

# 2010 Census Coverage Measurement Results

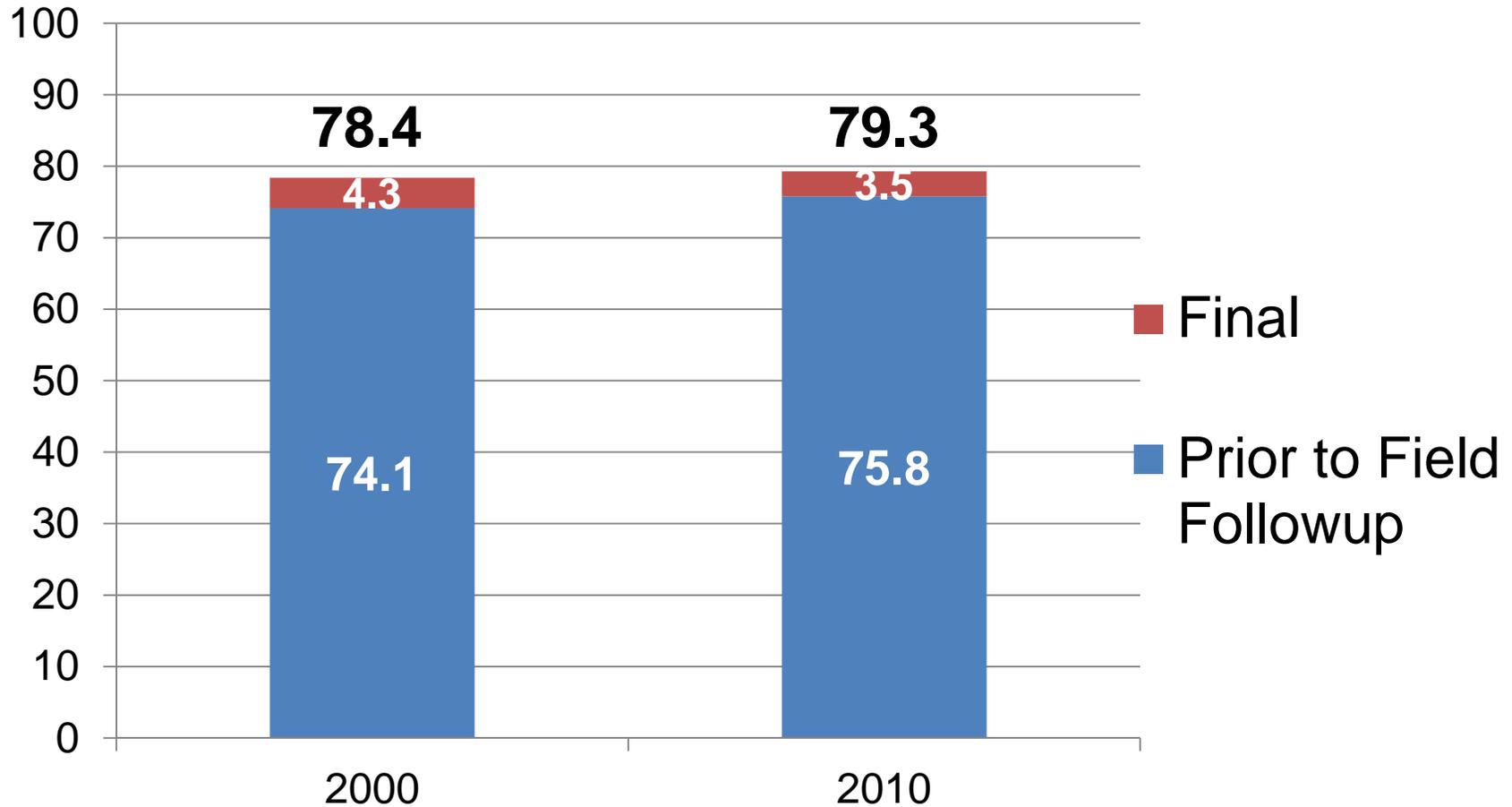
## News Conference

# Coverage of the Census

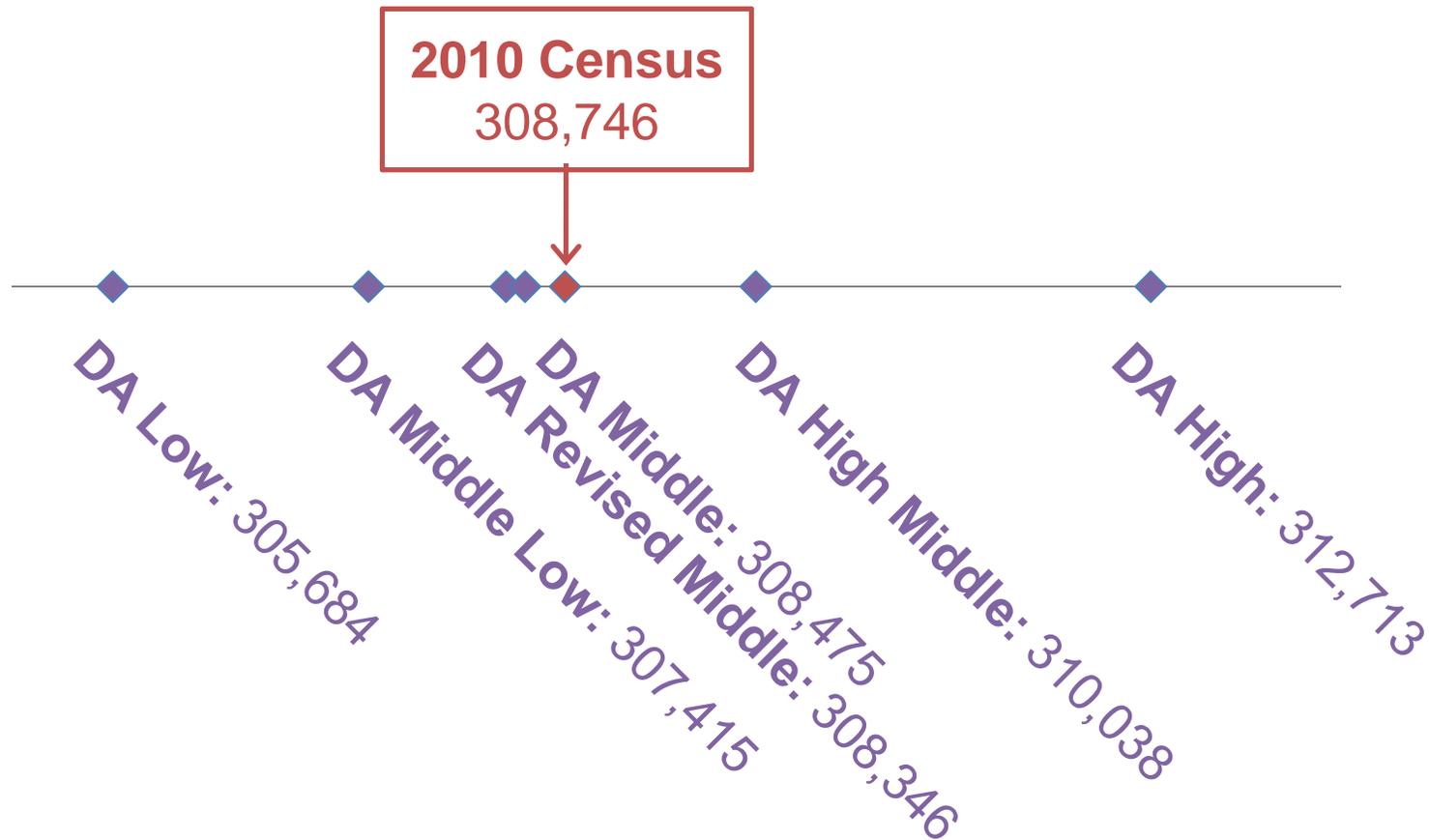
Several ways to measure quality of census

- Census process indicators
- Demographic Analysis and other types
- Post-enumeration survey, CCM

# Return Rate: 2000 vs. 2010



# 2010 Census and Demographic Analysis (in Thousands)



# Coverage of the Census

Several ways to measure quality of census

- Census process indicators
- Demographic Analysis and other types
- Post-enumeration survey, CCM

# Census Coverage Measurement Universe

- Household Population and Housing Units
- Excludes
  - Group Quarters and Group Quarter Population
  - Remote Alaska

# Census Count of the CCM Household Population

2010 Census Count	308,745,538
Group Quarters Population	- 7,987,323
Remote Alaska	- 54,777
Census Count of CCM Household Population	300,703,438

# Coverage of the Census

*Net census coverage* (defined as)

$$\begin{aligned} &= \text{estimate of population from survey} \\ &\quad - \text{census count} \end{aligned}$$

if positive ( $>0$ ), referred to as net undercount

if negative ( $<0$ ), net overcount

# Coverage of the Census (continued)

*Percent Net coverage* (defined as)

$$= \frac{\text{estimate from survey} - \text{census count}}{\text{estimate from survey}} \times 100$$

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

# Results for Persons

# National Net Coverage Results

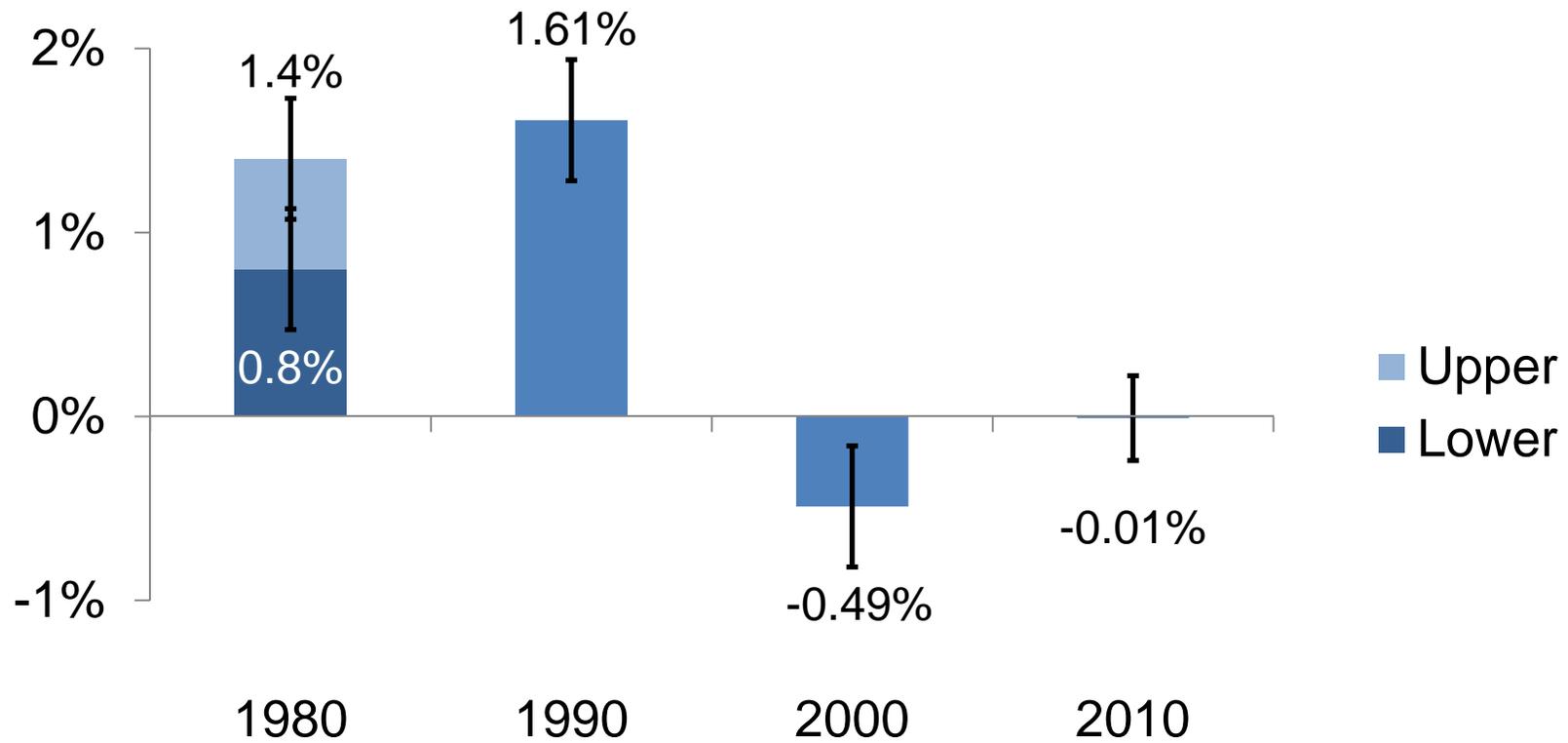
Census Count of the Population (Thousands): 300,703

Estimate of the Population from CCM  
(Thousands): 300,667

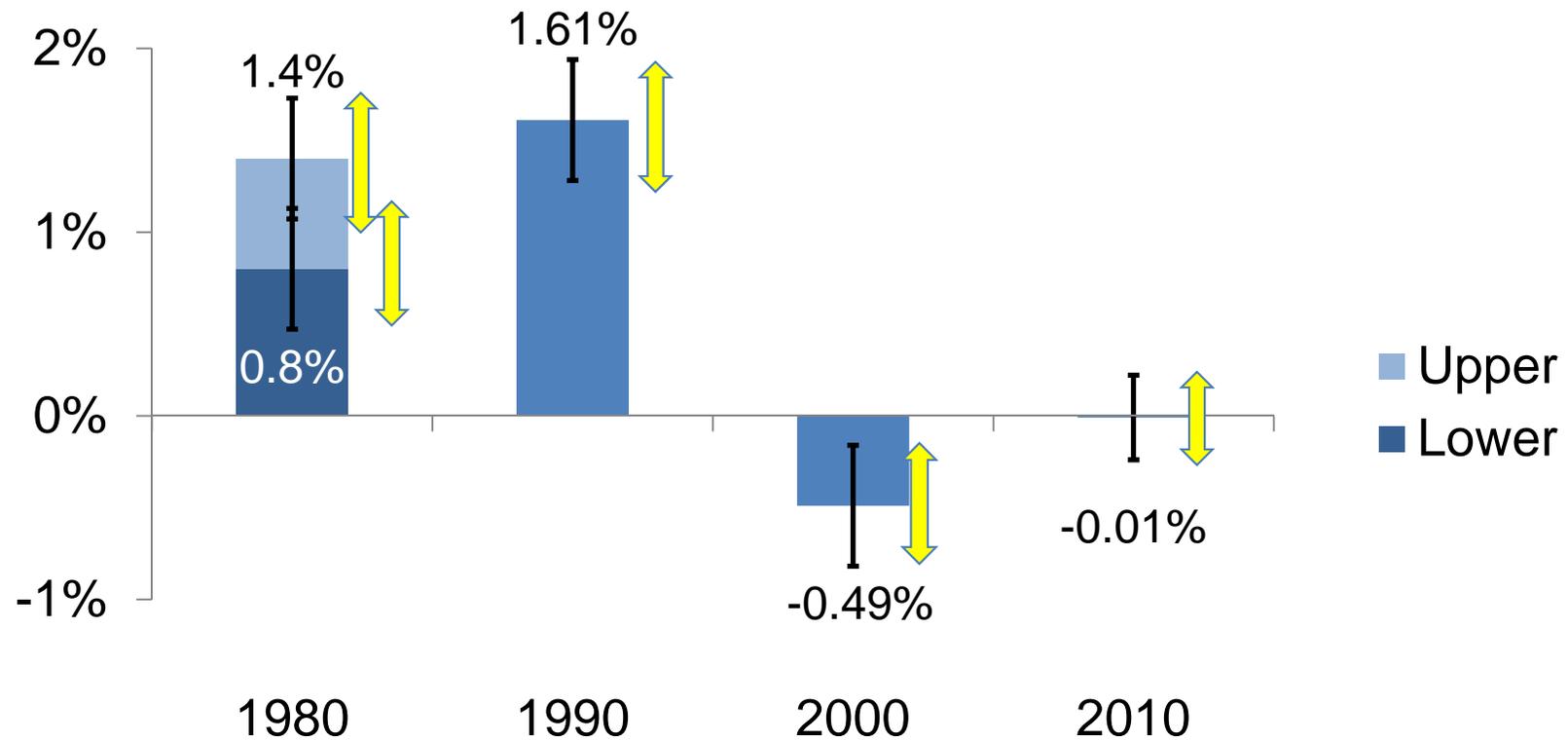
Overcount (Thousands): 36

Percent Net Undercount: -0.01%

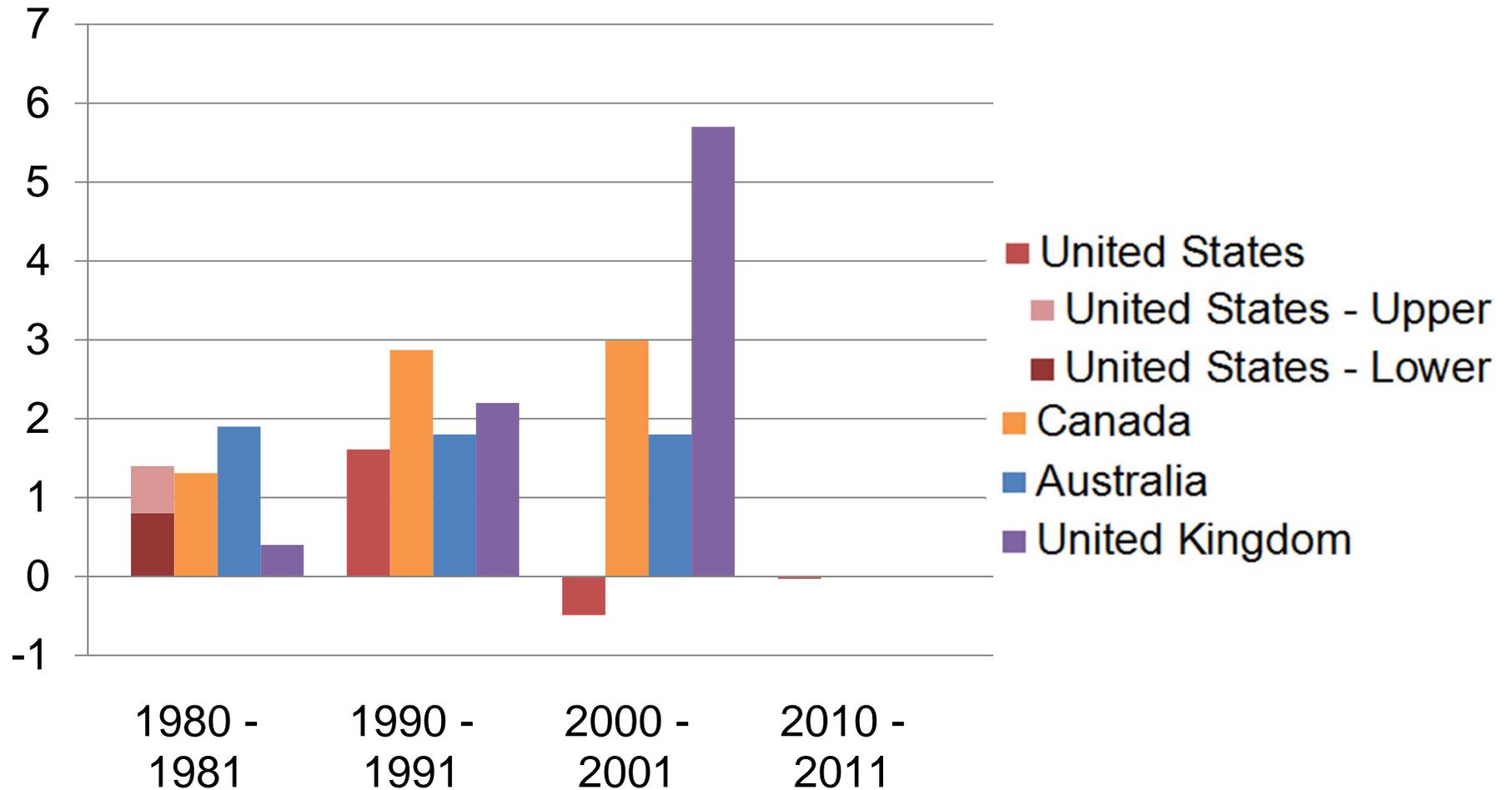
# U.S. Total Percentage Net Undercount from 1980 - 2010



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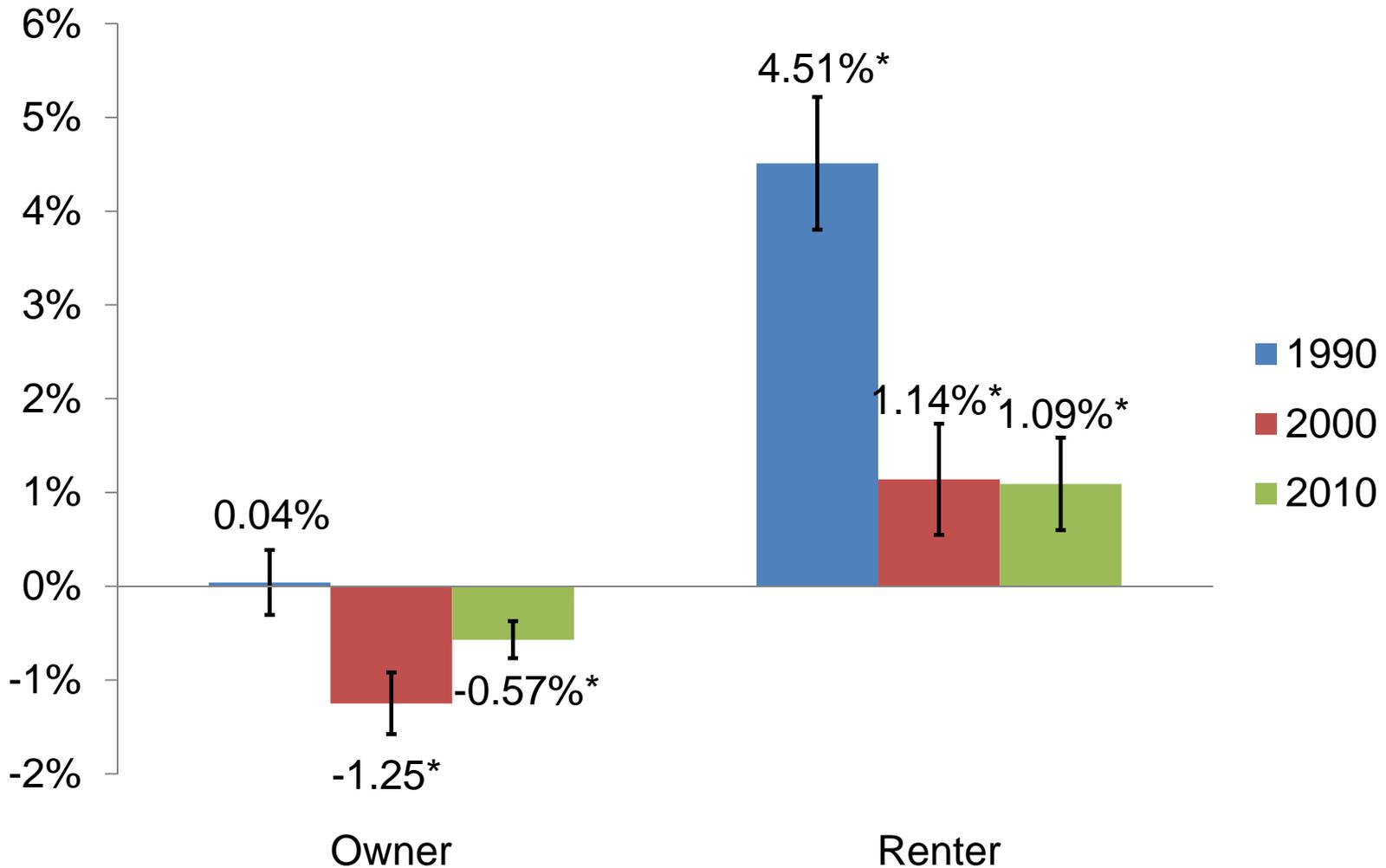


## Household Population Net Undercount for International Censuses of Population and Housing



Note: The United Kingdom's increase rate is due to the handling of imputed "absent households" in 2001.

# Percentage Net Undercount for Persons by Tenure 1990 – 2010



\* Statistically significantly different from zero

## Percentage Net Undercount by Race and Hispanic Origin

	1990	2000	2010
Non-Hispanic White	0.68*	-1.13*	-0.84*
Non-Hispanic Black	4.57*	1.84*	2.07*
Non-Hispanic Asian	2.36*	-0.75	0.08
American Indian on Reservation	12.22*	-0.88	4.88*
American Indian off Reservation	0.68*	0.62	-1.95
Native Hawaiian or Pacific Islander	2.36*	2.12	1.34
Hispanic Origin	4.99*	0.71	1.54*

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	1990	2000	2010	Is there a significant difference from 2010?	
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## Percentage Net Undercount by Age for Children 1990-2010

Age	1990	2000	2010
0 to 4	3.18*	-0.46	0.72*
5 to 9			-0.33
10 to 17		-1.32*	-0.97*

\* Statistically significantly different from zero

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10 to 17		-1.32*	-0.97*		

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## Percentage Net Undercount by Age and Sex for Adults 1990-2010

Age and Sex		1990	2000	2010
18 to 29	Males	3.30*	1.12*	1.21*
18 to 29	Females	2.83*	-1.39*	-0.28
30 to 49	Males	1.89*	2.01*	3.57*
30 to 49	Females	0.88*	-0.60*	-0.42*
50+	Males	-0.59*	-0.80*	-0.32*
50+	Females	-1.24*	-2.53*	-2.35*

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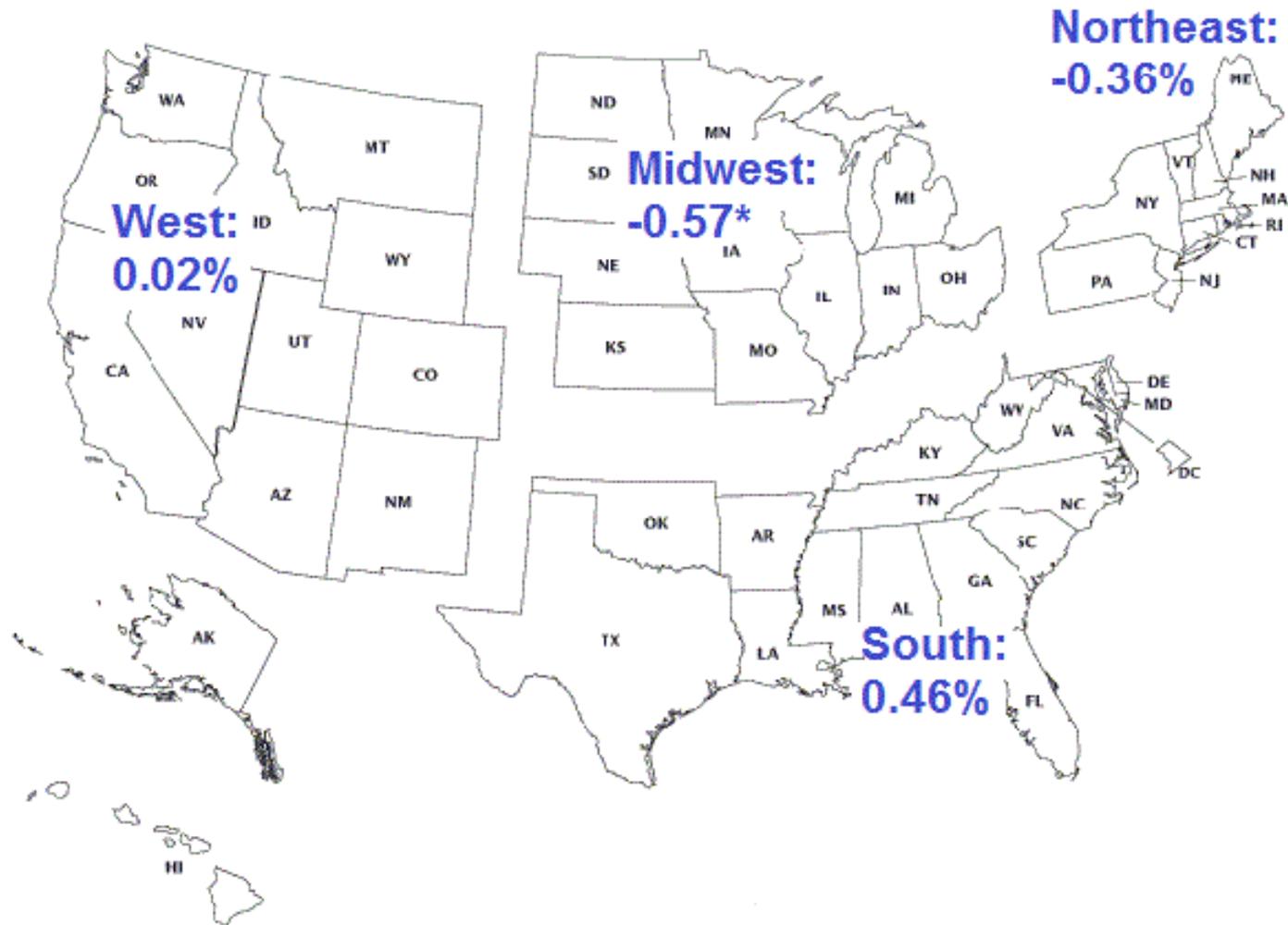
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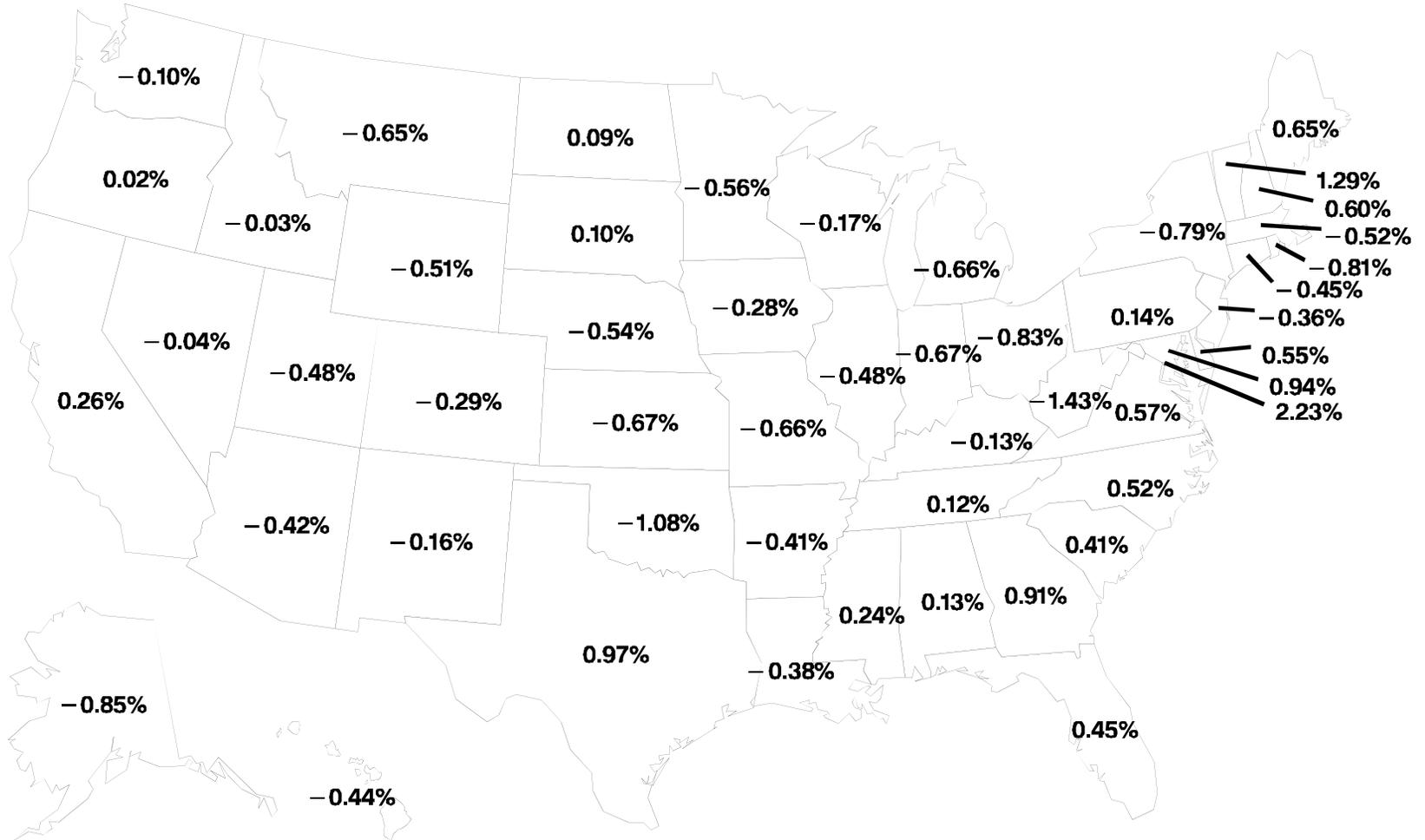
# Percentage Undercount for Persons by Region in 2010



\* Statistically significantly different from zero

# Percentage Net Undercount for Persons by State

No state or DC has a statistically significant undercount or overcount



# Percent Net Undercount for Persons for Counties and Places

- 100,000+ Total Population
- No county or place has a statistically significant undercount or overcount.

# Summary: Net Error

- Compared to prior censuses, the percentage undercount for 2010 was smaller.
- At the national level, there was no statistically significant undercount or overcount of people in the census.
- Classical patterns observed in past censuses were repeated in 2010
  - Differentials among some of the race/Hispanic origin groups

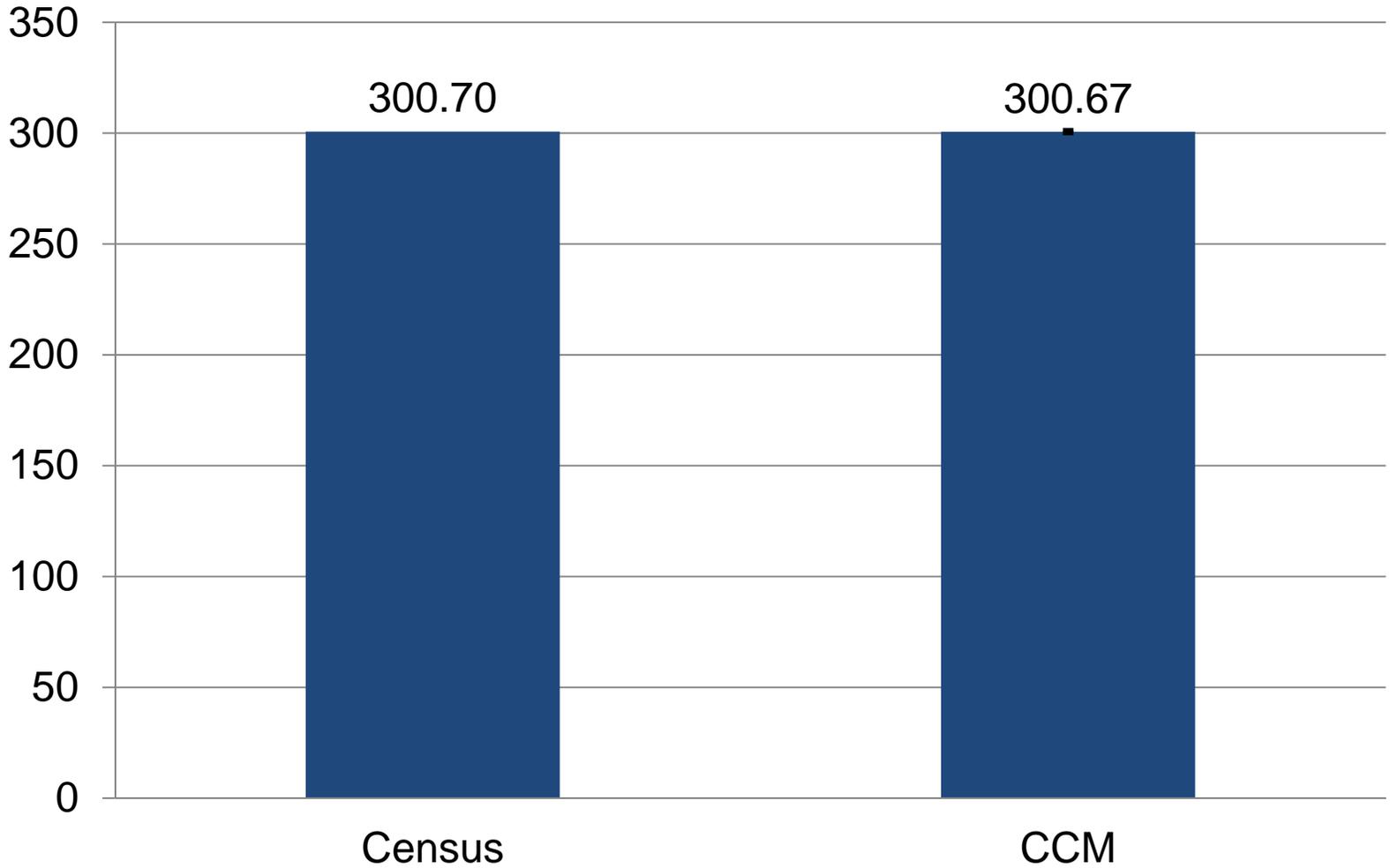
# Components of Census Coverage: For Persons

# Components of Census Coverage

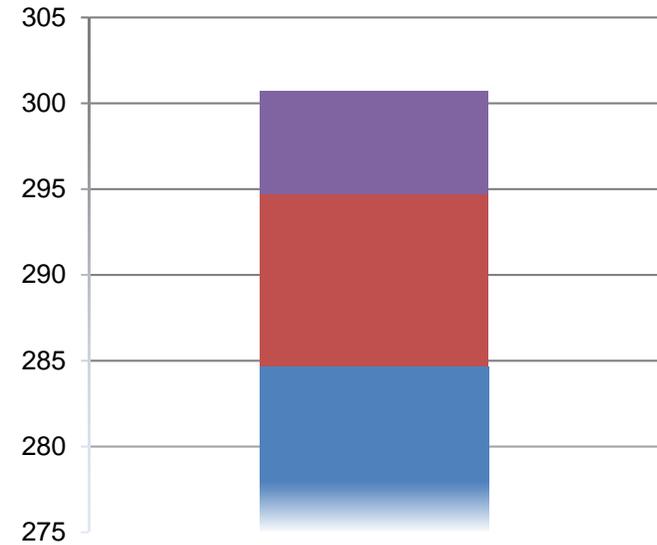
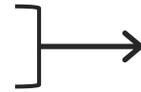
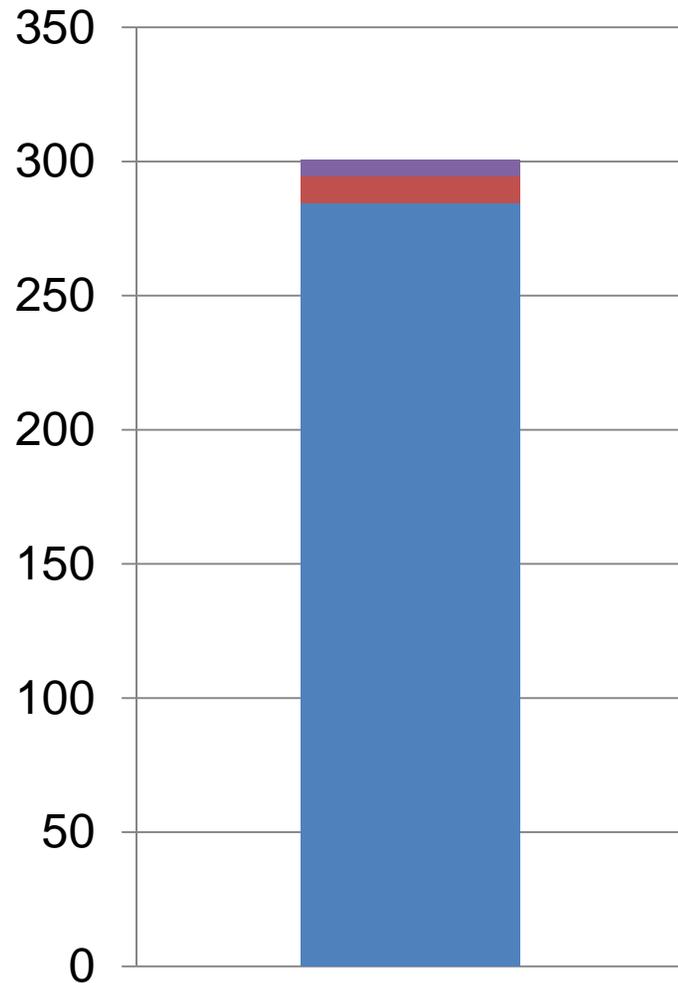
2010 CCM: First time we've produced ...

- Extensive, detailed estimates of components
- Estimates of net error or components for census operations

# Census Count and the CCM Estimate (Level, in Millions)



# National Components of the Census Count



- Whole-Person Census Imputations
- Erroneous Enumerations
- Correct Enumerations

## U.S. Persons: National Components of Census Coverage (in Millions)

Component of Census Coverage	Estimate	Standard Error	Percent	Standard Error
Census Count	300.7	0	100.0	
Correct enumerations	284.7	0.20	94.7	0.07
Erroneous enumerations	10.0	0.20	3.3	0.07
Due to duplication	8.5	0.19	2.8	0.06
For other reasons	1.5	0.05	0.5	0.01
Whole-Person Imputations	6.0	0	2.0	0

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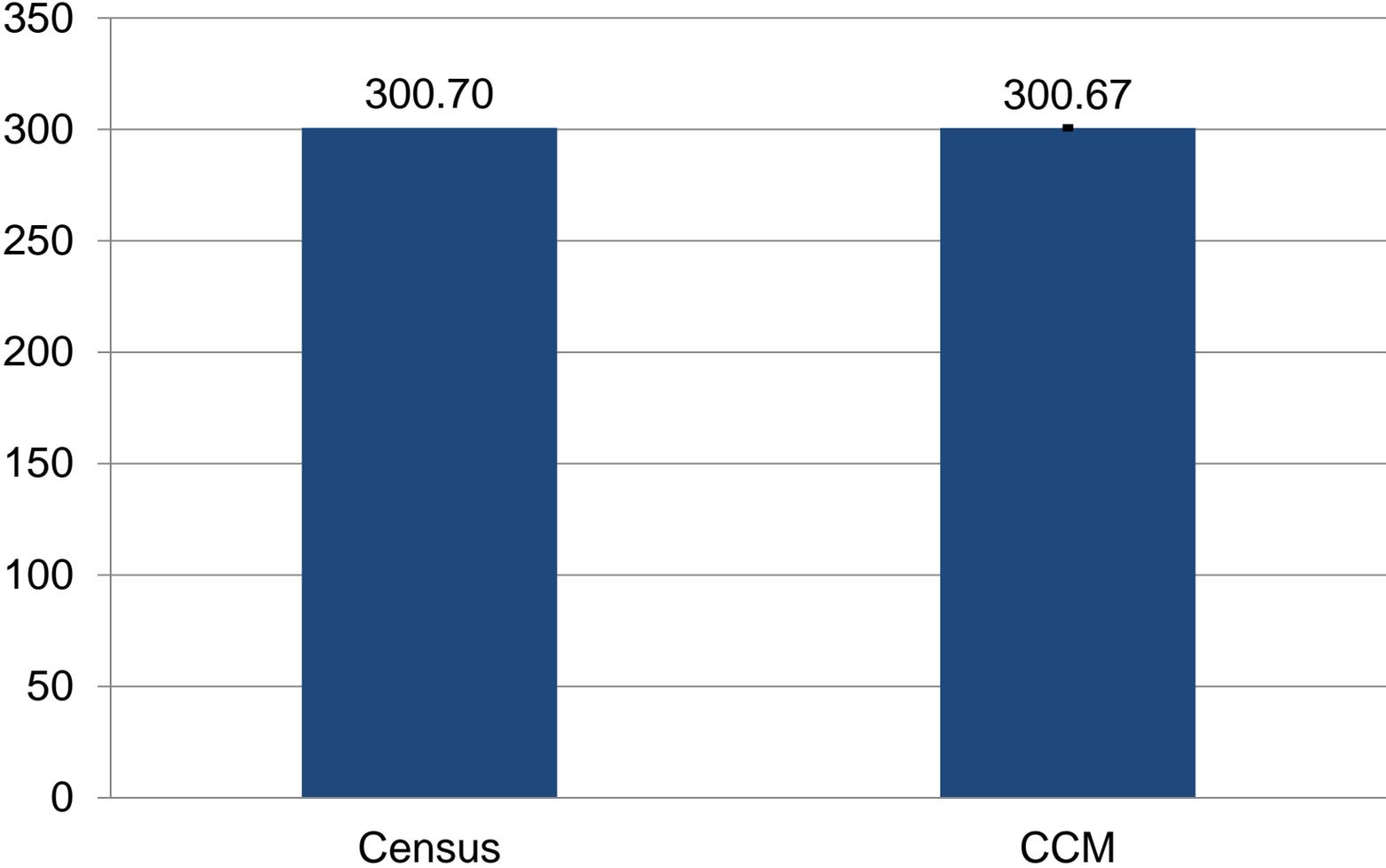
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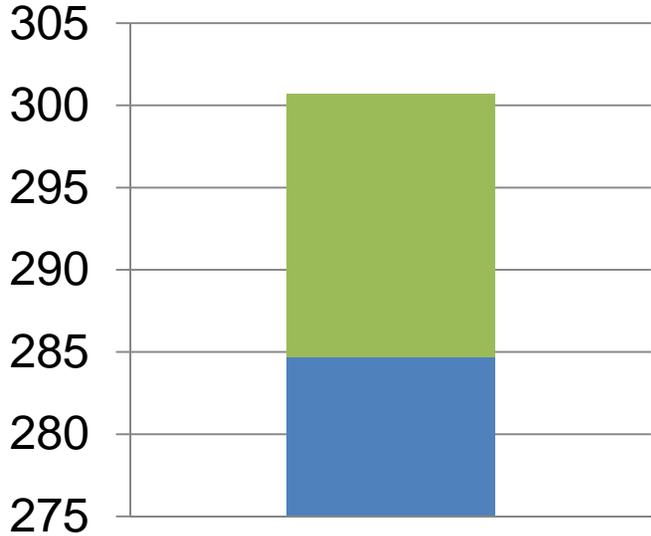
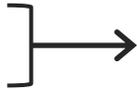
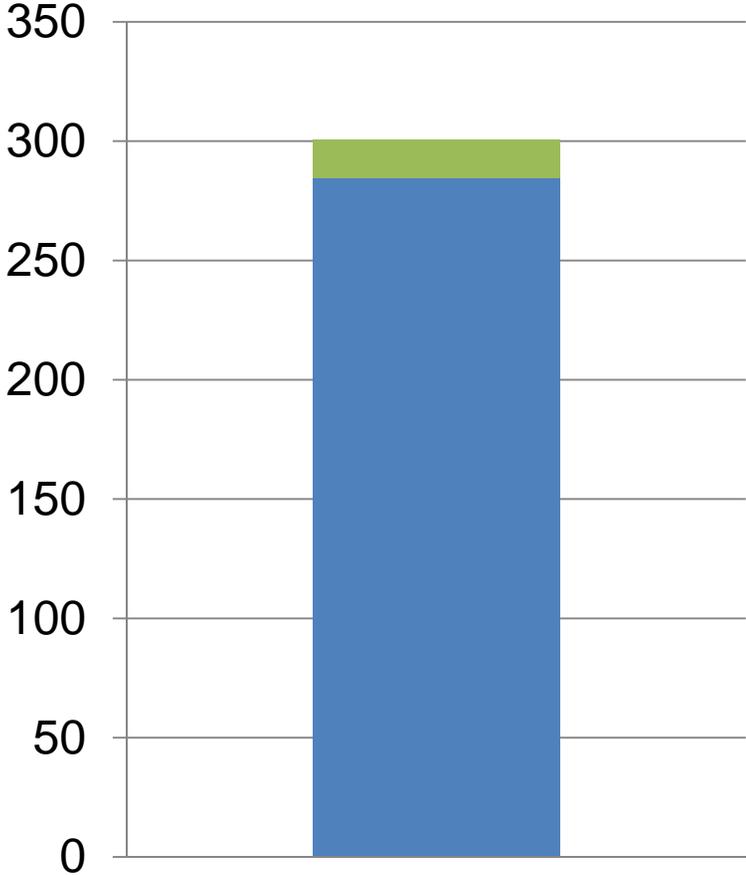
# Whole-Person Census Imputations

- "Imputation" here refers to the characteristics being statistically imputed or inserted
- For over 80% of these cases (4.8 million), we know how many people lived there, but the people are missing characteristics
- For over 95% of these cases, we know the housing unit was occupied, but the people are missing characteristics

# Census Count and the CCM Estimate (Level, in Millions)



# National Components of the CCM Estimate



- Omissions
- Correct Enumerations

## U.S. Persons: National Components of the CCM Estimate (in Millions)

Component of Census Coverage	Estimate	Standard Error	Percent	Standard Error
Estimate of Pop. from CCM	300.7	0.43	100.0	
Correct enumerations	284.7	0.20	94.7	0.1
Omissions	16.0	0.44	5.3	0.1

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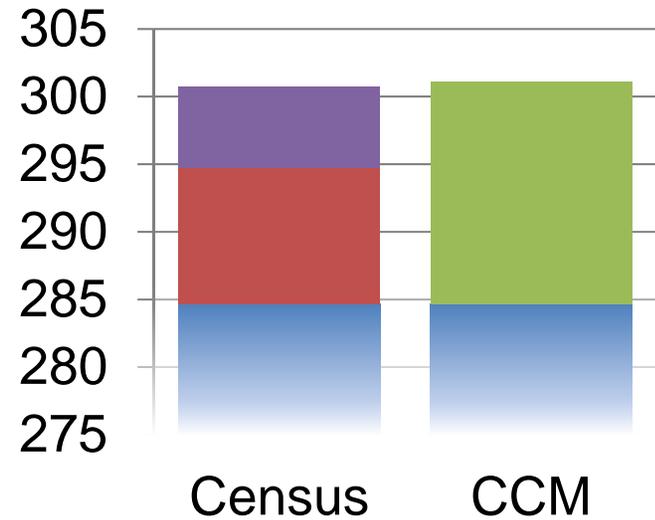
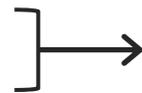
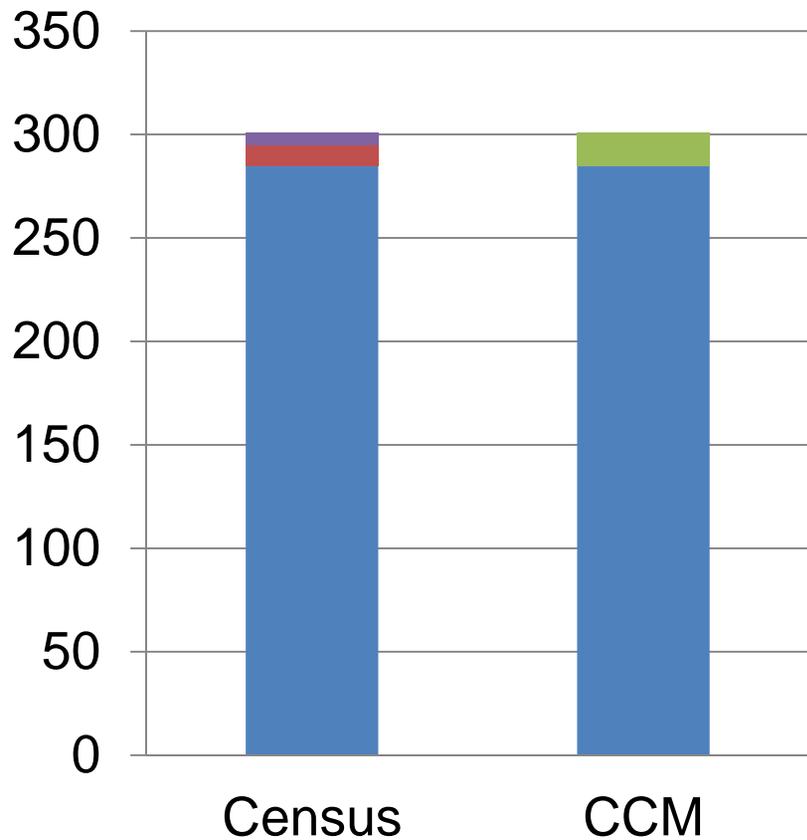
## Components of the Census and CCM

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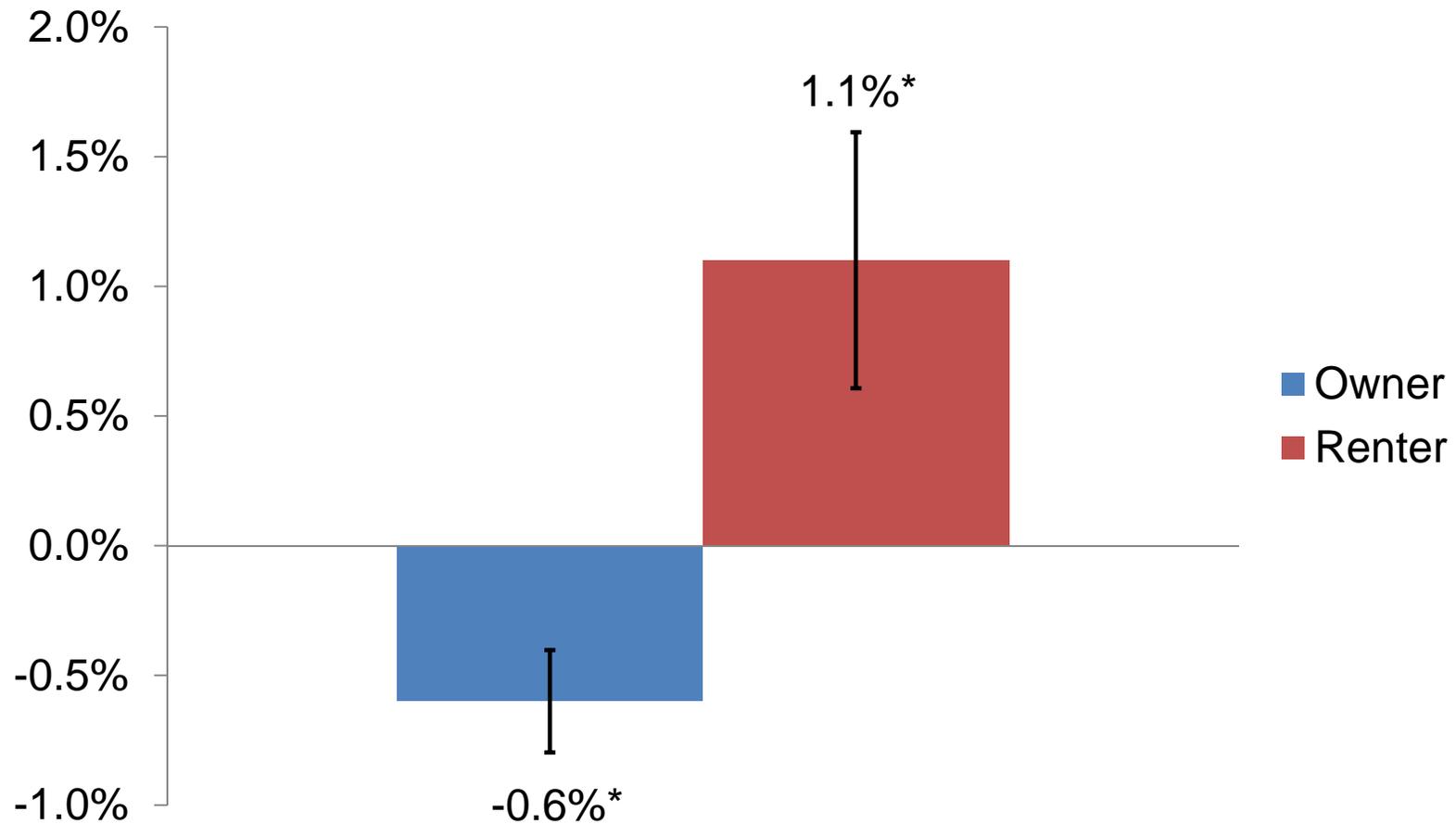
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# Components of Census Coverage in 2010 (Level, in Millions)



- Whole-Person Census Imputations
- Erroneous Enumerations
- Correct Enumerations
- Omissions

# Percent Undercount by Owner/Renter for Persons in 2010

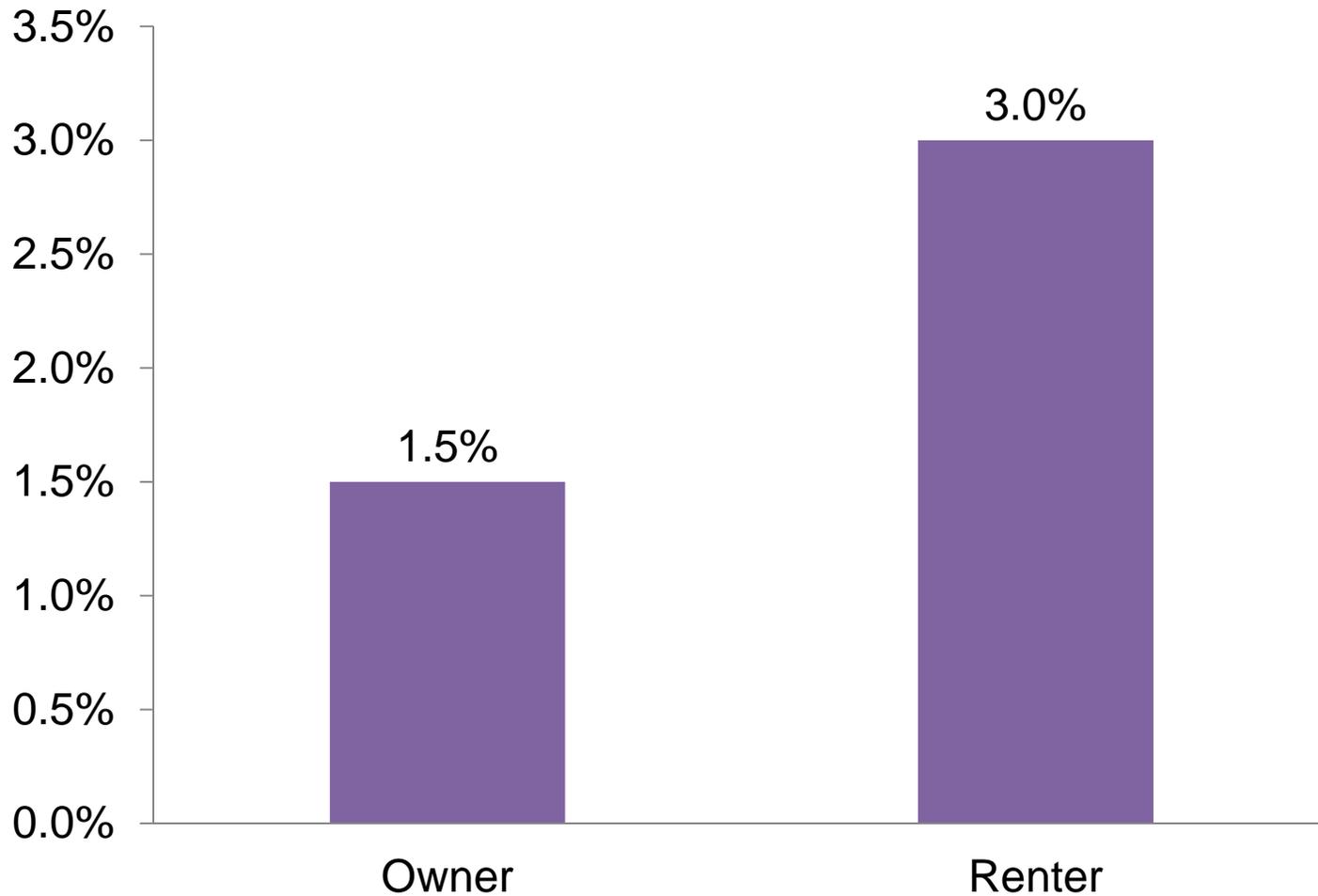


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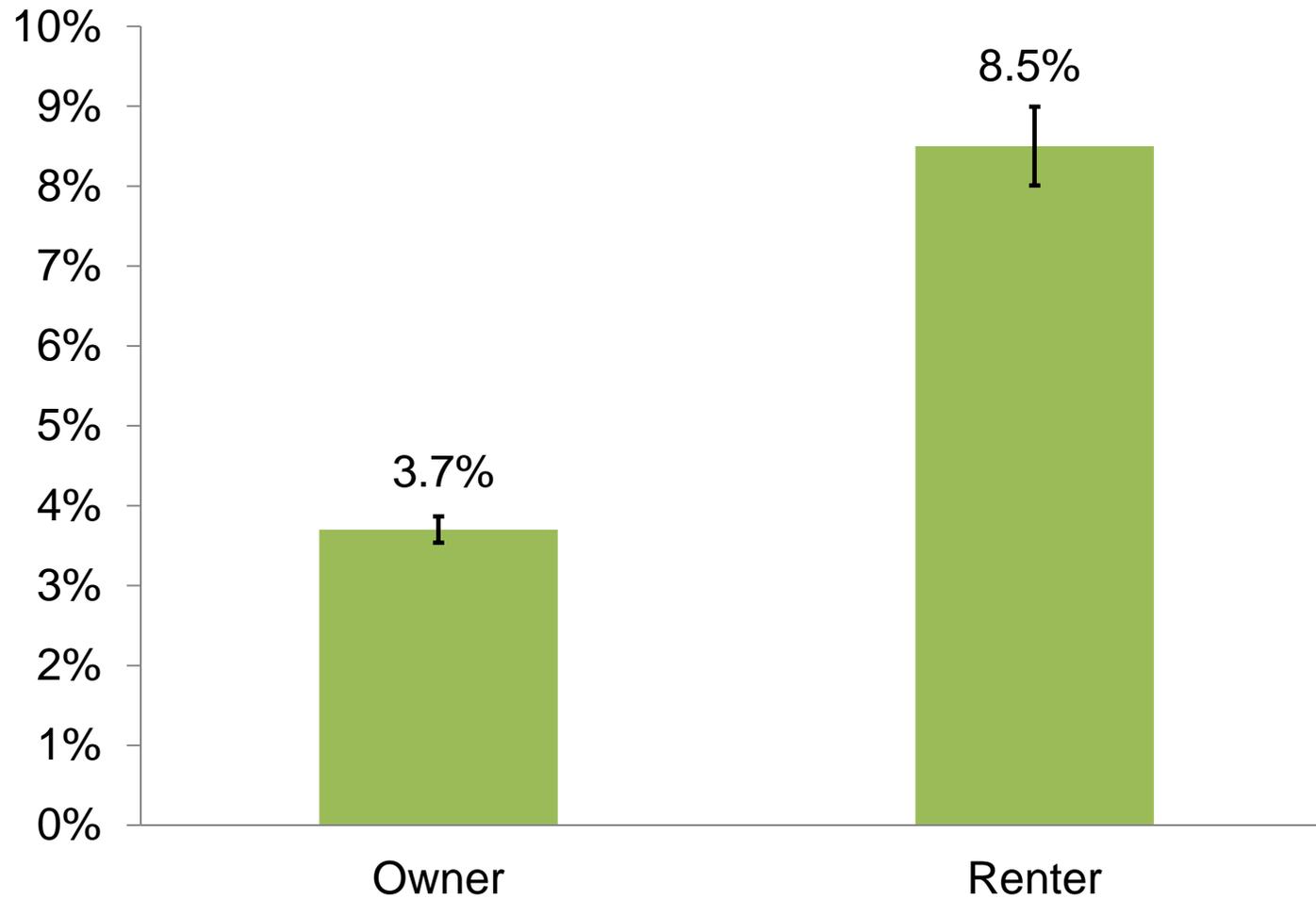
# Components of Census Coverage in 2010 for Owners and Renters – Erroneous Enumerations



# Components of Census Coverage in 2010 for Owners and Renters – Whole-Person Census Imputations



## Components of Census Coverage in 2010 for Owners and Renters - Omissions



# Observations: Owner vs. Renter

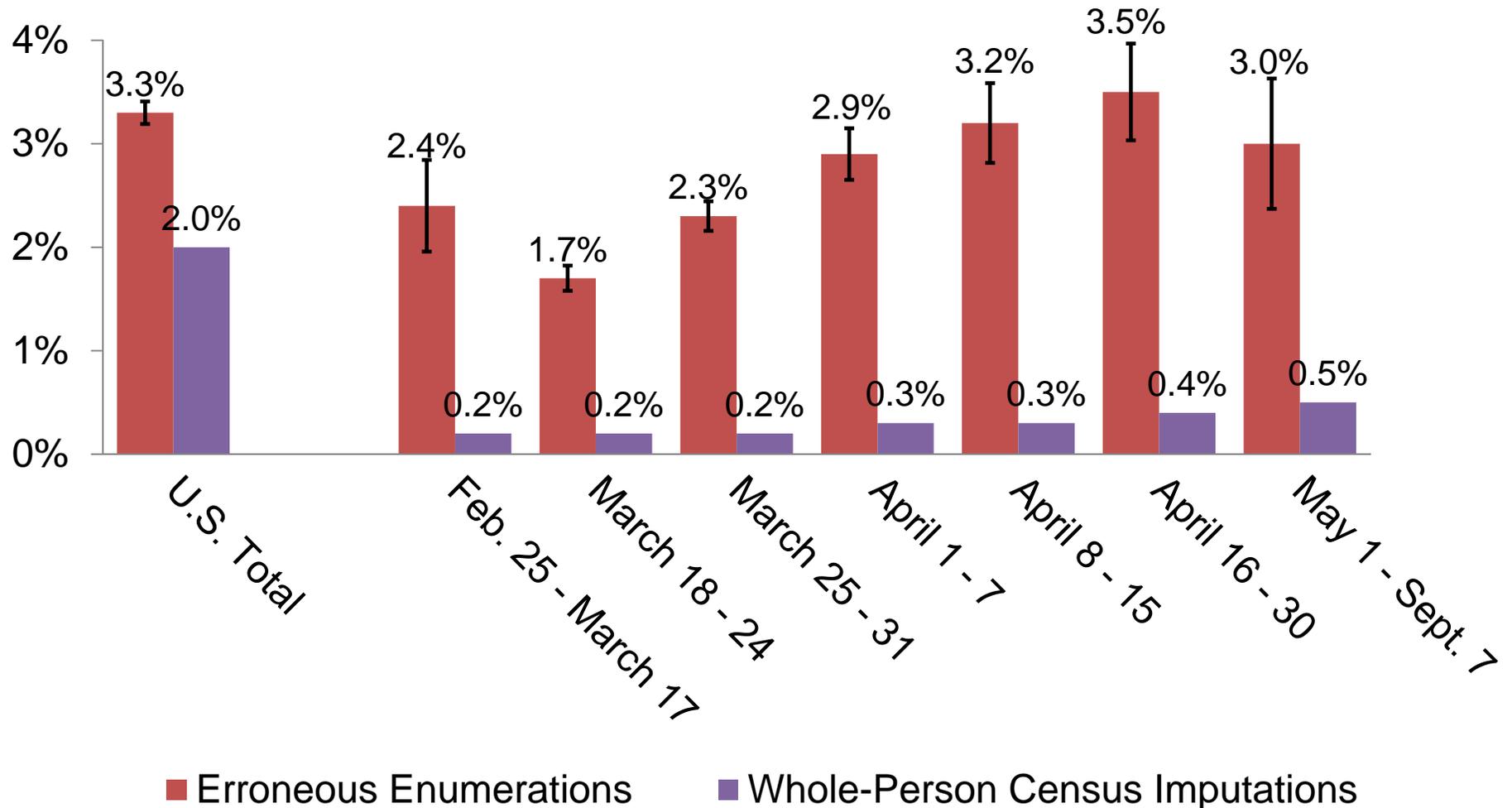
- Among renters, we see higher rates of erroneous enumerations, imputations, and omissions
- For other estimation categories or subgroups, the results may partially reflect the different rates between owners and renters

# **Components of Census Coverage: For Persons Census Operations**

## Census Count for Persons by Date of Mail Return

Mail Return Date	Census Count (Thousands)	Percentage
Feb. 25 – March 17	8,065	3.7
March 18 – 24	83,659	37.9
March 25 – 31	65,740	29.8
April 1 – 7	31,060	14.1
April 8 – 15	14,990	6.8
April 15 – 30	13,267	6.0
May 1 – Sept. 7	4,174	1.9

# Components of Census Coverage in 2010 by Date of Mail Return



Note: Valid Returns Only

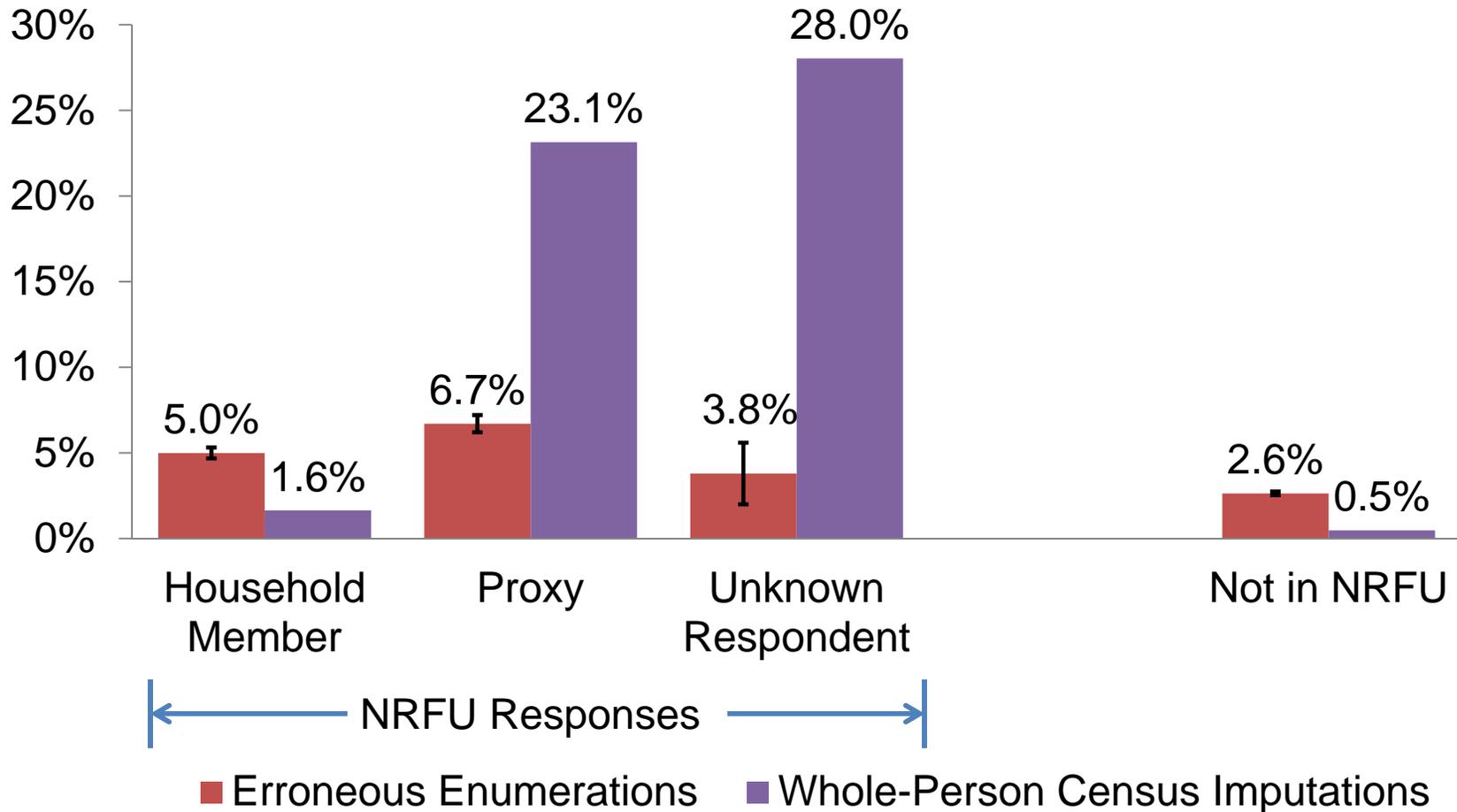
# Observations: Date of Mail Return

- Among those who mailed the census form back to us, we see lower rates of erroneous enumeration (by a little) and imputation (by a lot), than the national average
- These error rates generally increase slightly as the weeks go by

## Census Count for Persons by Respondent Type in the Nonresponse Followup Field Operation

Respondent Type	Census Count (Thousands)	Percentage
Household Member	61,437	78.4
Proxy	16,294	20.8
Unknown Respondent Type	589	0.8

# Components of Census Coverage in 2010 by Respondent Type in Nonresponse Followup Field Operations



# Observations: Respondent Type in NRFU

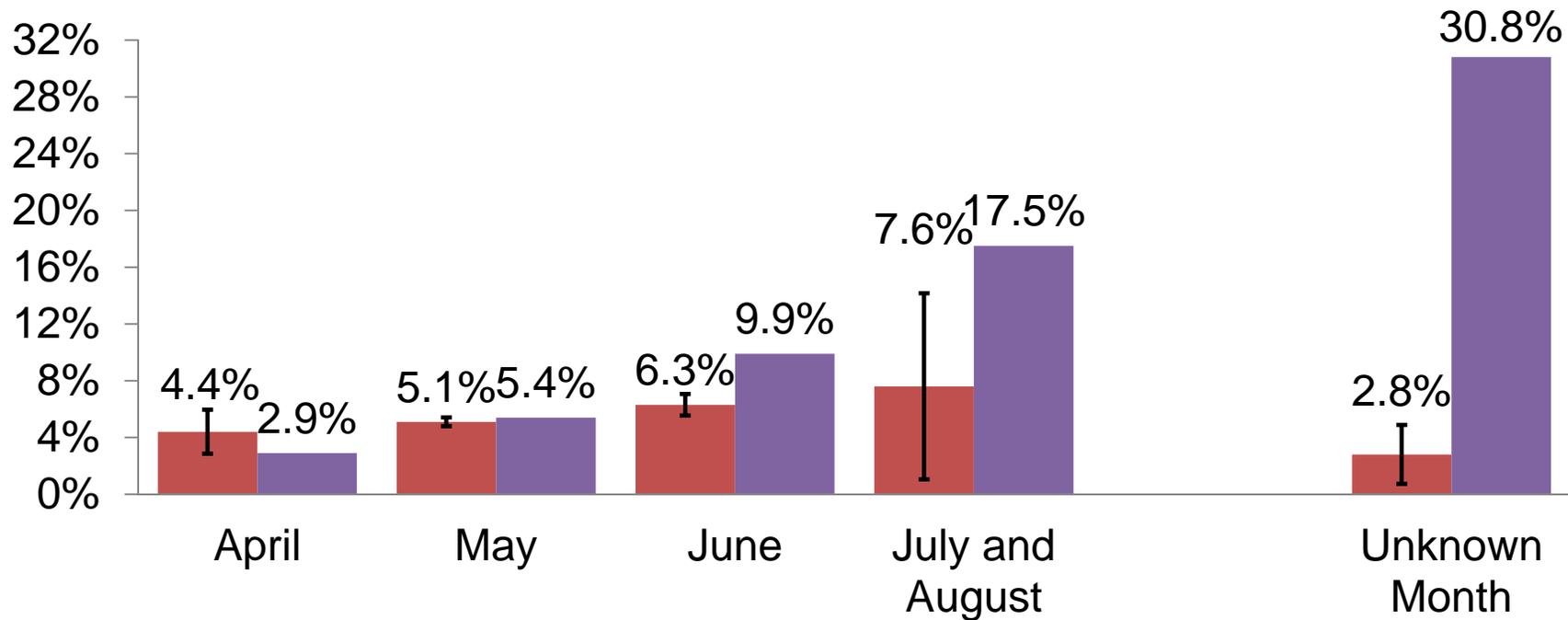
For people requiring NRFU (they did not mail a form back):

- We see much higher rates of erroneous enumeration and imputation, compared to those who mailed the form back
- Proxy responses have a higher rate of erroneous enumeration and imputation, compared to responses from a household members

## Census Count for Persons by Completion Month in the Nonresponse Followup Field Operation

Nonresponse Followup Completion Month	Census Count (Thousands)	Percentage
April	1,755	2.2
May	60,788	77.6
June	15,375	19.6
July and August	221	0.3
Unknown	181	0.2

# Components of Census Coverage in 2010 by Completion Month in the Nonresponse Followup Field Operation (NRFU Field Cases Only)



- Erroneous Enumerations
- Whole-Person Census Imputations

	Census Count (Thousands)
April	1,755
May	60,788
June	15,375
July & August	221
Unknown Month	181

# Observations: Completion Month in NRFU

Among NRFU respondents:

- The rates of erroneous enumeration and imputation are larger in June than in May
- The rate of imputation increases the longer it takes to complete the response

# Summary: Components of Census Coverage

- At the national level, we estimated 16.0 million omissions; 6.0 million of these were likely counted as census imputations.
- These omissions were offset by 10.0 million (3.3%) erroneous enumerations (mostly duplicates) and 6.0 million imputations.
- As a whole, erroneous enumerations and imputations were lower among people who mailed back a census form.
- In NRFU, responses from proxies suffered a higher rate of errors than responses from household members; we saw more errors the later the interview was completed.

# Summary (cont.)

The value of components of coverage:

- We can quantify errors that may offset and produce a very small undercount or overcount.
- We can study results by operations and other subgroups to see where we must focus research and planning.

# Additional Analysis Online

- Geography
- Various Demographic Categories
- Census Operational Areas

# Afternoon Technical Meeting

- Technical Panel
- Discussants

# Questions?