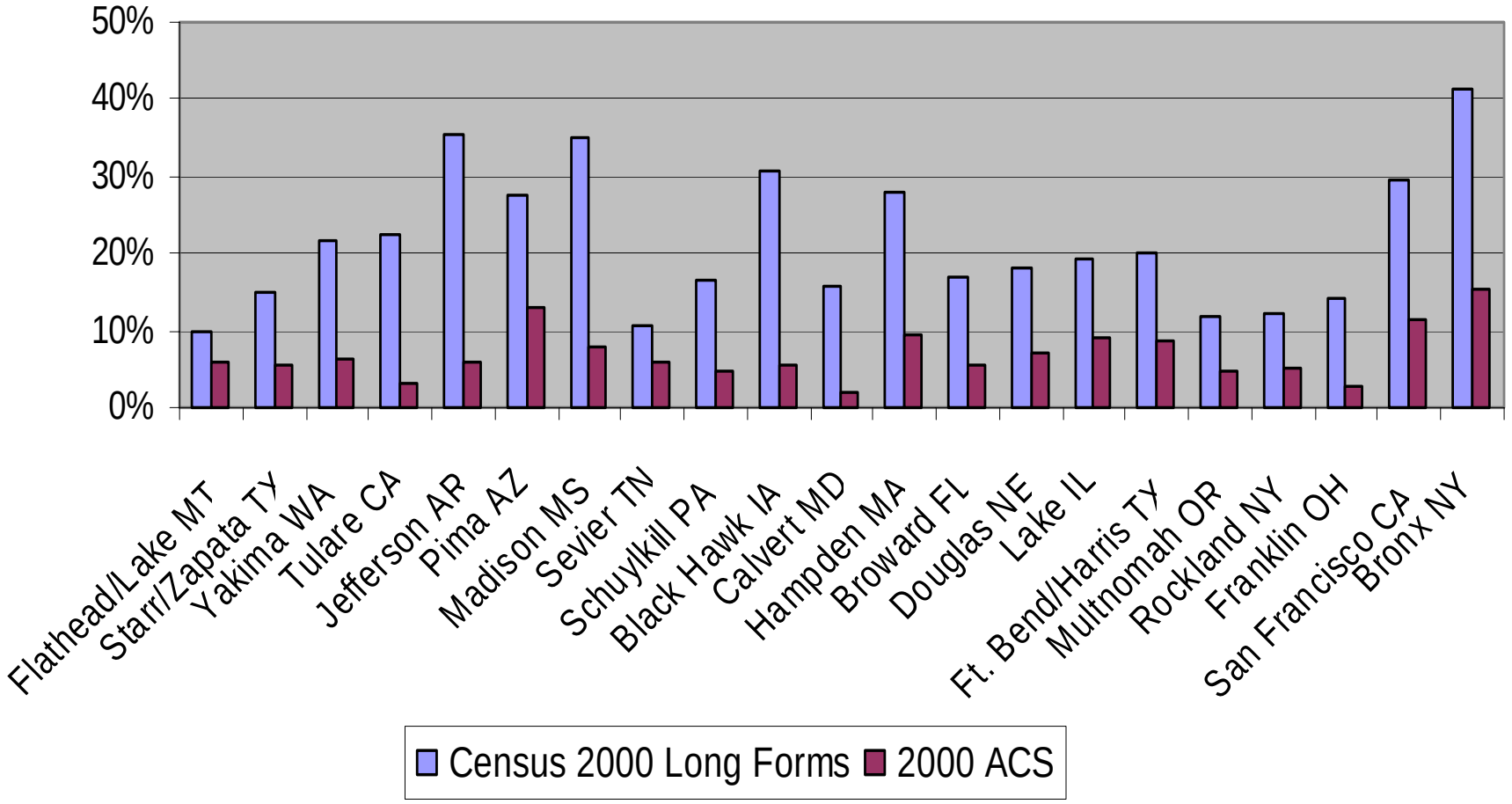
Self-Response Findings

- As expected, the ACS self-response rate is lower than Census 2000 long form self-response
- The quality of ACS estimates depends on the success of nonresponse follow-up operations

Noninterviews

- No interview conducted, or less than the required minimal amount of information is collected
- Mail return units are rarely noninterviews
- Noninterview rate is an indicator of follow-up data accuracy

Follow-up Noninterview Rates



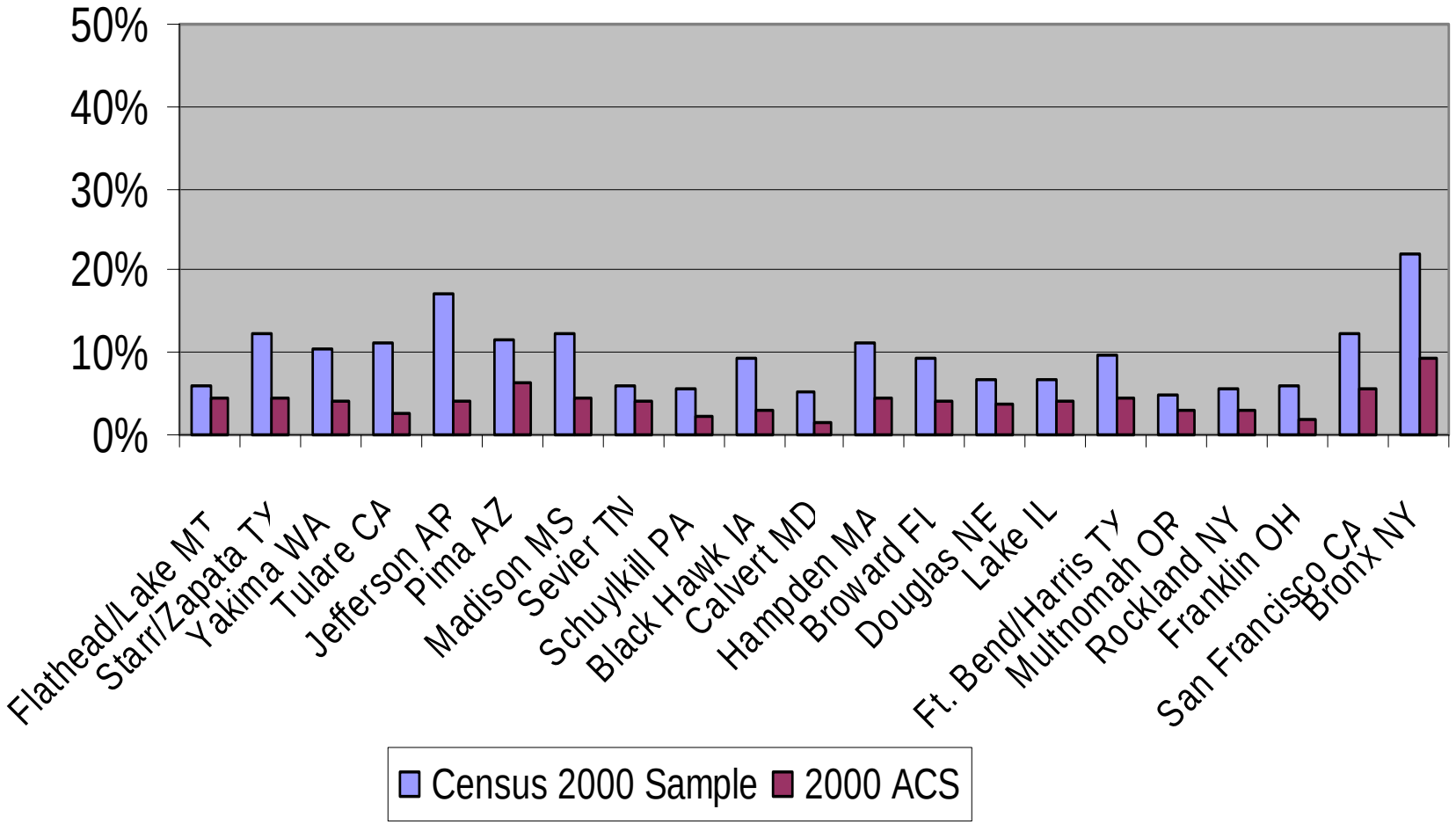
Follow-up Findings

- ACS follow-up noninterview rate is lower than Census 2000 long form rate in every site
- ACS noninterview rate is more consistent across sites than census long form noninterview rate
- Acceptance of proxy data in census increases the non-sampling error potential

Unit Nonresponse

- Most commonly used measure of overall survey data collection success
- Level is an indicator of bias potential
- Can vary widely from area to area
- Impacts the quality of all estimates

Total Unit Nonresponse Rates



Unit Nonresponse Findings

- ACS unit nonresponse consistently below that of Census 2000 sample
- Little difference between ACS unit nonresponse from site to site regardless of demographics, except for the Bronx

Impact of Unit Nonresponse

- Increases potential for bias in the results
  - Characteristics of nonresponse units are not known
  - Nearly all noninterview units in both ACS and census are in the follow-up universe
  - Characteristics of interviewed mail return and follow-up units are known and are different

Item Nonresponse

- Can be a greater threat to individual survey distributions than unit nonresponse
- Imputation methods can distort results if too much data are missing
- Allocation rates are used to measure item nonresponse levels

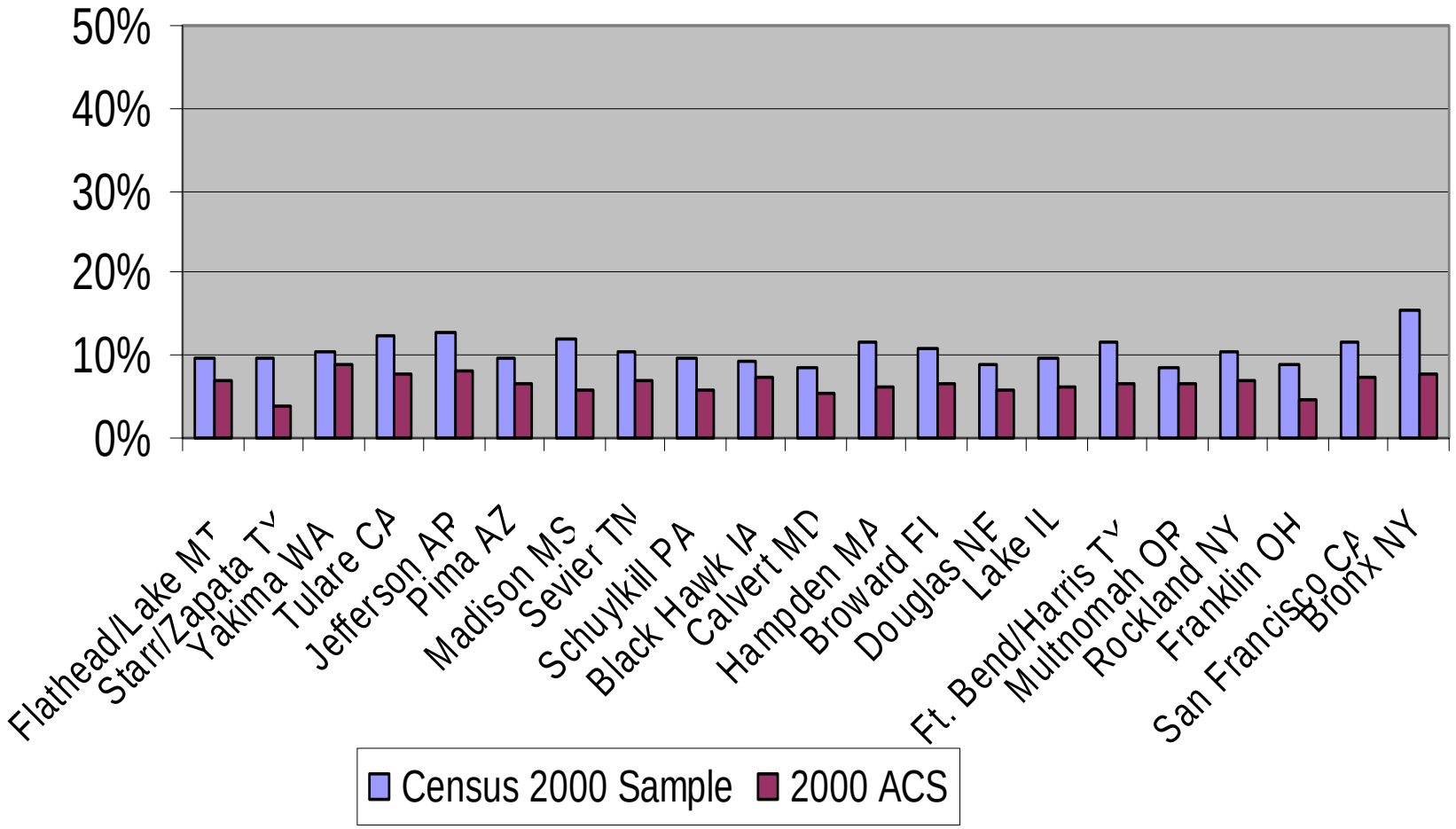
The Summary Allocation Rate

- An overall measure of the amount of required data that was not collected in each site

- Based on 54 population items and 29 housing items

Total allocations made to all items /
Total required answers

Summary Allocation Rates



Item Nonresponse Findings

- Overall item nonresponse in every site is lower in ACS than in the Census 2000 sample
- ACS allocation rates are more consistent across sites than the census sample rates, regardless of demographics

Final Thoughts

- Use unit and item nonresponse, as well as level of proxies, to judge overall survey accuracy
- Nonresponse error concentrated in specific collection modes is not randomly missing, and increases potential biases
- More time and effort should be devoted to measuring non-sampling error

Conclusions

- Sampling error on ACS estimates will be higher than on census sample estimates
- Nonresponse-related non-sampling error on ACS estimates will be lower than on census sample estimates
- Total non-sampling error on ACS estimates will most likely be more consistent across all types of areas than on census sample estimates
- Chip, you were right!