November 13, 2018

The Honorable Jesse M. Furman
United States District Court for the Southern District of New York
40 Centre Street, Room 2202
New York, NY 10007

RE: Plaintiffs' letter-motion for partial exclusion of opinion testimony by Dr. John Abowd in *State of New York, et al. v. U.S. Dep't of Commerce, et al.*, 18-CV-2921 (JMF).

Dear Judge Furman,

Pursuant to the discussion in Court today and Rule 3(I) of this Court's Individual Rules and Practices, Fed. R. Evid. 702, 703, and 705, and Fed. R. Civ. P. 26 and 37(c)(1), Plaintiffs move to exclude testimony from Dr. John Abowd about Defendants' demonstrative exhibits DDX-21, DDX-22 and DDX-25.

1. *Background*: At 4:51 pm on November 12, Defendants emailed 25 proposed demonstrative exhibits for use with Dr. Abowd. These exhibits include DDX-25, which is a series of calculations of net undercount under 8 separate scenarios (labelled "Scenario A" through "Scenario H") citing PX-267 Tables 8 & 9 (the "Mule" memo) and "Abowd's calculations" as the source. Ex. 1. At 5:16 pm, Plaintiffs wrote Defendants asking to identify where in Dr. Abowd's expert report this analysis had been disclosed and when the calculations had been produced. Ex. 2. Without responding to that email, at 8:50 pm Defendants provided a replacement copy of DDX-20, 21, 22 and 25; with regard to DDX-25, the only change was to add a citation to pages 19 and 20 of the Mule memo. Ex. 3. At 9:10 pm, Plaintiffs sent a second email to Defendants reiterating the request to identify where in Dr. Abowd's report the analysis had been discussed and to identify when the calculations had been provided. Ex. 4. Defendants did not respond to this request either.

2. *Defendants Did Not Disclose the Analysis in DDX-21, 22 or 25 in Dr. Abowd's Report and It is Not Evident From PX-267*: From DDX-21, 22, and 25, it is apparent that Dr. Abowd intends to present information based on certain inputs and calculations that have not been disclosed by Defendants. Regarding DDX-25, it appears that Dr. Abowd intends to present eight separate calculations of differential undercount between Hispanics and whites. These scenarios, the inputs, and the calculations were not disclosed anywhere in Dr. Abowd's report. Indeed, Dr. Abowd testified at his October 12 expert deposition that he had contemplated conducting an analysis of whether the addition of the citizenship question would increase the net undercount but had not done so. Ex. 5 (10/12/18 Abowd Tr. 287-290). And Dr. Abowd did not cite or discuss Dr. Mule's analysis in his expert report.

Nor are the inputs or calculations for Scenarios A through H found in Dr. Mule's memo. Ex. 6. The portions of the memo cited (Tables 8 & 9 and pages 19-20) do not discuss any undercount scenarios and do not provide any basis for what appear to be assumptions about Hispanic persons used to calculate Scenarios A through H. For example, in DDX-25, the scenarios provide a gross omission rate for Hispanics of 16.9% with no explanation of the source

of this number. The scenarios also contain a range of imputations for Hispanics from 2.6% to 11.8%, also with no explanation for the sources of these ranges.

DDX 20 through DDX 22 appear to be part of a series of estimated imputation rates for the 2020 Decennial Census. DDX-20 appears to be a 2020 census scenario without a citizenship question using the count imputation rate from the 2010 census as listed in Table 2 of PX-478, the 2010 Census Count Imputation Results Memo. Setting aside other issues with DDX-20, the imputation rate's connection to the 2010 imputation results (PX-47) is at least discernible. Slides DDX-21 and DDX-22, however, take the same graphic and appear to apply a different set of assumptions including the addition of a citizenship question and some unspecified "addresses in the 6-attempt group" to derive a newly estimated count imputation rate of either 0.40% (DDX-21) or 0.60% (DDX-22). The face of the demonstrative itself fails to disclose the number of addresses, the methodology, or the calculations used to derive the estimated count imputation rate. Nor do PX-478, Dr. Abowd's expert report, or Dr. Abowd's expert deposition disclose such information.

Preclusion of expert testimony under Fed. R. Civ. P. 37(c)(1) is warranted in these extreme circumstances. Applying the four factors identified by the Second Circuit in *Patterson v. Balsamico*, 440 F.3d 104, 117 (2d Cir. 2006), the prejudice to Plaintiffs of allowing expert testimony on the last day of trial based on undisclosed sources and calculations would be tremendous. Defendants appear to offer no explanation at all for their eleventh-hour ambush.

3. *Rule 26(a)(2)(C)(ii) does not excuse untimely disclosure.* In court, Defendants stated that Rule 26(a)(2)(C) excuses them from the requirements to disclose these opinions in their report. Even if Dr. Abowd's report qualified under Rule 26(a)(2)(C) (which it does not), after Plaintiffs threatened to move to compel Dr. Abowd to comply with Rule 26(a)(2)(b) requirements, on September 27 Defendants agreed "in an effort to avoid further disputes, we have determined to produce the materials relied upon or considered by Dr. Abowd in preparing his expert report, as you have requested." Ex. 7. When Defendants produced on October 5 "the documents considered by Dr. Abowd," Ex. 8, they did not produce the Mule memo or anything that relates in any way to Scenarios A through H.

In any event, the designation of Dr. Abowd as a Rule 26(a)(2)(C) witness was improper; such designations are traditionally limited to treating physicians, and given the extent of Dr. Abowd's opinions, this designation was improper. *See, e.g., Pierce v. City of New York*, 16-cv-5703, 2017 WL 2623857, at *3 (E.D.N.Y. June 16, 2017) (expert testimony that "relies upon scientific, technical, or other specialized knowledge . . . is governed by Federal Rule of Evidence 702, requiring expert disclosure under Federal Rule of Civil Procedure 26(a)(2)(B)"); *Israeli v. Ruiz*, 14-cv-9244, 2015 WL 4618055, at *2 (S.D.N.Y. July 27, 2015) (Rule 26(a)(2)(C) testimony is limited to where expert testifies based "on whatever he observed. . . . He may not testify, however, as to matters derived from information acquired from outside sources.").

Moreover, courts have compelled Rule 26(a)(2)(C) witnesses to comply with Rule 26(a)(2)(B) disclosure requirements because without such disclosure the opposing side "may be unable to test sufficiently the expert's opinion during deposition and suffer unfairly from this handicap at trial." *In re World Trade Ctr. Lower Manhattan Disaster Site Litig.*, No. 21-mc-102, 2014 WL 5757713, at *5 (S.D.N.Y. Nov. 5, 2014); *Robinson v. Suffolk Cty. Police Dep't*, No.

08-cv-1874, 2011 WL 4916709, at *1 (E.D.N.Y. Oct. 17, 2011). That is precisely the situation here. Plaintiffs have no idea what the basis is for the inputs for Hispanic data used in each of the A through H scenarios. Plaintiffs have no idea what the "Abowd calculations" are. Had these scenarios been timely disclosed, Plaintiffs would have had the opportunity to take discovery and to test during deposition the basis and reasonableness of the inputs and the calculations. Defendants' failure to timely produce this analysis is grossly unfair.

Respectfully submitted,

ARNOLD & PORTER KAYE SCHOLER LLP
AMERICAN CIVIL LIBERTIES UNION

By: /s/ John A. Freedman

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+ admitted pro hac vice
** Not admitted in the District of Columbia; practice limited pursuant to D.C. App. R. 49(c)(3).

Attorneys for *NYIC* Plaintiffs, 18-CV-5025

BARBARA D. UNDERWOOD

Attorney General of the State of New York

By: */s/ Matthew Colangelo*
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Attorneys for *State of New York* Plaintiffs, 18-CV-2921

EXHIBIT 1

From: Tomlinson, Martin M. (CIV) [mailto:Martin.M.Tomlinson@usdoj.gov]
Sent: Monday, November 12, 2018 4:49 PM
To: Colangelo, Matthew; Goldstein, Elena; Wood, Laura; Dale Ho; Sarah Brannon; Freedman, John A.; Gersch, David P.; Young, Dylan Scot; troy.strunkey@arnoldporter.com; Kelly M. Hernandez; Davin Rosborough
Cc: Wells, Carlotta (CIV); Gardner, Joshua E (CIV); Federighi, Carol (CIV); Bailey, Kate (CIV); Coyle, Garrett (CIV); Ehrlich, Stephen (CIV); Halainen, Daniel J. (CIV); Kopplin, Rebecca M. (CIV)
Subject: Defendants' Demonstratives for Dr. John Abowd

Counsel:

Please find attached the demonstratives, designated as DDX-001 through DDX-025, that Defendants intend to use for Dr. Abowd's testimony.

Martin M. Tomlinson
Trial Attorney | U.S. Department of Justice
Civil Division | Federal Programs Branch
P.O. Box 480; Ben Franklin Station
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Fax: (202) 616-8470

For overnight/courier deliveries:
Martin M. Tomlinson
Department of Justice
Federal Programs Branch, Room 12504
1100 L Street, N.W.
Washington, DC 20005

EXHIBIT 2

From: Freedman, John A.
Sent: Monday, November 12, 2018 5:16 PM
To: Tomlinson, Martin M. (CIV); Wells, Carlotta (CIV); Gardner, Joshua E (CIV); 'Bailey, Kate (CIV)'
Cc: 'Colangelo, Matthew'; Goldstein, Elena; dale.ho@aclu.org; Gersch, David P.; zzz.External.SBrannon@aclu.org
Subject: New York v. DOC, 18-cv-2921

Counsel --

We are in receipt of your demonstratives for use tomorrow.

1. Please advise where the opinions and underlying facts for DDX-25 were disclosed in Dr. Abowd's September 21 expert disclosure?

2. Please advise where in the September 21 expert disclosure Dr. Abowd analyzed any of the analysis from the Mule memo (G-01)?

3. Please advise when you produced the "Abowd's calculations" referenced in the source line?

Thanks,

John

_____
John A. Freedman

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John.Freedman@arnoldporter.com | www.arnoldporter.com

EXHIBIT 3

From: Tomlinson, Martin M. (CIV) [mailto:Martin.M.Tomlinson@usdoj.gov]
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Counsel:

Please find replacement versions of four of the Abowd demonstratives sent earlier. These have been updated to include the proper exhibit number in the citation, but should otherwise be unchanged.

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<dhalaine@CIV.USDOJ.GOV>; Kopplin, Rebecca M. (CIV) <rkopplin@CIV.USDOJ.GOV>
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EXHIBIT 4

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To: 'Tomlinson, Martin M. (CIV)'; Colangelo, Matthew; Goldstein, Elena; Wood, Laura; Dale Ho; Sarah Brannon; Gersch, David P.; Young, Dylan Scot; Strunkey, Troy M.; Kelly M. Hernandez; Davin Rosborough
Cc: Wells, Carlotta (CIV); Gardner, Joshua E (CIV); Federighi, Carol (CIV); Bailey, Kate (CIV); Coyle, Garrett (CIV); Ehrlich, Stephen (CIV); Halainen, Daniel J. (CIV); Kopplin, Rebecca M. (CIV)
Subject: RE: Defendants' Demonstratives for Dr. John Abowd

Counsel --

Thank you for the replacements. You still have not answered the questions I sent you four hours ago regarding DDX-25.

1. Please advise where the opinions and underlying facts for DDX-25 were disclosed in Dr. Abowd's September 21 expert disclosure?

2. Please advise where in the September 21 expert disclosure Dr. Abowd analyzed any of the analysis from the Mule memo (G-01)?

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EXHIBIT 5

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

- - - - - - - - - - - - - - - - -x

NEW YORK IMMIGRATION COALITION, et al.,	:	
Plaintiffs,	:	
v.	:	Case No.
UNITED STATES DEPARTMENT OF COMMERCE, et al.,	:	1:18-CF-05025-JMF
Defendants.	:	

- - - - - - - - - - - - - - - - -x

Friday, October 12,2018
Washington, D.C.

Videotaped Deposition of:
JOHN M. ABOWD, Ph.D.,
called for oral examination by counsel for the Plaintiffs, pursuant to notice, at the law offices of Arnold & Porter Kaye Scholer, LLP, 601 Massachusetts Avenue, Northwest, Washington, D.C. 20001-3743, before Christina S. Hotsko, RPR, CRR, of Veritext Legal Solutions, a Notary Public in and for the District of Columbia, beginning at 9:06 a.m., when were present on behalf of the respective parties:

qualitative information that we have done after many censuses, I know after all the recent ones, to try to get a better idea in the hard-to-count populations of what the issues were.

Q. So the one acronym you used that I'm not familiar with R&M.

A. Oh, research and methodology. That's the directorate that I'm in charge of. Sorry.

Q. And who's the individual you were referring to who just retired?

A. Patricia Suerte. I'm not sure I can spell the last name, but I could correct it when the transcript comes through.

Q. Okay. Shifting gears, if you want to go back to your report, Exhibit -- I'm sorry, page 3, Exhibit 1. I want to ask just one more series of questions about conclusion 2.

So with regard to the first sentence of conclusion 2, why hasn't the Census Bureau conducted a study to see if there's credible quantitative evidence that the addition of a citizenship question in the 2020 census would

increase the net undercount or increase differential net undercounts for identifiable subpopulations?

MS. WELLS: Object to the form.

THE WITNESS: Because we believe the qualitative analysis that we've already produced is sufficient to justify our recommendation not to ask the question.

BY MR. FREEDMAN:

Q. Has anybody within the Census Bureau proposed doing that additional analysis to produce credible qualitative evidence that the addition of a citizenship question in the 2020 census will increase the net undercount or increase the differential net undercounts for identifiable subpopulations?

A. Yes.

Q. Who?

A. Me.

Q. And what happened?

A. Well, I had to do a feasibility study by discussing it with the experts and determining

whether they had artifacts that might be useful for that or, if not, whether the methods that we are experienced in implementing for dual system estimation could be used for that.

I consulted internal experts, including the person I consider to be the world's biggest expert on this, and they didn't think that we could do it.

Q. Is that still an open question, whether you can do it?

A. It's not an open question as to whether I should devote staff research time to doing it. I'd say it's an open question as to whether the coverage measurement program could be used for that purpose. Yes.

Q. So whose decision was it not to undertake any analysis to see if the --

A. So we don't make decisions like that, like chain of command on things like that. It was within my scope of authority to assemble the team to do that. I would have had to pull most of them off their current 2020 operations and divert them

from other research projects that are directly related to other interests.

And as I've said, we didn't believe that credible quantitative information about net undercounts was necessary for our recommendation to the Secretary or to defend our current mitigation.

All of the components are going to be affected. And they could drive the net undercounts way up or they could drive them way down. And I wish that I had a better assessment of that, but it is my expert opinion that the resources required to do that are better deployed in making the 2020 census work.

Q. In terms of the OMB clearance package, who is responsible for approving the package to send to OMB at the Census Bureau?

A. So the responsibility for preparing it lies with the program area that wants to do the activity. So the responsibility for preparing it lies with the associate director for decennial census.

CERTIFICATE OF NOTARY PUBLIC

I, CHRISTINA S. HOTSKO, the officer before whom the foregoing deposition was taken, do hereby certify that the witness whose testimony appears in the foregoing deposition was duly sworn by me; that the testimony of said witness was taken by me in stenotypy and thereafter reduced to typewriting under my direction; that said statement is a true record of the proceedings; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this statement was taken; and, further, that I am not a relative or employee of any counsel or attorney employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

CHRISTINA S. HOTSKO
Notary Public in and for the
District of Columbia

My commission expires:
November 14, 2021

EXHIBIT 6

UNITED STATES DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. Census Bureau
Washington, DC 20233-0001

May 22, 2012

DSSD 2010 CENSUS COVERAGE MEASUREMENT MEMORANDUM SERIES #2010-G-01

MEMORANDUM FOR David C. Whitford
Chief, Decennial Statistical Studies Division

From: Patrick J. Cantwell *(Signed)*
Assistant Division Chief, Sampling and Estimation
Decennial Statistical Studies Division

Prepared by: Thomas Mule
Decennial Statistical Studies Division

Subject: 2010 Census Coverage Measurement Estimation Report: Summary of Estimates of Coverage for Persons in the United States

This report is one of twelve documents providing estimation results from the 2010 Census Coverage Measurement program. This report provides a summary of the United States coverage results for persons in households.

For more information, contact Thomas Mule on (301) 763-8322 or Patrick Cantwell on (301) 763-4982.

cc:
DSSD CCM Contacts List

Census Coverage Measurement Estimation Report

Summary of Estimates of Coverage for Persons in the United States

Prepared by
Thomas Mule

Decennial Statistical Studies Division

Table of Contents

Executive Summary

This document summarizes the 2010 survey-based coverage estimates for the household population excluding Remote Alaska areas. The Census Coverage Measurement (CCM) program produced net coverage results showing undercounts or overcounts using dual system estimation. Comparisons to 1990 Census results are from the 1990 Post-Enumeration Survey and to Census 2000 results are from the Accuracy and Coverage Evaluation Revision II estimates.

Additionally, the CCM program produced the components of census coverage that include erroneous enumerations and omissions. The CCM estimates of components of census coverage have more detail relative to previous coverage surveys for which similar efforts were primarily research-related.

Overall Household Population

The following are the key findings for the household population.

- The 2010 Census did not have a significant percent net undercount. The CCM estimated a net overcount of 0.01% (0.14% standard error) or 36,000 (429,000) persons. The CCM population estimate was not significantly different from the 2010 Census count. In previous studies, Census 2000 had a national net overcount of 0.49% (0.20%) while the 1990 Census had a net undercount of 1.61% (0.20%).

- The CCM estimated 10.0 million erroneous enumerations in the 2010 Census. Of the 10.0 million, 8.5 million were erroneous enumerations due to duplication while the remaining 1.5 million were erroneous enumerations due to other reasons.

- The 2010 Census had more erroneous enumerations due to duplication than Census 2000. The 8.5 million erroneous enumerations due to duplication in 2010 was larger than the Census 2000 estimate of 6.6 million duplicates.

- All demographic characteristics were imputed for 6.0 million census records. Of these, 4.8 million were in housing units where a population count was obtained.

- The CCM estimated 16.0 million omissions in the 2010 Census. Part of this estimate of omissions may be attributed to the 6.0 million records with all characteristics imputed.

Coverage by Race and Hispanic Origin

The CCM continued to measure differential net coverage by race and Hispanic origin.

- The CCM estimated a net undercount of 2.06% for the Black alone-or-in-combination population for the 2010 Census. This was not statistically different from the Non-Hispanic Black domain estimate of 1.84% for Census 2000. The 2010 Census net undercount was significantly different from the 1990 estimate of 4.57%.

- The CCM estimated a net undercount of 1.54% for the Hispanic population. This was not statistically different from the Hispanic domain estimate of a 0.71% net undercount for Census 2000, but it was lower than the 4.99% estimate in the 1990 Census.

- The CCM estimated a 4.88% net undercount for the American Indian and Alaskan Native alone-or-in-combination population living on American Indian Reservations. This was statistically different than the Census 2000 estimate. The 2010 estimate was not significantly different from the 12.22% net undercount for the 1990 Census.

- The Non-Hispanic White alone population had a net overcount of 0.83% in the 2010 Census. This was not significantly different from the 1.13% net overcount for the Non-Hispanic White domain in Census 2000. The 2010 estimate was significantly different than the 1990 estimate of 0.68% net undercount for this domain.

- For the components of census coverage for the Black alone-or-in-combination and the Hispanic populations, the CCM estimated higher percentages of erroneous enumerations, whole-person imputations, and omissions as compared to the Non-Hispanic White alone population.

Coverage by Tenure

The CCM continued to measure differential coverage by tenure.

- The estimated net undercount for renters in the 2010 Census was 1.09% as compared to a net overcount of 0.57% for owners. Comparing to Census 2000, the 2010 Census saw a reduction in the percent net overcount for the owner population while showing no significant difference for renters.

- The components of census coverage show that renters had higher percentages of erroneous enumerations due to duplication than owners (3.7% versus 2.4%) and higher percentages of records requiring all of their characteristics to be imputed (3.0% versus 1.5%).

Key Results for Census Operations

The CCM estimated the following results for census operations:

- For Type of Enumeration Area, Update/Leave areas had a 1.37% net overcount while Update/Enumerate areas had a 7.87% net undercount.

- The overcount of Update/Leave areas can be partially attributed to the fact that 4.7% of the census enumerations were erroneous due to duplication. This percentage was larger than the 2.7% for Mailback enumeration areas.

- For the Update/Enumerate areas, 5.3% of census records required imputation of all characteristics. This was larger than the 2.0% for Mailout/Mailback areas.

- For the Nonresponse Followup field operation, persons in housing units with a proxy respondent had 5.6% erroneous enumerations due to duplication and had 23.1% requiring all of their characteristics to be imputed. Persons in housing units in which a household member responded had 4.2% and 1.6%, respectively.

- For most of the Coverage Followup Operations, completed interviews generally resulted in lower percentages of erroneous enumerations than non-completed cases.

1. Introduction

As part of the 2010 Census, the United States Census Bureau conducted the Census Coverage Measurement (CCM) survey, a survey-based approach to assess the quality of the decennial census[1]. The CCM program evaluated the coverage of the 2010 Census and provided information to improve future censuses.

The major goals of the CCM program (Singh 2003) were to

- continue to provide measures of net coverage;
- produce measures of the components of census coverage, including erroneous enumerations and omissions;
- produce measures of coverage for demographic groups and geographic areas, as well as for key census operations.

This document summarizes the 2010 CCM coverage estimates for the household population excluding Remote Alaska enumeration areas. This document draws on reports prepared by Census Bureau staff that provide results or examine the quality of CCM estimates. See Mule and Konicki (2012) for a summary of the housing unit coverage.

This CCM summary report differs from the series of reports released by the Accuracy and Coverage Evaluation (A.C.E.) program to evaluate the Census 2000 coverage. There are no plans to use CCM results to produce adjusted population estimates for any purpose, and there will be no such recommendation.

Section 2 provides background on the net coverage and the estimation of components of census coverage. Section 3 provides limitations on the results shown. Section 4 discusses the coverage results for the total population. Section 5 discusses the coverage results for demographic and tenure groupings. Section 6 discusses the results for states and other governmental entities. Sections 7 and 8 summarize the results for census operations.

2. CCM Coverage Estimation

This section provides a brief overview of the methodology for net coverage and estimation of the components of census coverage. For more information, see the forthcoming methods document.

2.1. Net Coverage Estimation

Like the 1990 Post-Enumeration Survey (PES) and the 2000 A.C.E., the 2010 CCM evaluated net coverage by using dual system estimation to generate population estimates of housing units and persons in housing units. For the CCM, we used logistic regression modeling instead of

[1] In addition to operational assessments and evaluations, the Census Bureau has relied on two principal methods to evaluate the coverage of the decennial census. One method is the survey-based approach, which is the topic of this report. The other method is Demographic Analysis.

post-stratification to produce synthetic estimates of net coverage. The parameters in the model were based on a national sample and then applied to each individual census case. Information collected at the individual level can be easily used in conjunction with information collected at an aggregate level to provide estimates even for small domains with little or no sample. The logistic regression modeling allowed us to reduce the correlation bias in the total population estimates without having to include unnecessary higher-order interactions as when forming post-stratification cells. This allowed us to include additional variables in the model that can potentially help reduce synthetic error for national, state, county, and place estimates.

As part of this estimation, we implemented operations to account for missing data and to reduce the sampling and nonsampling errors in the estimates. This included imputation of missing characteristics, imputation of unresolved statuses, a weight adjustment for non-interviewed P-sample housing units, and an adjustment to minimize correlation bias using results derived from Demographic Analysis estimates.

For person estimation, we used the same independent variables (main effects) and interactions in each logistic regression model. See Olson (2012) for more details on the logistic regression models. The main effects used in the models include

- Race/Hispanic Origin domains
- Tenure
- Age/Sex groups
- Region of the country
- Metropolitan Statistical Area Size by Type of Enumeration Area
- Presence of Spouse in Household
- Relationship to Householder
- Tract-level Census Participation Rates
- Bilingual and Replacement Questionnaire Mailing Areas

Estimates of net undercount are the difference of the dual system estimate and the census count. A positive estimate indicates a net undercount and a negative estimate indicates a net overcount.

$$Net\ \ Undercount = DSE - Census$$

where DSE is the dual system estimate

We also report the estimate of percent net undercount. The percent net undercount is the net undercount estimate calculated above divided by the DSE expressed as a percentage.

$$Percent\ \ Net\ \ Undercount = \left(\frac{DSE - Census}{DSE} \right) \times 100$$

2.2. Components of Census Coverage Estimation

While we continue to produce estimates of net coverage, for the first time we provide components of census coverage. The four components of census coverage are

- correct enumerations,
- erroneous enumerations,
- whole-person census imputation counts, and
- omissions.

2.2.1. Correct Enumerations for Components

In the CCM, we evaluated a sample of the data-defined[2] enumerations in the census to determine if they were correct enumerations. For a person to be a correct enumeration for our component estimation, the first requirement was that the census person record should have been enumerated in a housing unit in the census. If a person was determined to have been included in the census two or more times, the CCM had procedures to determine which enumeration was correct based on the Person Interview and Person Followup information. The other enumerations were classified as erroneous enumerations.

Another requirement was geographic correctness. An enumeration was considered to be correct if the record was enumerated in the appropriate geographic area. Since we produced national, state, county, and place estimates, the definition of the correct geographic area changed depending on the area being evaluated.

For national-level estimates, the geographic requirement for the enumeration to be considered correct was if the record corresponded to a person that should have been included anywhere in the United States in the coverage universe (that is, in a housing unit outside of Remote Alaska areas). This criterion applied to the estimates of the total population and other domains like demographic characteristics and census operational areas. For state, county, and place estimates, the definition narrowed to require that the person should have been enumerated in that particular area.

This definition of correct enumeration for components of census coverage is different from the definition of correct enumeration used for estimating net coverage. The definition for net coverage is stricter, as it applies additional criteria to minimize the bias in the dual system estimates. For net coverage estimation, the record must (1) have sufficient identification information including reporting a valid name and two other characteristics, and (2) be enumerated in the specific geographic area referred to as the block cluster search area[3]. For component estimation, we used a different definition that is more suitable for national, state, county, and place estimates.

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[2] A data-defined enumeration in the census has two reported characteristics, one of which can be name.

[3] The block cluster search area is the block cluster and the one ring of surrounding census blocks. A block cluster is one or more contiguous blocks and averages 30 housing units.

In addition to generating estimates of levels of correct enumerations, the CCM produced percentages as well. For correct enumeration percentages, the denominator is the census count.

2.2.2. Erroneous Enumerations for Components of Census Coverage

We estimated the number of erroneous enumerations. When examining the reasons that a case was erroneous, we report the results for three categories:

- Persons that should not have been enumerated at all ("Other Reasons")
- Erroneous enumerations due to duplication
- Enumerations included in the wrong location

There are several types of erroneous enumerations combined into the first category of "Other Reasons." Some of these include persons who should have been enumerated in a group quarters, who were born after Census Day or who died before Census Day, and fictitious enumerations.

The second group is erroneous enumerations due to duplication. A person enumerated two or more times in the census for whom at least one of those enumerations was in a housing unit falls into this category. For the situation where the person was enumerated correctly in a group quarters and enumerated erroneously in a housing unit, the person enumeration in the housing unit was an erroneous enumeration due to duplication.

The third category of erroneous enumerations, those included in the wrong location, by definition does not exist for national estimates such as total population or race groups. For state, county, and place estimates, the CCM narrowed the geographic criterion of where the person should have been counted to determine whether the person is treated as erroneous or correct based on the appropriate geographic area of interest.

In addition to generating estimates of levels of erroneous enumerations, the CCM produced percentages as well. For erroneous enumeration percentages, the denominator is the census count.

2.2.3. Whole-Person Census Imputations

We tallied the number of whole-person census imputations. All of the characteristics were imputed for these census person records.

The CCM program was not in a position to assess whether an individual whole-person census imputation was correct or erroneous because, in large part, there was no practical way to follow up on records for which all information was imputed. Therefore, this report provides the count of whole-person imputations. Table 1 provides the five types of imputation cases included in the count.

In addition to tallying the number of whole-person census imputations, the CCM produced percentages as well. For these percentages, the denominator is the census count.

Table 1. Whole-Person Census Imputation Categories

Count Imputation 1. Status Imputation - No information about the housing unit; housing unit imputed as occupied, vacant, or non-existent. Those imputed as non-existent were removed from the census files. 2. Occupancy Imputation - Existence of housing unit confirmed, but no information as to occupancy status; imputed as occupied or vacant. 3. Household Size Imputation - Occupied status confirmed, but no information as to household count; the household population count was imputed.
Population Count Already Known for the Housing Unit 4. Whole Household - Population count known; all characteristics imputed for the entire household. 5. Partial Household - Population count known; all characteristics imputed for some, but not all, persons in the household.

Note: Any housing unit imputed as occupied during count imputation also had its household population count imputed, which resulted in whole-person census imputations.

2.2.4. Omissions

We estimated the total number of omissions in the census as well. A direct estimation method for the number of omissions is not available. In the past, different definitions and estimators of omissions were used. The CCM omission estimator subtracts the estimate of correct enumerations from the population estimate.

$$Omissions = DSE - Correct\ Enumerations$$

As whole-person census imputations are a separate category from correct enumerations and erroneous enumerations, our definition of omissions effectively treats these imputations as omissions. In effect, omissions are people who *should have been* enumerated in the United States, but were not. Many of these people may have been accounted for in the whole-person census imputations. We believe that most of the imputed people may have been correct if we could have collected a valid name and sufficient characteristics.

In addition to reporting levels, the CCM reports the percentage of omissions as well. This is the percentage of the true population that is omissions.

$$Omission\ Percentage = \left(\frac{Omissions}{DSE}\right) \times 100$$

2.3. Statistical Testing

Statements of comparison in this report are statistically significant at the 90% confidence level ($\alpha = 0.10$) using a two-sided test. "Statistically significant" means that the difference is not likely due to random chance alone. In the tables, net undercount and percent net undercount estimates that are significantly different from zero are identified by an asterisk (*).

3. Limitations

In this section, we provide statements about the data that are worth noting when reading this document.

3.1. Measures of Uncertainty Accounting for Sampling and Synthetic Error

Because the CCM estimates are based on a sample survey, they are subject to sampling error. As a result, the sample estimates will differ from what would have been obtained if all housing units had been included in the survey. The standard errors provided with the data reflect variation due to sampling. For the component estimation of correct and erroneous enumerations, we used a ratio-adjusted design-based estimator that was benchmarked to a larger aggregate estimate. The standard error measures the uncertainty of this direct estimate.

In applying dual system estimation of the population, we created a "synthetic" estimator as described in the methods. Thus, the estimation domains are subject to a potential synthetic bias. The bias in the synthetic estimator represents the difference, if any, in the domain's population estimate one would obtain by applying the synthetic model versus by simply tabulating over the true population (if it were known). For most estimation domains, main effects and interactions related to the domain were included in these models to minimize the synthetic bias in the population estimates.

For governmental entities like states, counties, and places, there was concern that the standard errors for the population estimates, net coverage, and omissions would underestimate the true error by not capturing the synthetic bias. For these governmental entities, we produced estimates of root mean squared error for the total population estimates, net coverage, and omissions. These estimates of error add an estimate of synthetic bias to the sampling variance of the synthetic estimates that use fixed-effect logistic regression.

3.2. Other Sources of Nonsampling Error

Nonsampling error is a catch-all term for errors that are not a function of selecting a sample. It includes errors that can occur during data collection and the processing of survey data. For example, while an interview is in progress, the respondent may make an error answering a question, or the interviewer may make an error asking a question or recording the answer. Sometimes interviews fail to take place or households provide incomplete data. The CCM had low levels of missing data. Appropriate estimation procedures were used to account for those instances. Other examples of nonsampling error in the 2010 CCM include matching error, modeling error, synthetic error, and classification error. Unlike sampling error, nonsampling error is difficult to quantify.

4. Summary of Coverage for the Total Household Population

This section summarizes the net coverage and the components of census coverage for the total household population. These include analysis of the estimates of erroneous enumerations due to duplication and whole-person census imputations.

4.1. Net Coverage

The national estimate of the net overcount for the 2010 Census was 36,000 persons or 0.01%. The 2010 Census did not have a significant net undercount or overcount. That is, the CCM population estimate was not significantly different from the census count. Table 2 shows the results for the past three census coverage measurement surveys. The 1990 survey measured a net undercount, and the 2000 survey measured a net overcount.

Table 2. National Estimates of Net Undercount by Year

Year	Census Count (Thousands)	Net Undercount		Percent Net Undercount	
		Estimate (Thousands)	Standard Error (Thousands)	Estimate (%)	Standard Error (%)
2010	300,703	-36	429	-0.01	0.14
2000	273,587	-1,332*	542	-0.49*	0.20
1990	248,710	3,994*	488	1.61*	0.20

The 2010 Census count excludes persons in group quarters and persons in Remote Alaska.
A negative net undercount or percent net undercount estimate indicates an overcount.
An asterisk (*) denotes a (percent) net undercount that is significantly different from zero.
The 2000 and 1990 estimates are from Kostanich (2003).

4.2. Components of Census Coverage

This section summarizes the national components of census coverage. Section 4.2.1 summarizes the components seen at the national level. Section 4.2.2 provides additional analysis for erroneous enumerations due to duplication including comparisons to duplication estimates in Census 2000. Section 4.2.3 provides additional analysis of the whole-person census imputations.

4.2.1. Overall Summary

Table 3 shows the estimates of the components of census coverage for the household population. The first part of the table shows how the census household population count of 300.703 million was distributed among correct enumerations, erroneous enumerations, and whole-person census imputations. We estimated that 284.7 million (94.7%) were correct enumerations, 10.0 million (3.3%) were erroneous enumerations, and 6.0 million (2.0%) were whole-person census imputations.

We estimated 284.7 million correct enumerations using the geographic requirement that the person was in a housing unit anywhere in the nation. Table 3 provides a further breakdown of this estimate using stricter geographic requirements.

CCM estimated that 280.9 million (93.4%) people were included in the correct CCM block cluster search area. This geographic location requirement is the CCM sample block cluster and the one ring of blocks that surround the sample block cluster. See Section 2.2.1 for more information on the CCM search area.

For the remaining three geographic requirements, CCM estimated that 2.0 million (0.7%) people were enumerated in the same county as where the person should have been enumerated. Another 830,000 (0.3%) people were enumerated in the same state but should have been included in a different county within that state. Finally, 948,000 (0.3%) people should have been enumerated in a different state.

The first part of the table continues by providing details about the 10.0 million erroneous enumerations in the 2010 Census. Of the total, 8.5 million (2.8%) were erroneous enumerations due to duplication and 1.5 million (0.5%) were erroneous enumerations for other reasons. The third breakdown of the census count is the 6.0 million (2.0%) whole-person census imputations.

The next part of the table summarizes the CCM population estimates. The CCM estimated that the household population was 300.667 million people resulting in an overcount of 36,000. The CCM population estimate is broken into two groups: correct enumerations and omissions. The correct enumerations estimate is the same 284.7 million shown earlier. Based on the CCM estimate of 300.667 million, the correct enumeration percentage of the true population is 94.7%.

The CCM estimated that 16.0 million people were omitted from the census. Omissions are people who should have been enumerated in the United States, but were not. Many of these people may have been accounted for by the 6.0 million whole-person census imputations.

Table 3. Components of Census Coverage for the United States Household Population (in Thousands)

Component of Census Coverage	Estimate	Standard Error	Percent	Standard Error
Census Count	300,703	0	100.0	
Correct enumerations[1]	284,668	199	94.7	0.07
Enumerated in the same block cluster[2]	280,852	220	93.4	0.07
Enumerated in the same county, though in a different block cluster	2,039	55	0.7	0.02
Enumerated in the same state, though in a different county	830	34	0.3	0.01
Enumerated in a different state	948	31	0.3	0.01
Erroneous enumerations	10,042	199	3.3	0.07
Due to duplication	8,521	194	2.8	0.06
For other reasons[3]	1,520	45	0.5	0.01
Whole-Person Census Imputations[4]	5,993	0	2.0	0
Estimate of Population from the Census Coverage Measurement[5]	300,667	429	100.0	
Correct enumerations[1]	284,668	199	94.7	0.1
Omissions[6]	15,999	440	5.3	0.1
Net Undercount	-36	429	-0.01	0.14

1. For the national table, someone who should have been counted is considered a correct enumeration if he or she was enumerated anywhere in the United States.
2. More precisely, enumerated in the *search area* for the correct block cluster. For definitions of block cluster and search area, see accompanying text.
3. Other reasons include fictitious people, those born after April 1, 2010, those who died before April 1, 2010, etc.
4. These imputations represent people from whom we did not collect sufficient information. Their records are included in the census count.
5. This number is the CCM estimate of people who should have been counted in the CCM household universe. It does not include people in group quarters or people living in the Remote Alaska type of enumeration area.
6. Omissions are people who *should have been* enumerated in the United States, but were not. Many of these people may have been accounted for in the whole-person census imputations above.

4.2.2. Erroneous Enumerations Due to Duplication

The 8.5 million erroneous enumerations due to duplication for the 2010 Census was larger than the estimated 6.6 million duplicates in Census 2000 (Bray 2012). This section examines how the erroneous inclusion of people in housing units due to duplication compares between 2010 and 2000. First, we examine instances when people were duplicated between housing units. Second, we examine the duplication between people in housing units and group quarters. A duplicate to a group quarters is a person enumerated correctly in a group quarters and erroneously included in the housing unit universe.

Table 4 shows the estimates of person duplication between housing units for 2010 and 2000. The 2010 Census had 8.0 million erroneous enumerations due to duplication between housing units. This was more than the 6.0 million duplicates in Census 2000. The table shows that the 2010 estimates increased for all geographic distances of the duplication. The table also shows results based on the types of return for both housing units. The increase between 2010 and 2000 was concentrated in the situations where there was one mailback/one non-mailback return or both were non-mailback returns.

Table 4. Estimate of Erroneous Enumerations due to Duplication Between Housing Units by Type of Return and Geographic Distance (in thousands)

	2010				2000[1]			
	Type of Return[2]				Type of Return			
Geographic Distance	Both Mailback	One Mailback/ One Non-Mailback	Both Non-Mailback	Total	Both Mailback	One Mailback/ One Non-Mailback	Both Non-Mailback	Total
Within Collection Block	314 (25)	2,534 (128)	953 (75)	3,801 (160)	398 (23)	2,125 (68)	384 (23)	2,907 (83)
Within Collection Tract, Different Block	76 (13)	684 (86)	258 (38)	1,018 (106)	97 (8)	406 (24)	123 (12)	625 (31)
Within County, Different Tract	370 (22)	929 (45)	350 (31)	1,649 (67)	401 (17)	699 (27)	110 (9)	1,210 (34)
Within State, Different County	334 (26)	381 (24)	137 (15)	852 (36)	306 (14)	315 (18)	43 (5)	664 (24)
Different State	274 (23)	326 (28)	86 (11)	686 (37)	266 (14)	242 (15)	41 (20)	549 (31)
Total	1,369 (49)	4,854 (154)	1,783 (93)	8,006 (195)	1,468 (36)	3,786 (83)	701 (35)	5,955 (109)

1. The 2000 estimates are from Bray (2012).
2. Type of return was the selected form type of the census housing unit.

Table 5 shows the erroneous enumerations due to duplication of people between housing units and group quarters. While person duplication between housing units increased between 2000 and 2010, the erroneous enumerations due to duplication to group quarters decreased by 101,000. The reduction was concentrated within the same county areas and smaller geographic distances.

Table 5. Estimate of Erroneous Enumerations due to Duplication Between Housing Units and Group Quarters by Type of Return and Geographic Distance (in thousands)

	2010			2000[1]		
	Type of Return			Type of Return		
Geographic Distance	Mailback	Non-Mailback	Total	Mailback	Non-Mailback	Total
Within Collection Block	14 (9)	27 (12)	41 (16)	53 (11)	20 (6)	73 (15)
Within Tract, Different Block	13 (3)	3 (1)	16 (4)	24 (5)	18 (9)	42 (21)
Within County, Different Tract	82 (10)	57 (7)	138 (12)	163 (32)	56 (8)	219 (38)
Within State, Different County	129 (12)	108 (13)	237 (18)	152 (7)	38 (4)	190 (7)
Different State	50 (7)	33 (6)	83 (9)	75 (6)	17 (3)	92 (6)
Total	287 (20)	228 (20)	515 (29)	467 (35)	149 (14)	616 (43)

1. The 2000 estimates are from Bray (2012).

4.2.3. Whole-Person Census Imputations

CCM tallied 6.0 million whole-person census imputations (2.0%) in the 2010 Census. This was about the same magnitude and percentage as the 5.8 million whole-person census imputations that were in Census 2000.

While the total magnitudes were similar, the underlying types of imputation changed. Table 6 shows the whole-person imputations by type for the 2010 Census and Census 2000. The table shows similar magnitudes for those done by count imputation and when a population count was reported for the unit.

For the 2010 Census, there were 4.61 million person records where imputation was required for the whole household of people and 220,000 records where it was a partial-household situation where some but not all persons required imputation. In Census 2000, the corresponding numbers were 2.27 million and 2.33 million records, respectively.

Table 6. Whole-Person Census Imputations By Type

	2010		2000	
Whole-Person Census Imputations	Count (millions)	Percent	Count (millions)	Percent
Total	5.99	2.0	5.77	2.1
Count Imputation	1.16	0.4	1.17	0.4
Status Imputation	0.24	0.1	0.42	0.2
Occupancy Imputation	0.05	0.0	0.26	0.1
Household Size Imputation	0.87	0.3	0.50	0.2
Population Count Already Known	4.83	1.6	4.60	1.7
Whole Household	4.61	1.5	2.27	0.8
Partial Household	0.22	0.1	2.33	0.9

Percent is out of the total census count excluding persons in group quarters and persons in Remote Alaska. The 2000 data are from Wetrogan and Cresce (2001).

5. Census Coverage for Demographic and Tenure Groupings

This section summarizes the census coverage for demographic and tenure groupings. These include estimates of coverage by race, Hispanic origin, age, sex, and tenure.

5.1. Census Coverage for Race and Hispanic Origin

The CCM continued to measure differential net coverage by race and Hispanic origin in the 2010 Census. Table 7 shows the percent net undercount estimates based on assigning a person to one of seven mutually exclusive Race/Hispanic Origin domains as described in Mulligan and Davis (2012). Both the 2000 and 1990 surveys released net coverage estimates for these specially defined race/origin domains; the two previous surveys did not produce separate estimates by race or by Hispanic origin. To compare with the previous surveys, we produced the 2010 net coverage estimates for the Race/Hispanic Origin domains.

The Non-Hispanic Black domain continued to be undercounted (2.07%). This domain has had a significant net undercount for the past three coverage surveys. Both the Hispanic domain and the American Indian on Reservation domains had undercounts in 2010 as well (1.54% and 4.88%, respectively). These two domains had undercounts in 1990, but the estimates in 2000 were not statistically different from zero. The Non-Hispanic White domain continued to be overcounted (-0.84%). The 2010 American Indian on Reservation net undercount estimate was higher than the 2000 estimate. For the other six domains, the comparisons of the 2010 percent net undercount estimate to the 2000 estimate were not statistically significant.

Table 7. Estimates of Percent Net Undercount by Race/Origin Domain

	2010		2000		1990	
Race/Origin Domain	Estimate (%)	Standard Error (%)	Estimate (%)	Standard Error (%)	Estimate (%)	Standard Error (%)
U.S. Total	-0.01	0.14	-0.49*	0.20	1.61*	0.20
Non-Hispanic White	-0.84*	0.15	-1.13*	0.20	0.68*	0.22
Non-Hispanic Black	2.07*	0.53	1.84*	0.43	4.57*	0.55
Non-Hispanic Asian[1]	0.08	0.61	-0.75	0.68	2.36*	1.39
American Indian on Reservation	4.88*	2.37	-0.88	1.53	12.22*	5.29
American Indian off Reservation[2]	-1.95	1.85	0.62	1.35	0.68*	0.22
Native Hawaiian or Pacific Islander	1.34	3.14	2.12	2.73	2.36*	1.39
Hispanic	1.54*	0.33	0.71	0.44	4.99*	0.82

Note: This table shows the results using the mutually exclusive Race/Origin domain assigned for CCM Estimation. For estimates of race alone-or-in-combination or Hispanic origin, see Table 8.
An asterisk (*) denotes a percent net undercount that is significantly different from zero.
The 2000 and 1990 estimates are from Kostanich (2003).
1. For 1990, Asian or Pacific Islander was a single Race/Hispanic Origin Domain. Therefore, for Non-Hispanic Asian and for Hawaiian or Pacific Islander, the net undercount and standard error are repeated.
2. For 1990, AI off Reservation was included in the Non-Hispanic White domain. Therefore, the net undercount and standard error for these domains are identical.

The Race/Origin domain results in Table 7 were based on a mutually exclusive assignment of persons to only one of the seven domains. This results, for example, in an estimate for the Non-Hispanic Black population rather than for Black alone-or-in-combination. Since people could report more than one race, the CCM also produced net coverage estimates using race alone-or-in-combination and for Hispanic origin. This approach allowed a person to fall into multiple categories and estimates based on multiple race and Hispanic origin reporting.

Table 8 shows the 2010 percent net undercount estimates for race alone-or-in-combination and Hispanic origin. Additional estimates are shown for the Non-Hispanic White alone and American Indian and Alaskan Native populations. For the American Indian and Alaskan Native alone-or-in-combination population, the estimates are broken down by geographic area. These geographies indicate whether this population lives on an American Indian Reservation, on an American Indian Area[4] off reservation, or in the remainder of the nation. While the overall result was not significant, the American Indian and Alaskan Native alone-or-in-combination population that lived on American Indian Reservations had a 4.88% undercount in 2010. Because of the high overlap of populations when comparing Race/Origin domain assignments to race

[4] American Indian Areas are lands considered (either wholly or partially) on an American Indian reservation/trust land, Oklahoma Tribal Statistical Area, Tribal Designated Statistical Area, or Alaska Native Village Statistical Area.

alone-or-in-combination or Hispanic origin reporting, several percent net undercount estimates in Table 7 and Table 8 are about the same or differ only slightly.

Table 8. Estimates of Percent Net Undercount by Race and Hispanic Origin

Race or Hispanic Origin	Estimate (%)	Standard Error (%)
U.S. Total	-0.01	0.14
Race alone-or-in-combination with one or more other races		
White	-0.54*	0.14
Non-Hispanic White Alone	-0.83*	0.15
Black	2.06*	0.50
Asian	0.00	0.52
American Indian and Alaskan Native	0.15	0.71
On Reservation	4.88*	2.37
American Indian Areas off Reservation	-3.86	2.99
Balance of the U.S.	-0.05	0.58
Native Hawaiian or Pacific Islander	1.02	2.06
Some Other Race	1.63*	0.31
Hispanic Origin	1.54*	0.33

Note: This table shows the results by race alone-or-in-combination and Hispanic origin. A person may fall into several rows based on multiple reporting of race or Hispanic origin. See Table 7 for results by the Race/Origin domains used in CCM Estimation.
An asterisk (*) denotes a percent net undercount that is significantly different from zero.

Table 9 shows the components of census coverage by race reported alone-or-in-combination with other races and Hispanic origin. The Black alone-or-in-combination and Hispanic populations have larger percentages of erroneous enumerations due to duplication (3.6% and 3.2%, respectively) in the 2010 Census than the Non-Hispanic White alone population (2.6%). For omissions, the Black alone-or-in-combination and Hispanic populations have larger percentages (9.3% and 7.7%, respectively) than the Non-Hispanic White alone population (3.8%). Part of the omissions for these two groups may be accounted for by the whole-person census imputations. For imputations, the Black alone-or-in-combination and Hispanic populations have larger percentages (3.1% and 2.4%, respectively) than the Non-Hispanic White alone population (1.6%).

For the American Indian and Alaskan Native population living on reservations, we estimated 4.7% erroneous enumerations due to duplication and 13.7% omissions. Part of this 13.7% may have been accounted by the 4.1% of the census that were whole-person census imputations. For American Indian and Alaskan Natives living on American Indian Areas off reservations, the CCM estimated that 9.7% were erroneous enumerations due to duplication.

Table 9. Components of Census Coverage by Race and Hispanic Origin

Race or Hispanic Origin	Census Count (Thousands)	Correct Enumerations (%)	Erroneous Enumerations		Whole-Person Census Imputations (%)	Percent Undercount (%)	Omissions (%)
			Duplication (%)	Other Reasons (%)			
U.S. Total	300,703	94.7	2.8	0.5	2.0	-0.01	5.3
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)	(0.14)	(0.1)
Race alone-or-in-combination with one or more other races							
White	225,547	95.2	2.7	0.4	1.7	-0.54*	4.3
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)	(0.14)	(0.1)
Non-Hispanic White alone	191,997	95.4	2.6	0.4	1.6	-0.83*	3.8
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)	(0.15)	(0.1)
Black	40,153	92.6	3.6	0.7	3.1	2.06*	9.3
	(0)	(0.2)	(0.2)	(<0.1)	(0)	(0.50)	(0.4)
Asian	16,969	94.7	2.4	0.9	2.1	0.00	5.3
	(0)	(0.2)	(0.2)	(<0.1)	(0)	(0.52)	(0.5)
American Indian and Alaskan Native	5,056	92.5	4.1	0.6	2.9	0.15	7.6
	(0)	(0.6)	(0.6)	(<0.1)	(0)	(0.71)	(0.6)
On Reservation	571	90.8	4.7	0.4	4.1	4.88*	13.7
	(0)	(0.6)	(0.6)	(<0.1)	(0)	(2.37)	(2.1)
American Indian Areas off Reservation	527	87.8	9.7	1.0	1.5	-3.86	8.8
	(0)	(4.1)	(3.9)	(0.5)	(0)	(2.99)	(2.6)
Balance of the U.S.	3,959	93.4	3.2	0.6	2.9	-0.05	6.6
	(0)	(0.4)	(0.4)	(<0.1)	(0)	(0.58)	(0.6)
Native Hawaiian or Pacific Islander	1,189	93.1	3.4	0.8	2.8	1.02	7.9
	(0)	(0.6)	(0.6)	(0.2)	(0)	(2.06)	(2.0)
Some Other Race	21,448	92.9	3.5	0.7	2.9	1.63*	8.6
	(0)	(0.3)	(0.3)	(<0.1)	(0)	(0.31)	(0.4)
Hispanic Origin	49,580	93.7	3.2	0.7	2.4	1.54*	7.7
	(0)	(0.2)	(0.2)	(<0.1)	(0)	(0.33)	(0.3)

A person can be included in multiple rows.
Standard errors are in parentheses below the estimate.
The 2010 Census count excludes persons in group quarters and persons in Remote Alaska.
An asterisk (*) denotes a percent net undercount that is significantly different from zero.

5.2. Census Coverage by Tenure

The CCM continued to measure differential coverage by tenure. Table 10 shows the net coverage estimates for the past three censuses. Renters continue to be undercounted (1.09%) for the third consecutive coverage survey. Owners in 2010 continue to be overcounted as they were in 2000 but at a lower amount (-0.57% and -1.25%, respectively). For renters, the comparison of the 2010 percent net undercount estimate was not significantly different than the 2000 estimate (1.14%) but was lower than the 1990 net undercount estimate (4.51%).

Table 10. Estimates of Percent Net Undercount by Tenure

Tenure	2010		2000		1990	
	Estimate (%)	Standard Error (%)	Estimate (%)	Standard Error (%)	Estimate (%)	Standard Error (%)
U.S. Total	-0.01	0.14	-0.49*	0.20	1.61*	0.20
Owner	-0.57*	0.12	-1.25*	0.20	0.04	0.21
Renter	1.09*	0.30	1.14*	0.36	4.51*	0.43

A negative percent undercount indicates an overcount.
An asterisk (*) denotes a percent net undercount that is significantly different from zero.
The 2000 and 1990 estimates are from Kostanich (2003).

Table 11 shows the components of census coverage by tenure. The tenure differential for net coverage is also seen in the components of census coverage. Renters had higher percentages of erroneous enumerations due to duplication (3.7% versus 2.4%), erroneous enumerations due to other reasons (0.7% versus 0.4%), and whole-person census imputations (3.0% versus 1.5%). Renters also had a larger percentage of omissions (8.5% versus 3.7%) than owners.

Table 11. Components of Census Coverage by Tenure

Tenure	Census Count (Thousands)	Correct Enumerations (%)	Erroneous Enumerations		Whole-Person Census Imputations (%)	Percent Undercount (%)	Omissions (%)
			Duplication (%)	Other Reasons (%)			
U.S. Total	300,703	94.7	2.8	0.5	2.0	-0.01	5.3
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)	(0.14)	(0.1)
Owner	201,241	95.7	2.4	0.4	1.5	-0.57*	3.7
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)	(0.12)	(0.1)
Renter	99,463	92.5	3.7	0.7	3.0	1.09*	8.5
	(0)	(0.1)	(0.1)	(<0.1)	(0)	(0.30)	(0.3)

Standard errors are in parentheses below the estimate.
The 2010 Census count excludes persons in group quarters and persons in Remote Alaska.
An asterisk (*) denotes a percent net undercount that is significantly different from zero.

5.3. Census Coverage by Age and Sex Groups

The CCM measured differential coverage by age and sex. Table 12 shows the net coverage results for 1990, 2000, and 2010. The 18 to 29 year old male and the 30 to 49 year old male populations continued to have undercounts for the third consecutive survey. The 30 to 49 year old females have overcounts for the second consecutive survey. For the past three surveys, both the 50+ male and female populations have had overcounts. Children 0 to 4 were undercounted (0.72%) while children 10 to 17 were overcounted (-0.97%).

Table 12. Estimates of Percent Undercount by Age and Sex

Age and Sex	2010		2000		1990	
	Estimate (%)	Standard Error (%)	Estimate (%)	Standard Error (%)	Estimate (%)	Standard Error (%)
U.S. Total	-0.01	0.14	-0.49*	0.20	1.61*	0.20
0 to 17	-0.33	0.22			3.18*	0.29
0 to 9	0.20	0.29	-0.46	0.33		
0 to 4	0.72*	0.40				
5 to 9	-0.33	0.31				
10 to 17	-0.97*	0.29	-1.32*	0.41		
18 to 29 Males	1.21*	0.45	1.12*	0.63	3.30*	0.54
18 to 29 Females	-0.28	0.36	-1.39*	0.52	2.83*	0.47
30 to 49 Males	3.57*	0.20	2.01*	0.25	1.89*	0.32
30 to 49 Females	-0.42*	0.21	-0.60*	0.25	0.88*	0.25
50+ Males	-0.32*	0.14	-0.80*	0.27	-0.59*	0.34
50+ Females	-2.35*	0.14	-2.53*	0.27	-1.24*	0.29

A negative percent undercount indicates an overcount.

The 2000 A.C.E. Revision II estimated 0 to 9 year olds as a single group.

The 1990 PES estimated 0 to 17 year olds as a single group.

An asterisk (*) denotes a percent net undercount that is significantly different from zero.

The 2000 and 1990 estimates are from Kostanich (2003).

The CCM estimated the components of census coverage based on the nine age-sex groups shown in Table 13. For children under 18, we estimated erroneous enumeration due to duplication at about 3%. While 18 to 29 males and females had different estimates of percent net undercount, these groups had similar estimates of erroneous enumerations due to duplication and whole-person census imputations. The 18 to 29 males had a large percentage of omissions compared to 18 to 29 females. Males and females 30+ had erroneous enumerations due to duplication percentages between 2.1% and 2.5%. In looking at the percentages of whole-person census imputations for the 18+ population, the percentages decreased as the groups get older.

Table 13. Components of Census Coverage by Age and Sex Groupings

Age and Sex Group	Census Count (Thousands)	Correct Enumerations (%)	Erroneous Enumerations		Whole-Person Census Imputations (%)	Percent Undercount (%)	Omissions (%)
			Duplication (%)	Other Reasons (%)			
U.S. Total	300,703	94.7	2.8	0.5	2.0	-0.01	5.3
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)	(0.14)	(0.1)
0 to 4	20,158	94.0	3.2	0.6	2.2	0.72*	6.6
	(0)	(0.2)	(0.2)	(<0.1)	(0)	(0.40)	(0.3)
5 to 9	20,315	94.8	3.0	0.2	2.0	-0.33	4.9
	(0)	(0.1)	(0.1)	(<0.1)	(0)	(0.31)	(0.3)
10 to 17	33,430	94.7	3.2	0.3	1.9	-0.97*	4.4
	(0)	(0.1)	(0.1)	(<0.1)	(0)	(0.29)	(0.3)
18 to 29 Males	23,982	91.8	4.0	1.2	2.9	1.21*	9.3
	(0)	(0.2)	(0.2)	(<0.1)	(0)	(0.45)	(0.4)
18 to 29 Females	23,912	92.2	4.2	0.8	2.8	-0.28	7.6
	(0)	(0.2)	(0.2)	(<0.1)	(0)	(0.36)	(0.3)
30 to 49 Males	40,256	94.9	2.3	0.6	2.2	3.57*	8.5
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)	(0.20)	(0.2)
30 to 49 Females	41,815	95.5	2.1	0.3	2.0	-0.42*	4.1
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)	(0.21)	(0.2)
50+ Males	44,886	95.5	2.5	0.5	1.5	-0.32*	4.2
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)	(0.14)	(0.1)
50+ Females	51,950	95.7	2.5	0.4	1.4	-2.35*	2.0
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)	(0.14)	(0.1)

Standard errors are in parentheses below the estimate.
The 2010 Census count excludes persons in group quarters and persons in Remote Alaska.
An asterisk (*) denotes a percent net undercount that is significantly different from zero.

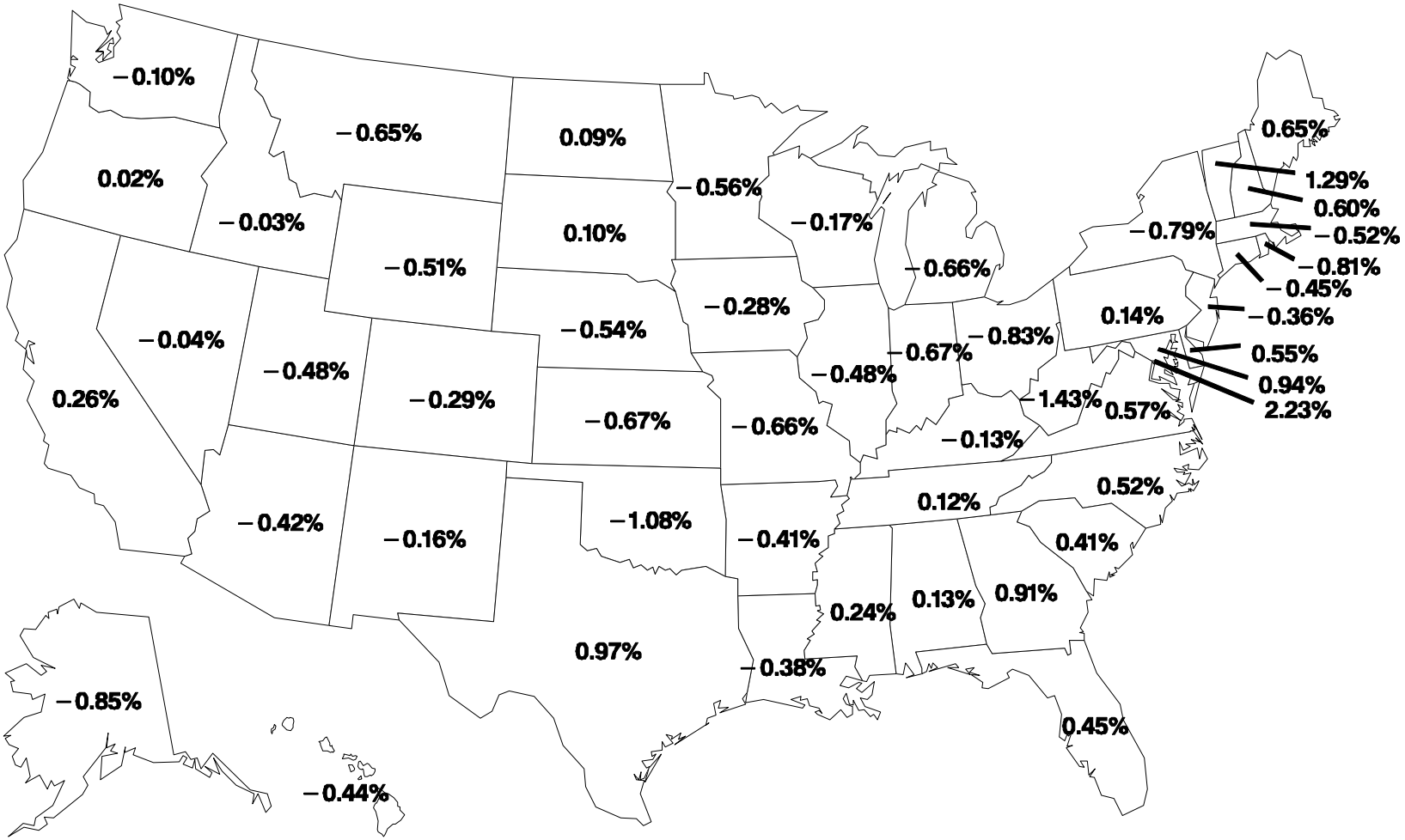
6. Census Coverage for States and Other Governmental Entities

The CCM evaluated the net coverage of the fifty states and the District of Columbia shown in Figure 1. For state estimates of net coverage, we produced estimates of the root mean squared error as discussed in the limitations section. Based on the root mean squared error estimates, the estimated percent net undercount for persons for each state and the District of Columbia was not statistically different from zero.

Table 14 summarizes the components of census coverage for the states and the District of Columbia. The CCM produced direct estimates of correct and erroneous enumeration and benchmarked them to national totals. Some of the states have high measures of uncertainty as a result. For more information on the components of census coverage for states, see Keller and Fox (2012).

For governmental entities below the state level, the CCM estimated net coverage for counties and places with a total census population, including persons residing in a group quarters, over 100,000. See Davis and Mulligan (2012) for the net coverage estimates for those areas. The CCM also estimated the components of census coverage for counties and places with a total population over 500,000. See Keller and Fox (2012) for the component estimates for those areas.

Figure 1: Percent Net Undercount for Persons by State



For each state and the District of Columbia, the estimated percent net undercount is not significantly different from zero. Not significant means that the 90 percent confidence interval based on the estimated root mean squared error includes zero.

Table 14. Components of Census Coverage by State

State	Census Count (Thousands)	Correct Enumerations (%)	Erroneous Enumerations		Whole-Person Census Imputations (%)	Percent Undercount		Omissions	
			Est. (%)	SE (%)		Est. (%)	RMSE (%)	Est. (%)	RMSE (%)
U.S. Total	300,703.4	94.7	3.3	(<0.1)	2.0	-0.01	0.14	5.3	0.1
Alabama	4,663.9	92.5	4.8	0.8	2.8	0.13	1.24	7.7	1.4
Alaska	629.1	93.7	4.8	0.9	1.4	-0.85	2.22	5.5	2.3
Arizona	6,252.6	92.3	4.3	0.4	3.4	-0.42	1.19	7.3	1.2
Arkansas	2,837.0	94.2	4.2	0.6	1.6	-0.41	1.45	5.4	1.5
California	36,434.1	95.1	3.2	0.1	1.7	0.26	0.73	5.1	0.7
Colorado	4,913.3	93.8	2.9	0.4	3.3	-0.29	1.23	5.9	1.2
Connecticut	3,455.9	95.7	3.0	0.5	1.3	-0.45	1.34	3.9	1.4
Delaware	873.5	94.3	2.8	0.7	2.8	0.55	1.93	6.2	1.9
District of Columbia	561.7	93.1	4.0	0.4	2.9	2.23	2.20	9.0	2.1
Florida	18,379.6	92.9	4.5	0.4	2.7	0.45	0.86	7.5	0.9
Georgia	9,434.5	93.5	3.1	0.3	3.3	0.91	1.04	7.3	1.0
Hawaii	1,317.4	91.8	5.2	0.5	3.0	-0.44	2.08	7.8	2.0
Idaho	1,538.6	94.2	3.2	0.6	2.6	-0.03	1.70	5.8	1.7
Illinois	12,528.9	95.0	3.3	0.4	1.8	-0.48	1.02	4.6	1.1
Indiana	6,296.9	95.7	3.2	0.5	1.1	-0.67	1.14	3.6	1.2
Iowa	2,948.2	97.1	2.0	0.4	0.9	-0.28	1.41	2.6	1.4
Kansas	2,774.0	95.6	3.7	0.7	0.7	-0.67	1.44	3.7	1.5
Kentucky	4,213.5	94.4	3.7	0.5	1.8	-0.13	1.28	5.5	1.3
Louisiana	4,405.9	92.9	4.0	0.5	3.1	-0.38	1.31	6.8	1.3
Maine	1,292.8	96.4	2.5	0.6	1.1	0.65	1.99	4.2	2.0
Maryland	5,635.2	94.9	3.4	0.5	1.8	0.94	1.19	6.0	1.2
Massachusetts	6,308.7	93.8	5.1	0.8	1.1	-0.52	1.15	5.7	1.4
Michigan	9,654.6	94.9	3.5	0.4	1.6	-0.66	1.02	4.5	1.0
Minnesota	5,168.5	95.1	3.9	1.2	1.0	-0.56	1.20	4.4	1.7
Mississippi	2,875.3	91.3	6.7	1.1	1.9	0.24	1.45	8.9	1.7
Missouri	5,814.8	94.9	3.4	0.5	1.8	-0.66	1.19	4.5	1.2
Montana	960.6	93.3	3.8	0.5	2.9	-0.65	2.01	6.1	1.9
Nebraska	1,775.2	96.4	2.4	0.3	1.3	-0.54	1.61	3.1	1.6
Nevada	2,664.4	93.0	2.9	0.3	4.1	-0.04	1.46	6.9	1.4
New Hampshire	1,276.4	95.6	3.3	0.8	1.1	0.60	2.07	5.0	2.1
New Jersey	8,605.0	95.1	3.3	0.4	1.6	-0.36	1.07	4.5	1.1
New Mexico	2,016.6	92.2	4.0	0.7	3.8	-0.16	1.58	7.7	1.6
New York	18,792.4	93.1	4.8	0.3	2.1	-0.79	0.92	6.1	0.9
North Carolina	9,278.2	92.8	4.4	0.7	2.8	0.52	1.03	7.6	1.2
North Dakota	647.5	96.1	2.9	0.7	0.9	0.09	2.17	3.9	2.2
Ohio	11,230.2	95.7	2.9	0.3	1.4	-0.83	1.00	3.5	1.0
Oklahoma	3,639.3	92.6	6.0	0.8	1.4	-1.08	1.40	6.4	1.5
Oregon	3,744.4	96.0	2.4	0.5	1.6	0.02	1.32	4.0	1.4
Pennsylvania	12,276.3	95.6	3.1	0.3	1.2	0.14	0.97	4.5	1.0
Rhode Island	1,009.9	93.3	5.0	0.9	1.7	-0.81	1.91	5.9	2.0
South Carolina	4,486.2	95.2	2.7	0.6	2.1	0.41	1.25	5.2	1.3
South Dakota	780.1	95.2	2.9	0.6	1.9	0.10	2.05	4.9	2.0
Tennessee	6,192.6	94.3	3.5	0.4	2.2	0.12	1.15	5.8	1.2
Texas	24,564.4	94.0	3.5	0.3	2.6	0.97	0.85	6.9	0.8
Utah	2,717.7	94.6	4.0	1.6	1.4	-0.48	1.44	4.9	2.1
Vermont	600.4	95.9	3.7	0.7	0.5	1.29	2.43	5.4	2.4
Virginia	7,761.2	94.7	3.3	0.4	1.9	0.57	1.06	5.8	1.1
Washington	6,585.2	95.4	2.9	0.3	1.6	-0.10	1.14	4.5	1.1
West Virginia	1,803.6	91.0	7.7	2.0	1.3	-1.43	1.70	7.7	2.6
Wisconsin	5,536.8	95.7	3.1	0.4	1.2	-0.17	1.20	4.1	1.2
Wyoming	549.9	93.2	4.2	0.7	2.6	-0.51	2.31	6.4	2.3

The standard error of the percent correct enumeration estimate is the same as that of the percent erroneous enumeration estimate.
For percent undercount and percent omissions, we produced estimates of the root mean squared error (RMSE).
The 2010 Census count excludes persons in group quarters and persons in Remote Alaska.
For each state and the District of Columbia, the estimated percent net undercount is not significantly different from zero.

7. Census Coverage for Census Operational Areas

This section summarizes the coverage results for geographic areas associated with how the census was conducted. This includes Type of Enumeration Area (TEA), Bilingual Mailing areas, and Replacement Mailing areas.

7.1. Type of Enumeration Area

The Census Bureau uses TEA to efficiently enumerate people living in various parts of the country. The TEA accounts for how we obtained addresses and conducted the census in an area. We provide estimates by combining six TEAs into three main categories. (The Remote Alaska TEA is out of scope.)

The first was "Mailout/Mailback," which included the Mailout/Mailback and the Military Mailout/Mailback TEAs. We mailed questionnaires to the housing units and instructed respondents to return the form by mail.

The second category was the "Update/Leave," which included the Update/Leave and the Urban Update/Leave TEAs. A census worker updated the address list and delivered questionnaires to each address on the updated list. Respondents were to return the form by mail.

The third was the "Update/Enumerate," which included the Remote Update/Enumerate and the Update/Enumerate TEAs. A census enumerator updated the address list and conducted the enumeration at each housing unit on the updated list.

Table 15 shows that the Update/Leave TEAs had an overcount (1.37%) while Update/Enumerate TEAs had an undercount (7.87%). For the components of census coverage, the table shows that Update/Leave areas had a high percentage of erroneous enumerations due to duplication (4.7%). The Update/Enumerate areas had a high percentage of whole-person census imputations (5.3%) and omissions (16.0%).

Table 15. Components of Census Coverage by Type of Enumeration Area

Type of Enumeration Area Group	Census Count (Thousands)	Correct Enumerations (%)	Erroneous Enumerations		Whole-Person Census Imputations (%)	Percent Undercount (%)	Omissions (%)
			Duplication (%)	Other Reasons (%)			
U.S. Total	300,703	94.7	2.8	0.5	2.0	-0.01	5.3
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)	(0.14)	(0.1)
Mailout/Mailback	278,553	94.8	2.7	0.5	2.0	0.02	5.2
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)	(0.14)	(0.1)
Update/Leave	20,076	92.7	4.7	0.5	2.2	-1.37*	6.1
	(0)	(0.3)	(0.3)	(<0.1)	(0)	(0.67)	(0.6)
Update/Enumerate	2,074	91.1	3.0	0.5	5.3	7.87*	16.0
	(0)	(0.5)	(0.4)	(0.2)	(0)	(3.13)	(2.7)

Standard errors are in parentheses below the estimate.
The 2010 Census count excludes persons in group quarters and persons in Remote Alaska.
An asterisk (*) denotes a percent net undercount that is significantly different from zero.

7.2. Bilingual Mailing Areas

For the 2010 Census, the Census Bureau mailed a bilingual (English and Spanish) census questionnaire to housing units in select areas that could require Spanish language assistance to complete their census form. For more information on bilingual mailing, see Bentley (2008) or Rothhaas et al. (2011). We estimated coverage for the areas that received the bilingual questionnaire versus the remainder of the country. Table 16 shows that the Bilingual Mailing areas had a 0.80% net undercount. For components, the Bilingual Mailing areas had a higher percentage of erroneous enumerations due to duplication than the remainder of the country. In Bilingual Mailing areas, Hispanics had a 1.33% net undercount while the Non-Hispanic population had a net overcount of 0.15%. The 1.33% net undercount for Hispanics in the Bilingual Mailing areas was not significantly different than the 1.72% net undercount of Hispanics in the balance of the country.

Table 16. Components of Census Coverage by Bilingual Mailing Area

Bilingual Mailing Area	Census Count (Thousands)	Correct Enumerations (%)	Erroneous Enumerations		Whole-Person Census Imputations (%)	Percent Undercount (%)	Omissions (%)
			Duplication (%)	Other Reasons (%)			
U.S. Total	300,703	94.7	2.8	0.5	2.0	-0.01	5.3
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)	(0.14)	(0.1)
Bilingual Mailing Area	35,204	93.5	3.5	0.7	2.3	0.80*	7.3
	(0)	(0.2)	(0.2)	(<0.1)	(0)	(0.40)	(0.3)
Hispanic	22,498	93.3	3.8	0.7	2.2	1.33*	7.9
	(0)	(0.3)	(0.3)	(<0.1)	(0)	(0.42)	(0.4)
Non-Hispanic	12,706	93.8	3.0	0.6	2.6	-0.15	6.0
	(0)	(0.3)	(0.3)	(<0.1)	(0)	(0.50)	(0.5)
Balance of U.S.	265,499	94.8	2.7	0.5	1.9	-0.12	5.1
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)	(0.16)	(0.1)
Hispanic	27,082	94.1	2.7	0.6	2.6	1.72*	7.6
	(0)	(0.2)	(0.2)	(<0.1)	(0)	(0.42)	(0.4)
Non-Hispanic	238,418	94.9	2.7	0.5	1.9	-0.33*	4.8
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)	(0.16)	(0.1)

Standard errors are in parentheses below the estimate.
The 2010 Census count excludes persons in group quarters and persons in Remote Alaska.
An asterisk (*) denotes a percent net undercount that is significantly different from zero.

7.3. Replacement Mailing Areas

For 2010, the Census Bureau mailed a replacement mailing package to some housing units in Mailout/Mailback areas of the country that had low mail response in Census 2000. The replacement mailing strategy used a combination of blanketed and targeted distribution. Areas with low response in 2000 had the blanketed distribution, so all housing units in these areas received a replacement mailing. For areas with mid-range response in 2000, only nonresponding housing units received a replacement mailing; this is referred to as targeted distribution. The balance of the United States did not receive a replacement questionnaire in the mail. We provide separate estimates for the two types of replacement mailing areas and the balance of the United States. For more information on the replacement mailing areas and the official counts, see Letourneau (2010).

Table 17 shows the coverage estimates for replacement mailing areas. For whole-person census imputations, the blanketed areas had a higher percentage than the targeted or the remaining areas in the United States. The percentage of erroneous enumerations due to duplication was 4.2% for the blanketed areas, 3.2% for targeted areas, and 2.3% for the balance of the United States.

The high percentage of erroneous enumerations due to duplication in the blanketed and targeted areas raised a concern that mailing a replacement form to a housing unit led to this duplication. However, CCM estimated that only 184,000 of the 8.5 million total duplicates were situations where the duplication was within the same housing unit.

Table 17. Components of Census Coverage by Replacement Mailing Area

Replacement Mailing Treatment	Census Count (Thousands)	Correct Enumerations (%)	Erroneous Enumeration		Whole-Person Census Imputations (%)	Percent Undercount (%)	Omissions (%)
			Duplication (%)	Other Reasons (%)			
U.S. Total	300,703	94.7	2.8	0.5	2.0	-0.01	5.3
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)	(0.14)	(0.1)
Blanketed	53,651	92.2	4.2	0.7	2.9	0.38	8.2
	(0)	(0.2)	(0.2)	(<0.1)	(0)	(0.45)	(0.4)
Targeted	65,952	94.2	3.2	0.6	2.1	0.19	6.0
	(0)	(0.2)	(0.2)	(<0.1)	(0)	(0.36)	(0.3)
Balance of U.S.	181,100	95.6	2.3	0.4	1.7	-0.20	4.2
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)	(0.15)	(0.1)

Standard errors are in parentheses below the estimate.
The 2010 Census count excludes persons in group quarters and persons in Remote Alaska.
An asterisk (*) denotes a percent net undercount that is significantly different from zero.

8. Census Coverage for Census Operational Outcomes

This section summarizes the components of census coverage for person records based on the result of the census operations. This includes Mail Return Status, Nonresponse Followup (NRFU), and Coverage Followup (CFU). The components of census coverage discussed are correct enumerations, erroneous enumerations, and whole-person census imputations. Because operational outcomes are characteristics of the census records that we cannot measure in the P sample, we cannot generate dual system estimates for census operational outcomes. Therefore, this section does not show estimates of net coverage or omissions.

8.1. Mail Return Status

The CCM estimated census coverage by mail return status of the housing unit where the person was enumerated. While most people in a housing unit for which we have a valid mail return were included on the mail return for that unit, some of the people in that housing unit were enumerated in a subsequent census operation. This analysis does not differentiate between these cases.

For housing units that were part of the mail return universe and did return a questionnaire, Table 18 shows that the components of census coverage were about the same across the various dates of return. The percentage of whole-person census imputations was very small when a form was returned.

There were 61 million person records in housing units that were mail-return eligible but did not have a valid return. Further, these housing units were in mailback areas, had pre-identified adequate address information for mailout, and were not undeliverable as addressed (UAA). For these cases without a valid return, we estimated that 3.7% were erroneous enumerations due to duplication and 6.9% required whole-person census imputations. For more information on the mailback operation, official counts, and an assessment of the mail return and mail response rates, see Letourneau (2012).

The last row of the table shows the component structure of the 18 million person records who were not in the mail return universe. These include the enumerations in housing units a) in Update/Enumerate or Remote Update/Enumerate TEAs, b) in mailback areas with pre-identified, inadequate address information for mailing, or c) determined to be UAA. For these 18 million census records, 11.0% were erroneous enumerations due to duplication, and 7.1% were whole-person census imputations.

Table 18. Components of Census Coverage by Mail Return Date

Mail Return Date	Census Count (Thousands)	Correct Enumerations (%)	Erroneous Enumerations		Whole-Person Census Imputations (%)
			Duplication (%)	Other Reasons (%)	
U.S. Total	300,703	94.7	2.8	0.5	2.0
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)
Valid Returns					
2/25-3/17	8,065	97.4	2.1	0.3	0.2
	(0)	(0.3)	(0.3)	(<0.1)	(0)
3/18-3/24	83,659	98.1	1.4	0.3	0.2
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)
3/25-3/31	65,740	97.5	1.9	0.4	0.2
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)
4/1 - 4/7	31,060	96.9	2.4	0.5	0.3
	(0)	(0.2)	(0.1)	(<0.1)	(0)
4/8 - 4/15	14,990	96.5	2.7	0.5	0.3
	(0)	(0.2)	(0.2)	(<0.1)	(0)
4/16 - 4/30	13,267	96.1	3.0	0.5	0.4
	(0)	(0.3)	(0.3)	(<0.1)	(0)
5/1 - 9/7	4,174	96.5	2.4	0.6	0.5
	(0)	(0.4)	(0.3)	(0.1)	(0)
No Valid Return	61,307	88.6	3.7	0.9	6.9
	(0)	(0.1)	(0.1)	(<0.1)	(0)
Not in Mail Return Universe	18,442	81.2	11.0	0.8	7.1
	(0)	(0.8)	(0.8)	(<0.1)	(0)

Standard errors are in parentheses below the estimate.
The 2010 Census count excludes persons in group quarters and persons in Remote Alaska.

8.2. Nonresponse Followup Operations

The 2010 NRFU Operation included four 2010 Census field operations:

- NRFU
- NRFU Reinterview
- NRFU Vacant Delete Check, and
- NRFU Residual

The NRFU field operation primarily involved census enumerators interviewing and verifying the status of housing units in areas that received a mailback 2010 Census questionnaire but did not respond by mail. The NRFU Reinterview operation was a quality control check on the NRFU enumerator's work. The NRFU Vacant Delete Check (VDC) operation verified housing units

determined to be vacant or nonexistent during NRFU. Additionally, the VDC operation included a first-time enumeration of housing units.

The NRFU Residual operation came about because monitoring of the NRFU field operation detected a potentially large number of occupied housing units lacking information about the number of people living in the housing unit. The NRFU Residual operation was the last attempt to complete a full interview for this type of unit. Its workload also included housing units from the NRFU field operation for which a questionnaire was completed, but no data were captured for the case in the data capture system. Jackson et al. (2012) assesses the 2010 NRFU operation and provides official workload totals and more detailed information about the operation. Differences in counts between the census assessment and the CCM occur because we evaluated only the persons included in the final census while the NRFU assessment covers persons and housing units deleted during census processing. Keller and Fox (2012) have additional breakdowns of the components of census coverage for cases in the NRFU operation not shown here.

Table 19 shows the components of census person coverage focusing on whether the housing unit was included in the NRFU or the VDC field operations. Most persons in housing units that were part of the NRFU field operation but not in VDC were in housing units that were worked in May and June. The table shows that 84.6% of the June cases were correct enumerations, compared to 90.2% of the cases in May. We can see that the percentage of whole-person census imputations increases as the enumeration occurred further from Census Day.

For people in housing units in the VDC operation, results are shown by whether the housing unit was included in the NRFU operation. The percentages of erroneous enumerations due to duplication and whole-person census imputations were about the same for cases that had been previously worked (15.3% and 17.0% in both VDC and NRFU) versus those being worked for the first time (16.1% and 14.1% in VDC but not NRFU).

Table 19: Components of Census Coverage for Persons by Nonresponse Followup Field Operation Status

NRFU Field Operation	Census Count (Thousands)	Correct Enumerations (%)	Erroneous Enumerations		Whole-Person Census Imputations (%)
			Duplication (%)	Other Reasons (%)	
U.S. Total	300,703	94.7	2.8	0.5	2.0
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)
In NRFU but not VDC					
April	1,717	93.1	3.7	0.6	2.6
	(0)	(1.0)	(0.9)	(0.2)	(0)
May	59,057	90.2	4.0	0.8	5.0
	(0)	(0.2)	(0.2)	(<0.1)	(0)
June	14,766	84.6	4.8	0.9	9.6
	(0)	(0.5)	(0.5)	(<0.1)	(0)
July and August	211	74.8	6.8	1.2	17.3
	(0)	(4.1)	(4.3)	(0.8)	(0)
Unknown Month	175	66.1	2.3	0.5	31.2
	(0)	(1.3)	(1.2)	(0.2)	(0)
In VDC and in NRFU	2,393	65.7	15.3	2.0	17.0
	(0)	(1.2)	(1.2)	(0.3)	(0)
In VDC but not NRFU	2,828	69.0	16.1	0.8	14.1
	(0)	(2.4)	(2.4)	(0.2)	(0)
Not in NRFU or VDC but in NRFU Reinterview or Residual	349	76.6	8.1	0.3	14.9
	(0)	(2.4)	(2.4)	(<0.1)	(0)
Not in any NRFU Universe	219,207	97.3	2.1	0.4	0.3
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)

Standard errors are in parentheses below the estimate.
The 2010 Census count excludes persons in group quarters and persons in Remote Alaska.

Table 20 shows the components of census coverage for the NRFU Residual field operation. For the person records in housing units in this field operation, 6.0% were erroneous enumerations due to duplication and 32.8% were whole-person census imputations. Of the 32.8% where whole-person census imputation was required, additional analysis showed that most were in count imputation housing units where the unit was determined to be occupied on Census Day but the population count needed to be imputed.

Table 20. Components of Census Coverage by Nonresponse Followup Residual

Operation	Census Count (Thousands)	Correct Enumerations (%)	Erroneous Enumerations		Whole-Person Census Imputations (%)
			Duplication (%)	Other Reasons (%)	
U.S. Total	300,703	94.7	2.8	0.5	2.0
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)
NRFU Residual	1,057	60.5	6.0	0.7	32.8
	(0)	(1.4)	(1.4)	(0.3)	(0)
Not in NRFU Residual but in another NRFU operation	80,440	88.0	4.9	0.8	6.3
	(0)	(0.2)	(0.2)	(<0.1)	(0)
Not in any NRFU Universe	219,207	97.3	2.1	0.4	0.3
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)

Other NRFU operations include NRFU field operation, NRFU Reinterview, and NRFU Vacant Delete Check.
Standard errors are in parentheses below the estimate.
The 2010 Census count excludes persons in group quarters and persons in Remote Alaska.

Table 21 shows the components of census coverage for the NRFU field operation cases by respondent type for the housing unit. Proxy response cases had 5.6% erroneous enumerations due to duplication and 23.1% whole-person census imputations. Household member respondent cases have 4.2% erroneous enumerations due to duplication and 1.6% whole-person census imputations.

Table 21. Components of Census Coverage by Nonresponse Followup Field Operation Respondent Type

Nonresponse Followup Field Operation Respondent Type	Census Count (Thousands)	Correct Enumerations (%)	Erroneous Enumerations		Whole-Person Census Imputations (%)
			Duplication (%)	Other Reasons (%)	
U.S. Total	300,703	94.7	2.8	0.5	2.0
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)
Household Member	61,437	93.4	4.2	0.8	1.6
	(0)	(0.2)	(0.2)	(<0.1)	(0)
Proxy	16,294	70.1	5.6	1.1	23.1
	(0)	(0.3)	(0.3)	(<0.1)	(0)
Unknown Respondent Type	589	68.2	3.3	0.5	28.0
	(0)	(1.1)	(1.1)	(0.1)	(0)
Not in NRFU Field Operation[1]	222,384	96.9	2.2	0.4	0.5
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)

Standard errors are in parentheses below the estimate.
The 2010 Census count excludes persons in group quarters and persons in Remote Alaska.
1. Includes persons in another NRFU operation and persons not in any NRFU universe. For more information, see Keller and Fox (2012).

8.3. Coverage Followup Operations

During the CFU operation, telephone interviews were conducted with respondents to determine if changes should have been made to their household roster as reported on their initial census return. The questions were designed to identify if people were missed or counted in error, and to collect missing demographic data. Govern et al. (2012) documents the official counts and provides more information on the CFU operation.

The CFU operation focused on situations in which there may have been erroneous enumerations or omissions in the 2010 Census. The CCM does not produce estimates of omissions for census operations. This section focuses on situations mostly designed to identify potential overcounting. The CCM analysis is based on whether the CFU interview was a completed or a non-completed case. The CCM does not evaluate if cases deleted by CFU were removed correctly from the census. Keller and Fox (2012) shows components of census coverage results for additional reasons for being part of the CFU operation.

Table 22 shows the components of census coverage for the person records in housing units identified as having discrepancies between the reported population count and the number of valid people listed on the questionnaire. A high discrepancy case occurs when the number of valid people is more than the population count. A low discrepancy case occurs when the number of valid people is less than the population count. When comparing completed to non-completed cases for high discrepancy cases, the percentage of erroneous enumerations due to duplication was 7.0 percentage points lower (4.7% versus 11.7%) and the percentage of erroneous enumerations due to other reasons was 1.0 percentage points lower (0.8% versus 1.8%). For the low discrepancy cases, there were no whole-person census imputations when the interview was completed, compared to 13.6% imputed for the non-completed cases.

Table 22. Components of Census Coverage by CFU Count Discrepancy

Count Discrepancy	Census Count (Thousands)	Correct Enumerations (%)	Erroneous Enumerations		Whole-Person Census Imputations (%)
			Duplication (%)	Other Reasons (%)	
U.S. Total	300,703	94.7	2.8	0.5	2.0
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)
High Discrepancy Case					
Complete	2,347	94.4	4.7	0.8	0.0
	(0)	(0.6)	(0.6)	(0.2)	(0)
Non-Complete	1,704	86.4	11.7	1.8	0.1
	(0)	(1.1)	(1.0)	(0.4)	(0)
Low Discrepancy Case					
Complete	943	96.5	2.8	0.7	0.0
	(0)	(0.9)	(0.8)	(0.3)	(0)
Non-Complete	1,039	80.1	4.4	1.9	13.6
	(0)	(1.2)	(1.1)	(0.5)	(0)
Not a CFU Discrepancy Case	294,671	94.8	2.8	0.5	2.0
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)

Standard errors are in parentheses below the estimate.
The 2010 Census count excludes persons in group quarters and persons in Remote Alaska.

A second reason for cases going to CFU was based on matching of administrative records to the census responses by the Census Bureau Center for Administrative Records and Research Application. The matching identified housing units in which at least one person was matched between an administrative record and the census return and at least one person was identified on the administrative record but not on the census return. Table 23 shows the results for these cases by the interview completion status. Completed administrative records cases had 1.2% erroneous enumerations due to duplication and 0.3% erroneous enumerations due to other reasons.

Non-completed cases had 2.9% erroneous enumerations due to duplication and 1.3% erroneous enumerations due to others reasons.

Table 23. Components of Census Coverage by CFU Administrative Records Matching

Group	Census Count (Thousands)	Correct Enumerations (%)	Erroneous Enumerations		Whole-Person Census Imputations (%)
			Duplication (%)	Other Reasons (%)	
U.S. Total	300,703	94.7	2.8	0.5	2.0
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)
Administrative Records Matching					
Complete	1,389	98.5	1.2	0.3	0.0
	(0)	(0.5)	(0.5)	(0.1)	(0)
Non-Complete	916	95.4	2.9	1.3	0.5
	(0)	(1.0)	(0.9)	(0.4)	(0)
Not a CFU Administrative Record Case	298,398	94.6	2.8	0.5	2.0
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)

Standard errors are in parentheses below the estimate.
The 2010 Census count excludes persons in group quarters and persons in Remote Alaska.

A third reason cases went to CFU was the overcount coverage probe. For each person on the form, the respondent could indicate if the person sometimes stays or lives in college housing, military, jail, nursing home, or other places. Positive responses for a person or several people in a housing unit triggered the CFU interview for the housing unit. Table 24 shows the results for select overcount question probes by interview outcome. When the overcount reason was college, CFU completed interviews had 3.4% erroneous enumerations due to duplication and 0.8% erroneous enumerations due to other reasons. For non-completed cases, the estimates were 16.2% and 3.5%, respectively.

When several people in a housing unit indicated that they may have lived somewhere else, completed interview cases had a 6.2% estimate of erroneous enumerations due to duplication. Non-completed cases had a 13.8% estimate. When the other place was a jail, completed cases had 6.5% erroneous enumerations due to duplication and 4.1% erroneous enumerations due to other reasons. Non-completed cases for this reason had estimates of 2.4% and 2.6, respectively. An explanation for this unexpected result is a processing error that affected the roster change rate for those in the overcount reason “in jail or prison,” as documented in Govern et al. (2012).

Table 24. Components of Census Coverage by Household Status of the CFU Overcount Question

Overcount Question Reason	Census Count (Thousands)	Correct Enumerations (%)	Erroneous Enumerations		Whole-Person Census Imputations (%)
			Duplication (%)	Other Reasons (%)	
U.S. Total	300,703	94.7	2.8	0.5	2.0
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)
College					
Complete	2,034	95.8	3.4	0.8	0.0
	(0)	(0.5)	(0.5)	(0.2)	(0)
Non-Complete	1,224	80.2	16.2	3.5	0.1
	(0)	(1.2)	(1.1)	(0.6)	(0)
Military					
Complete	913	96.9	1.2	1.8	0.0
	(0)	(0.6)	(0.5)	(0.4)	(0)
Non-Complete	572	90.6	3.5	5.8	0.1
	(0)	(1.6)	(1.2)	(1.0)	(0)
Jail					
Complete	167	89.4	6.5	4.1	0.0
	(0)	(1.9)	(1.7)	(1.3)	(0)
Non-Complete	142	94.8	2.4	2.6	0.2
	(0)	(1.6)	(1.2)	(1.1)	(0)
Nursing Home					
Complete	75	90.7	9.1	0.1	0.0
	(0)	(3.3)	(3.3)	(<0.1)	(0)
Non-Complete	94	78.0	16.9	4.7	0.4
	(0)	(4.6)	(3.9)	(2.7)	(0)
Multiple Reasons for Person					
Complete	283	92.2	7.4	0.4	0.0
	(0)	(1.5)	(1.6)	(0.3)	(0)
Non-Complete	204	89.0	9.2	1.5	0.3
	(0)	(2.3)	(2.3)	(0.6)	(0)
Multiple People in Housing Unit Case					
Complete	1,201	92.0	6.2	1.8	0.0
	(0)	(1.1)	(1.1)	(0.4)	(0)
Non-Complete	827	83.5	13.8	2.7	0.0
	(0)	(1.6)	(1.5)	(0.6)	(0)
Not a CFU Overcount Case	292,967	94.8	2.7	0.5	2.0
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)

Census count is all of the people in the housing unit and excludes persons in group quarters and persons in Remote Alaska. Standard errors are in parentheses below the estimate.

Table 25 shows the component results for large household cases in the CFU operation. These are cases for which the population count provided by the respondent was equal to or greater than the number of spaces allotted to the form to fully enumerate the household. While the primary goal for conducting the CFU interview for these cases was to obtain the remaining demographic characteristics for all the people in the unit, the interview could result in determining some of the persons were erroneous enumerations and removing them. The estimates for large household completed cases were 3.0% erroneous enumerations due to duplication and 0.5% erroneous due to other reasons. For the non-completed large household cases, the estimates were 3.1% and 0.6% respectively. These results were not significantly different.

Table 25. Components of Census Coverage by CFU Large Household Status

Large Household Status	Census Count (Thousands)	Correct Enumerations (%)	Erroneous Enumerations		Whole-Person Census Imputations (%)
			Duplication (%)	Other Reasons (%)	
U.S. Total	300,703	94.7	2.8	0.5	2.0
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)
Large Household					
Complete	6,654	96.5	3.0	0.5	0.0
	(0)	(0.4)	(0.4)	(<0.1)	(0)
Non-Complete	3,788	96.1	3.1	0.6	0.1
	(0)	(0.7)	(0.6)	(0.1)	(0)
Possible Large Household					
Complete	118	93.3	6.6	0.1	0.0
	(0)	(5.3)	(5.4)	(0.1)	(0)
Non-Complete	141	86.8	12.5	0.8	0.0
	(0)	(5.7)	(5.2)	(0.7)	(0)
Not a CFU Large Household Case	290,002	94.6	2.8	0.5	2.1
	(0)	(<0.1)	(<0.1)	(<0.1)	(0)

Standard errors are in parentheses below the estimate.
The 2010 Census count excludes persons in group quarters and persons in Remote Alaska.

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EXHIBIT 7

From: Bailey, Kate (CIV) [mailto:Kate.Bailey@usdoj.gov]
Sent: Thursday, September 27, 2018 4:45 PM
To: Freedman, John A.; Goldstein, Elena; zzz.External.DHo@aclu.org; Federighi, Carol (CIV); Coyle, Garrett (CIV); Kopplin, Rebecca M. (CIV); Halainen, Daniel J. (CIV); Tomlinson, Martin M. (CIV); Ehrlich, Stephen (CIV); Wells, Carlotta (CIV)
Cc: zzz.External.SBrannon@aclu.org; zzz.External.PGrossman@nyclu.org; Colangelo, Matthew; Bauer, Andrew; Gersch, David P.; Grossi, Peter T.; Weiner, David J.; Young, Dylan Scot; Kelly, Caroline; Saini, Ajay
Subject: RE: NY v. Commerce, 18-cv-2921: outstanding discovery issues

Counsel,

Thank you for promptly considering our proposal. We appreciate your agreement to our first three proposals below, which will allow us to more quickly process and produce the remaining documents responsive to your fifth motion to compel.

Regarding your proposal with respect to the new custodians:

- As for your requests (ii) and (iii) below, to simply search for "Kobach" and "Gore" produces a very large number of documents which appear to be nonresponsive, and we do not think we would be able to review all of them for production by the end of discovery. However, if we modify the search to look for "Kobach" and "Gore" within 50 of the relevance terms ("census" or "apportionment" or "enumerate!" or "districting" or "redistricting" or "counting") within those new custodians, this resulted in a reasonable amount of additional documents that we believe we can process, review, and produce along with the documents identified by the narrowing terms we sent yesterday. So, if agreeable, we will include those in our review.
- As for your request (i), the search as you proposed produces a very large volume of documents that more than doubles the volume for review in the next two weeks. We tried running proximity limits of "/50" and even "/20," but the total volume did not change by more than a couple of hundred documents. This is beyond our capacity to review. We also believe the vast majority of these documents would duplicate material already produced and thus constitutes a burden on attorney and technological resources out of proportion to the claims in the case. Because your proposed search (i) remains overly broad and we do not see a feasible way of culling down this volume to a reasonable, proportional number or ensuring that they do not substantially duplicate material already produced, we therefore propose to move forward with (ii) and (iii), but not (i).

In response to your inquiry of earlier today regarding the subpoenas we issued, we do not intend to depose Dr. Handley. Finally, in an effort to avoid further disputes, we have determined to produce the material relied upon or considered by Dr. Abowd in preparing his expert report, as you have requested. We will work to produce these materials as quickly as possible.

Thank you again for your consideration and flexibility.

Kate Bailey
Trial Attorney

United States Department of Justice
Civil Division – Federal Programs Branch
20 Massachusetts Avenue, NW
Room 7214
Washington, D.C. 20530
202.514.9239 | kate.bailey@usdoj.gov

From: Freedman, John A. [mailto:John.Freedman@arnoldporter.com]
Sent: Thursday, September 27, 2018 1:43 PM
To: Bailey, Kate (CIV) <katbaile@CIV.USDOJ.GOV>; Goldstein, Elena <Elena.Goldstein@ag.ny.gov>; DHo@aclu.org; Federighi, Carol (CIV) <CFederig@CIV.USDOJ.GOV>; Coyle, Garrett (CIV) <gcoyle@CIV.USDOJ.GOV>; Kopplin, Rebecca M. (CIV) <rkopplin@CIV.USDOJ.GOV>; Halainen, Daniel J. (CIV) <dhalaine@CIV.USDOJ.GOV>; Tomlinson, Martin M. (CIV) <mtomlins@CIV.USDOJ.GOV>; Ehrlich, Stephen (CIV) <sehrlich@CIV.USDOJ.GOV>; Wells, Carlotta (CIV) <CWells@CIV.USDOJ.GOV>
Cc: SBrannon@aclu.org; PGrossman@nyclu.org; Colangelo, Matthew <Matthew.Colangelo@ag.ny.gov>; Bauer, Andrew <Andrew.Bauer@arnoldporter.com>; Gersch, David P. <David.Gersch@arnoldporter.com>; Grossi, Peter T. <Peter.Grossi@arnoldporter.com>; Weiner, David J. <David.Weiner@arnoldporter.com>; Young, Dylan Scot <Dylan.Young@arnoldporter.com>; Kelly, Caroline <Caroline.Kelly@arnoldporter.com>; Saini, Ajay <Ajay.Saini@ag.ny.gov>
Subject: RE: NY v. Commerce, 18-cv-2921: outstanding discovery issues

Counsel --

A few things:

1. With regard to your proposed search terms, the first three bullets are fine. With regard to the last bullet regarding the new custodians, while it is fine to concentrate on the new terms, from the original, the following should be run: (i) term "citizenship" within proximity of "question," "topic" or "Census," (ii) Kobach, and (iii) Gore.

2. We are reviewing the draft protective order and will get back to you tomorrow.

Thanks & best regards,

John

From: Bailey, Kate (CIV) [mailto:Kate.Bailey@usdoj.gov]
Sent: Wednesday, September 26, 2018 9:57 PM
To: Goldstein, Elena; zzz.External.DHo@aclu.org; Freedman, John A.; Federighi, Carol (CIV); Coyle, Garrett (CIV); Kopplin, Rebecca M. (CIV); Halainen, Daniel J. (CIV); Tomlinson, Martin M. (CIV); Ehrlich, Stephen (CIV); Wells, Carlotta (CIV)
Cc: zzz.External.SBrannon@aclu.org; zzz.External.PGrossman@nyclu.org; Colangelo, Matthew; Bauer, Andrew; Gersch, David P.; Grossi, Peter T.; Weiner, David J.; Young, Dylan Scot; Kelly, Caroline; Saini, Ajay
Subject: RE: NY v. Commerce, 18-cv-2921: outstanding discovery issues

Counsel,

As we discussed on this afternoon's meet and confer, the previously proposed search terms resulted in tens of thousands of documents. Given our limited resources, both technological and human, as well as the technical issues we have experienced, we are unfortunately simply unable to process, review, and produce this volume of materials prior to the close of discovery. In the interests of identifying the documents we believe most likely to be responsive and get

those documents to you by the close of discovery, we propose to narrow the search terms you provided for different configurations of custodians as follows:

- On the previously-proposed search for "Bannon" and any of the following terms: "census" or "apportionment" or "enumerate!" or "districting" or "redistricting" or "counting", we propose to keep all of those terms, but use a proximity search that will return all documents in which any of those terms appear within 50 words of "Bannon."
- On the previously-proposed searches for the names "McHenry," "Cutrona," "Hankey," and a number of different misspellings or iterations of Kobach, Neuman, Hamilton, Zadrozny, and Sherk, we plan to narrow this search by using a proximity search that will return all documents that contain any of those names within 50 words of the relevance terms listed above ("census" or "apportionment" or "enumerate!" or "districting" or "redistricting" or "counting")
- On the previously-proposed search for certain subject-matter related terms ("aliens" or "immigrants" or "illegals" or "noncitizen*" or "non-citizen!" or "democrat!") in combination with certain other "relevance terms" ("census" or "apportionment" or "enumerate*" or "districting" or "redistricting" or "counting"), we propose to narrow this search by
    - (a) removing the term "democrat!" from the list, because it produces a very large volume of material, does not seem reasonably calculated to lead to proportional, responsive documents, and was not discussed by the parties until *after* Defendants had agreed to perform searches in response to Plaintiffs' Fifth MTC;
    - and (b) using a proximity search that will return all documents from all custodians that contain any of those remaining subject-matter related terms within 50 words of any of the "relevance terms."
- For the new custodians, the volume of potentially responsive material including the original search terms (from the Cannon declaration) is extremely large and impossible to process given the short time allotted for discovery. The previously produced materials include any responsive documents from the new custodians in which the original custodians, i.e., the higher-level Commerce officials, were included in the communication. Running the original search terms would thus be very duplicative. For these custodians, we propose running the searches listed above—i.e., the "name" and "subject-matter" searches, rather than repeating all of the searches.

As we stated, once we perform these narrowing searches we are certainly willing to prioritize documents from the custodians you have identified. We look forward to hearing your thoughts.

Kate Bailey
Trial Attorney
United States Department of Justice
Civil Division – Federal Programs Branch
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From: Bailey, Kate (CIV)
Sent: Wednesday, September 26, 2018 5:23 PM
To: 'Goldstein, Elena' <Elena.Goldstein@ag.ny.gov>; 'Dale Ho' <dho@aclu.org>; 'Freedman, John A.' <John.Freedman@arnoldporter.com>; Federighi, Carol (CIV) <CFederig@CIV.USDOJ.GOV>; Coyle, Garrett (CIV) <gcoyle@CIV.USDOJ.GOV>; Kopplin, Rebecca M. (CIV) <rkopplin@CIV.USDOJ.GOV>; Halainen, Daniel J. (CIV) <dhalaine@CIV.USDOJ.GOV>; Tomlinson, Martin M. (CIV) <mtomlins@CIV.USDOJ.GOV>; Ehrlich, Stephen (CIV) <sehrlich@CIV.USDOJ.GOV>; Wells, Carlotta (CIV) <CWells@CIV.USDOJ.GOV>

Cc: 'Sarah Brannon' <sbrannon@aclu.org>; 'Perry Grossman' <PGrossman@nyclu.org>; 'Colangelo, Matthew' <Matthew.Colangelo@ag.ny.gov>; 'Bauer, Andrew' <Andrew.Bauer@arnoldporter.com>; 'Gersch, David P.' <David.Gersch@arnoldporter.com>; 'Grossi, Peter T.' <Peter.Grossi@arnoldporter.com>; 'Weiner, David J.' <David.Weiner@arnoldporter.com>; 'Young, Dylan Scot' <Dylan.Young@arnoldporter.com>; 'Kelly, Caroline' <Caroline.Kelly@arnoldporter.com>; 'Saini, Ajay' <Ajay.Saini@ag.ny.gov>
Subject: RE: NY v. Commerce, 18-cv-2921: outstanding discovery issues

Counsel,

As promised, here are the three remaining stakeholder briefing memos.

Kate Bailey
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From: Bailey, Kate (CIV)
Sent: Tuesday, September 25, 2018 9:24 PM
To: 'Goldstein, Elena' <Elena.Goldstein@ag.ny.gov>; Dale Ho <dho@aclu.org>; Freedman, John A. <John.Freedman@arnoldporter.com>; Federighi, Carol (CIV) <CFederig@CIV.USDOJ.GOV>; Coyle, Garrett (CIV) <gcoyle@CIV.USDOJ.GOV>; Kopplin, Rebecca M. (CIV) <rkopplin@CIV.USDOJ.GOV>; Halainen, Daniel J. (CIV) <dhalaine@CIV.USDOJ.GOV>; Tomlinson, Martin M. (CIV) <mtomlins@CIV.USDOJ.GOV>; Ehrlich, Stephen (CIV) <sehrlich@CIV.USDOJ.GOV>; Wells, Carlotta (CIV) <CWells@CIV.USDOJ.GOV>
Cc: Sarah Brannon <sbrannon@aclu.org>; Perry Grossman <PGrossman@nyclu.org>; Colangelo, Matthew <Matthew.Colangelo@ag.ny.gov>; Bauer, Andrew <Andrew.Bauer@arnoldporter.com>; Gersch, David P. <David.Gersch@arnoldporter.com>; Grossi, Peter T. <Peter.Grossi@arnoldporter.com>; Weiner, David J. <David.Weiner@arnoldporter.com>; Young, Dylan Scot <Dylan.Young@arnoldporter.com>; Kelly, Caroline <Caroline.Kelly@arnoldporter.com>; Saini, Ajay <Ajay.Saini@ag.ny.gov>
Subject: RE: NY v. Commerce, 18-cv-2921: outstanding discovery issues

Counsel,

With regard to the supplemental searches we agreed to conduct in response to your fifth motion to compel (Item 3 in your first discovery dispute letter today), please note that your recitation again mischaracterizes the searches we agreed upon, as you still include Velkoff and Raglin as custodains. We have repeatedly made clear in previous correspondence that we agreed to perform searches responsive to your motion and will not expand either the terms or custodians beyond the parties' previous agreement. That said, we look forward to conferring with you regarding the material the parties previously have discussed.

Regarding the focus group materials (Item 5 in your first discovery dispute letter today), they have been delivered to your office as requested. The FedEx tracking number is 8013 9046 6422. The remaining materials are undergoing DRB review, as clearly explained in my September 20 email. They will not be produced until that review is complete, per the timeline set forth in my previous email.

As for Item #6 in your first discovery dispute letter, 23 out of 26 of the briefing memos are attached. A technical glitch prevented production of the remaining three today; we will provide those to you ASAP.

Regarding Item #7 in your first dispute letter today *and* your second discovery dispute letter of the day, received at 7:46 pm, your assertion of entitlement to the items listed in #1 of Attachment A to that letter is incorrect. Plaintiffs are not entitled to the materials relied upon by Dr. Abowd because his report was designated under Rule 26(a)(2)(C), not (B), and we will not be providing them. As for the other items requested in your second discovery dispute letter today, kindly identify the RFPs to which you believe these materials would be responsive.

Regarding your request to meet and confer "no later than tomorrow," we each are unavailable during most of the day, but could make ourselves available at 5:30 pm. Please let us know if that works for you.

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From: Goldstein, Elena [mailto:Elena.Goldstein@ag.ny.gov]
Sent: Tuesday, September 25, 2018 12:03 PM
To: Bailey, Kate (CIV) <katbaile@CIV.USDOJ.GOV>; Dale Ho <dho@aclu.org>; Freedman, John A. <John.Freedman@arnoldporter.com>; Federighi, Carol (CIV) <CFederig@CIV.USDOJ.GOV>; Coyle, Garrett (CIV) <gcoyle@CIV.USDOJ.GOV>; Kopplin, Rebecca M. (CIV) <rkopplin@CIV.USDOJ.GOV>; Halainen, Daniel J. (CIV) <dhalaine@CIV.USDOJ.GOV>; Tomlinson, Martin M. (CIV) <mtomlins@CIV.USDOJ.GOV>; Ehrlich, Stephen (CIV) <sehrlich@CIV.USDOJ.GOV>; Wells, Carlotta (CIV) <CWells@CIV.USDOJ.GOV>
Cc: Sarah Brannon <sbrannon@aclu.org>; Perry Grossman <PGrossman@nyclu.org>; Colangelo, Matthew <Matthew.Colangelo@ag.ny.gov>; Bauer, Andrew <Andrew.Bauer@arnoldporter.com>; Gersch, David P. <David.Gersch@arnoldporter.com>; Grossi, Peter T. <Peter.Grossi@arnoldporter.com>; Weiner, David J. <David.Weiner@arnoldporter.com>; Young, Dylan Scot <Dylan.Young@arnoldporter.com>; Kelly, Caroline <Caroline.Kelly@arnoldporter.com>; Saini, Ajay <Ajay.Saini@ag.ny.gov>
Subject: NY v. Commerce, 18-cv-2921: outstanding discovery issues

Counsel,
Please see attached.

Elena Goldstein | Senior Trial Counsel
Civil Rights Bureau
New York State Office of the Attorney General
28 Liberty Street, 20th Floor | New York, New York 10005
Tel: (212) 416-6201 | Fax: (212) 416-6030 | elena.goldstein@ag.ny.gov | www.ag.ny.gov

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http://www.arnoldporter.com

EXHIBIT 8

From: Ehrlich, Stephen (CIV) [mailto:Stephen.Ehrlich@usdoj.gov]
Sent: Friday, October 05, 2018 5:39 PM
To: Goldstein, Elena; Bailey, Kate (CIV); Freedman, John A.; zzz.External.DHo@aclu.org; Federighi, Carol (CIV); Coyle, Garrett (CIV); Kopplin, Rebecca M. (CIV); Halainen, Daniel J. (CIV); Tomlinson, Martin M. (CIV); Wells, Carlotta (CIV)
Cc: zzz.External.SBrannon@aclu.org; zzz.External.PGrossman@nyclu.org; Colangelo, Matthew; Bauer, Andrew; Gersch, David P.; Grossi, Peter T.; Weiner, David J.; Young, Dylan Scot; Kelly, Caroline; Saini, Ajay; Wood, Laura
Subject: RE: Several outstanding matters

Counsel,

With respect to our clawback request, the highlighted version of Dr. Abowd's expert disclosure was a draft for DOJ review, and was thus privileged work product. Please destroy the highlighted version of Dr. Abowd's expert disclosure. Documents considered by Dr. Abowd are attached.

Stephen Ehrlich
Trial Attorney
U.S. Department of Justice
Civil Division | Federal Programs Branch
202-305-9803 | stephen.ehrlich@usdoj.gov

From: Goldstein, Elena [mailto:Elena.Goldstein@ag.ny.gov]
Sent: Tuesday, October 02, 2018 10:01 PM
To: Bailey, Kate (CIV) <katbaile@CIV.USDOJ.GOV>; Freedman, John A. <John.Freedman@arnoldporter.com>; DHo@aclu.org; Federighi, Carol (CIV) <CFederig@CIV.USDOJ.GOV>; Coyle, Garrett (CIV) <gcoyle@CIV.USDOJ.GOV>; Kopplin, Rebecca M. (CIV) <rkopplin@CIV.USDOJ.GOV>; Halainen, Daniel J. (CIV) <dhalaine@CIV.USDOJ.GOV>; Tomlinson, Martin M. (CIV) <mtomlins@CIV.USDOJ.GOV>; Ehrlich, Stephen (CIV) <sehrlich@CIV.USDOJ.GOV>; Wells, Carlotta (CIV) <CWells@CIV.USDOJ.GOV>
Cc: SBrannon@aclu.org; PGrossman@nyclu.org; Colangelo, Matthew <Matthew.Colangelo@ag.ny.gov>; Bauer, Andrew <Andrew.Bauer@arnoldporter.com>; Gersch, David P. <David.Gersch@arnoldporter.com>; Grossi, Peter T. <Peter.Grossi@arnoldporter.com>; Weiner, David J. <David.Weiner@arnoldporter.com>; Young, Dylan Scot <Dylan.Young@arnoldporter.com>; Kelly, Caroline <Caroline.Kelly@arnoldporter.com>; Saini, Ajay <Ajay.Saini@ag.ny.gov>; Wood, Laura <Laura.Wood@ag.ny.gov>
Subject: RE: Several outstanding matters

Counsel,

With respect to the supplemental administrative record search terms and custodians, please advise whether you intend to produce these documents by the close of business tomorrow. If not, Plaintiffs will seek relief from the Court. As you are aware, the Court ordered that supplementation of the Administrative Record was to be completed on July 26 and Plaintiffs filed their motion to compel these documents on August 31. Soon after,

Defendants advised that they would voluntarily comply, and on September 6, Plaintiffs agreed to ask the Court to hold that motion in abeyance. By September 10, the parties had substantially agreed on terms and custodians; more than two weeks later, on September 26, Defendants advised for the first time that these terms yielded results that were too large for Defendants to efficiently process. Defendants requested that Plaintiffs further narrow the scope of the search terms, and we agreed to a narrower search on September 28. However, more than a month after Plaintiffs' initial motion to compel, Defendants now indicate only that they are "reviewing and processing" the materials at issue, and will not commit to any date certain for production. While Plaintiffs have been exceedingly flexible with respect to this production, and have repeatedly acceded to Defendants' requests to narrow the scope of the searches at issue, the discovery timeline mandates that these documents be produced forthwith. Accordingly, kindly confirm that Defendants will produce these materials by the close of business tomorrow. As you know, we have met and conferred on this request extensively, including on our August 31, September 5, and September 26 calls.

With respect to your clawback request regarding the highlighted version of Dr. Abowd's expert disclosure that you produced yesterday, we have sequestered the document as required by ECF No. 296 and Rule 26(b)(5)(B). To enable us to determine whether to contest this claim of privilege, as permitted by ECF No. 296 and Rule 26(b)(5)(B), please explain your claim that the report is work product that was produced in error. We note in particular that Defendants' email of 9:04pm yesterday specifically identified this report in your production and noted that it contains "yellow highlights indicating that a new footnote identifies the source of the yellow-highlighted item." Please advise how the identification of Dr. Abowd's sources was not already required by Rule 26. As noted, we have sequestered the document pending resolution of your clawback request, and are aware of our obligations under 26(b)(5)(B) not to use the information until your privilege claim is resolved.

Also -- attached please find a deposition notice for Dr. Abowd's testimony for September 12.

Best,
Elena

Elena Goldstein | Senior Trial Counsel
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From: Bailey, Kate (CIV) <Kate.Bailey@usdoj.gov>
Sent: Tuesday, October 2, 2018 7:46 PM
To: Freedman, John A. <John.Freedman@arnoldporter.com>; Goldstein, Elena <Elena.Goldstein@ag.ny.gov>; DHo@aclu.org; Federighi, Carol (CIV) <Carol.Federighi@usdoj.gov>; Coyle, Garrett (CIV) <Garrett.Coyle@usdoj.gov>; Kopplin, Rebecca M. (CIV) <Rebecca.M.Kopplin@usdoj.gov>; Halainen, Daniel J. (CIV) <Daniel.J.Halainen@usdoj.gov>; Tomlinson, Martin M. (CIV) <Martin.M.Tomlinson@usdoj.gov>; Ehrlich, Stephen (CIV) <Stephen.Ehrlich@usdoj.gov>; Wells, Carlotta (CIV) <Carlotta.Wells@usdoj.gov>
Cc: SBrannon@aclu.org; PGrossman@nyclu.org; Colangelo, Matthew <Matthew.Colangelo@ag.ny.gov>; Bauer, Andrew <Andrew.Bauer@arnoldporter.com>; Gersch, David P. <David.Gersch@arnoldporter.com>; Grossi, Peter T. <Peter.Grossi@arnoldporter.com>; Weiner, David J. <David.Weiner@arnoldporter.com>; Young, Dylan Scot <Dylan.Young@arnoldporter.com>; Kelly, Caroline <Caroline.Kelly@arnoldporter.com>; Saini, Ajay

<Ajay.Saini@ag.ny.gov>
Subject: Several outstanding matters

Counsel—

I write regarding several outstanding matters:

- We don't believe that we have received a subpoena for Dr. Abowd's expert deposition on the 12th. With apologies if we've somehow overlooked it, please send us his subpoena at your earliest convenience.
- Please provide dates of availability for deposition of the experts on which you rely for rebuttal.
- Secretary Ross will be unavailable during trial as he will be out of the country; accordingly, to the extent his deposition goes forward, we wanted to let you know this as a courtesy.
- Regarding the search terms discussed by the parties last week, we have updated our searches to include the terms proposed by John Freedman on 9/28. We are reviewing and processing potentially responsive documents according to the search terms agreed upon by the parties last week.
- Consistent with our representation on the September 26 meet and confer, we began running the next production of DOJ materials early yesterday morning. Because that production is unusually large—more than 18,000 pages total—it is taking longer to complete than typical, and is still in process with our lab. We anticipate the production will be complete tomorrow morning and will overnight disks to you promptly.
- We also have received focus-group materials cleared for release through the DRB. Our lab is processing/Bates stamping those materials as well and they also should be ready in the morning.
- The highlighted version of Dr. Abowd's expert disclosure sent to you last night is privileged work product and was produced in error. Pursuant to Rule 26 and the parties' clawback agreement, ECF No. 296, please destroy this version of Dr. Abowd's disclosure. We will be in touch soon regarding the documents on which Dr. Abowd relied.

Best,

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