Understanding Who Was Missed in the 2010 Census

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Executive Summary

Researchers use two main measures to determine who was missed in the 2010 Decennial Census: omissions and net undercounts. Omissions reflect the number of people who should have been counted in the census but were not, while net undercounts reflect the percent of people who were missed minus the percent who were double counted.

Census omissions and net undercount rates both reflect dimensions of Census accuracy, but they often tell different stories. Analysis shows a nationwide omissions rate of 5.3 percent compared to a net undercount rate of 0.01 percent. This paper focuses on census omissions. In the 2010 U.S. Census, there were nearly 16 million omissions.

Omissions rates vary among demographic groups in much the same pattern as seen in net undercount rates. Racial and Hispanic minorities have higher omissions rates than non-Hispanic whites. Renters (8.5 percent omissions rate) are more likely than homeowners (3.7 percent) to be omitted in the census. Among the states, omissions rates range from a low of 2.6 percent in Iowa to a high of 8.9 percent in Mississippi. Large cities tend to have higher omissions rates than the rest of the country.

Obtaining an accurate count of state and local populations is important because the data affect the balance of political power across geographic areas and are widely used for state and local decision-making. For example:

- Seats in the U.S. House of Representatives are apportioned based on decennial census data.

- More than $850 billion in federal aid was distributed in FY 2016 based on state and local census data.

- Planners use local census data to decide where to build new roads, schools and hospitals.

- Businesses use census data to inform their location or relocation decisions.

This analysis is designed to help community leaders, advocates, and others better target geographic areas and population subgroups for Get-Out-the-Count efforts to reduce the number of people who are missed in the 2020 Census and improve the accuracy of the count.

1. Introduction

Who was missed in the 2010 Decennial Census? Researchers use two main measures to answer this question: net undercounts and omissions. Although the measures may sound similar, they convey different information about the accuracy of the data, and they often send different messages about census results.

In the simplest terms, omissions reflect the number of people missed in the census. Omissions are defined by the U.S. Census Bureau as, "people who should have been enumerated in the United States Census but were not."[1]

Net undercounts (and overcounts) reflect a balance between two groups of people. The first group is those who are omitted from the enumeration, and the second group includes people who are counted more than once or included in the census inappropriately (erroneous enumerations) and who are added to the census count to fill in missing responses (whole-person imputations). Erroneous enumerations are mostly people who have been double counted, but also include people who were counted in error, such as foreign tourists or people included in the count even though they died before April 1 of the census year. Whole-person imputations are people who are not enumerated but added to the census count based on some evidence they exist. For example, if a housing unit looks occupied but a resident does not return a census form or respond to repeated visits from a Census Bureau enumerator, the Census Bureau may impute people into the census count.

If the number of omissions is larger than the number of erroneous enumerations and whole-person imputations, there is a net undercount. If the number of erroneous enumerations and whole-person imputations is larger than the number of omissions, there is a net overcount.

People may be more familiar with net undercount as a measure of census accuracy because it is the only measure of census accuracy that has been reported consistently over a long period of time. Net undercounts have been reported since the 1950 census and are frequently used to show trends in census accuracy.[2] The 2010 Census was the first to make omissions data easily available.

Net undercounts were the first measures of census accuracy released for the 2010 Census. Data on net undercounts were released in the spring of 2011, but data on omissions were not available until May 2012.[3]

Although net undercount rates are widely used to measure census accuracy, omissions are a better reflection of who is actually missed in the census because the net undercount can mask omissions. For example, if 10 percent of Hispanics in a state were missed, while an equal number of non-Hispanic whites were double counted, the net undercount rate for the state would be zero, despite the large number of Hispanics who were missed.

Shortcomings of the net undercount measure are underscored by the 2010 Census results. The net undercount rate was near zero (0.01 percent), which led some people to declare the 2010 Census very accurate.[4] Yet in the 2010 Census, 16 million people were missed in the count. However, these omissions were offset by approximately 10 million erroneous enumerations and 6 million whole-person imputations, resulting in a net undercount rate near zero.[5]

The main point is that census net undercounts *do not* tell you the number or characteristics of people who were missed. Only census omissions reveal that information.

This paper focuses on omissions data from the 2010 Census. All the data reported here come from Census Bureau reports, but sometimes these data are difficult to find for those not familiar with Census Bureau publications. This report is motivated by the fact that data on omissions are not widely available, and omissions rates provide a different and valuable perspective on census accuracy. Omissions are also one of the few measures of census accuracy available for states and large cities.

2. Implications of Omissions

Almost all applications of census data use population counts, which include net undercounts and net overcounts. From this perspective, omissions may not seem very important, because omissions in the total population count at the national level may be balanced by people counted more than once and whole-person imputations.

But for understanding who is missed in the census, omissions do matter. There is an important distinction between the accuracy of the total population count at the national level and the accuracy of the data for subareas or subpopulations. The main benefit of the decennial census is the availability of data at a subnational level and for detailed demographic groups (age, sex, race, Hispanic Origin, and tenure). This makes omissions important even when they are balanced by erroneous enumerations or whole-person imputations at the national level.

For example, omissions in California that are offset by erroneous enumerations in Florida do not impact national accuracy, but these omissions are problematic because they affect the accuracy of the census counts in both states. The same issue can occur in cities: If an omission in Los Angeles is canceled by a whole-person imputation in San Francisco, the census count in Los Angles would be too low while that in San Francisco would be too high.

Similarly, when omissions of people in one racial group are offset by double counting people of another racial group, these errors affect the accuracy of the census count for both racial groups. For example, if the omission of a black male is offset by double counting a white female in the same city, the total population count for the city is not affected, but these errors affect the accuracy of the counts of blacks, whites, males, and females in the city. Most experts believe that the kinds of people who are counted more than once are systematically different than the kinds of people who are missed. For example, people with two or more homes are more likely to be double counted while homeless people are more likely to be missed.

The impact of omissions can be illustrated with data from the 2010 Census. The population reporting they were black (alone or in combination with some other race) had a net undercount rate of 2.1 percent compared with a net overcount of 0.8 percent for the non-Hispanic white alone population, resulting in a gap of almost 3 percentage points.[6] What accounts for this difference? The erroneous enumeration rate and the whole-person imputation rate of the two groups are relatively similar. The erroneous enumeration rate for whites was 3.0 percent compared to 4.3 percent for blacks, and the whole-person imputation rate for the white population was 1.6 percent compared to 3.1 percent for blacks.[7] But the omissions rate was 9.3 percent for blacks compared to 3.8 percent for whites.[8] In other words, there was a 1.3 percentage-point gap between blacks and whites in the erroneous enumeration rate, a 1.5 percentage-point gap in the whole-person imputation rate, and a 5.5 percentage-point gap in the omissions rate. So, the black-white gap in census coverage is due primarily to differences in omissions rates.

Omissions rates are also important in communicating about the accuracy of census data—and advocating for a better census count. A net undercount of zero in the 2010 Census sends a different message than the observation that 16 million people (5.3 percent of the population) were missed. A net undercount of zero suggests that the census was very good with no serious problems with the enumeration. On the other hand, high omissions rates suggest problems with the census that require attention. Many advocates monitor omissions rates because they want

to understand how many people in certain geographic areas or population subgroups were missed in the census.

The Census Bureau's decennial census outreach and promotion materials also focus on avoiding omissions. Their motto is: "Counting Everyone Once, Only Once, and in the Right Place." Avoiding erroneous inclusions receives little attention. "The primary goal of the IPC (Integrated Partnership and Communications operation) is to develop a research-based communication plan with the objective of motivating self-response to the decennial census."[9] In other words, the Census Bureau's primary focus is getting people to complete and submit their census forms online, by phone, or by mail.

3. Omissions by Age and Sex, Race/Hispanic Origin, and Tenure

The Census Bureau began evaluating the coverage error or accuracy of decennial censuses with the 1940 Census. Two primary methods are used: dual system estimation (DSE) and Demographic Analysis (DA). DSE involves conducting an independent survey (called a post-enumeration survey or PES) and case-by-case matching of persons in the PES with those enumerated in the census to determine who was missed or who was counted in error. Demographic Analysis involves the use of administrative records to develop an independent set of national population estimates by age, sex, and race to compare with the counts from the census to assess differences. More detail about each of these methodologies is provided in Appendix A.

This paper presents omissions rates from the 2010 Census in two sections. This section focuses on national-level omissions rates by age and sex, race/Hispanic origin, and tenure. The following section focuses on omissions rates for states, the fifty largest counties, and cities with populations of 500,000 or more.

Omissions by Age and Sex

In the 2010 Census, using the DSE method, the Census Bureau estimated an omissions rate of 6.6 percent for children under age 5. However, the DSE method estimated a net undercount rate of just 0.7 percent for young children, compared with an estimate of 4.6 percent based on the DA method. Most experts agree that DA is a better method for estimating the accuracy of census counts of young children because it relies heavily on the use of comprehensive and accurate birth certificate data. The observed difference between omissions rates and net undercount rates is generally attributed to correlation bias in the DSE methodology.[10] Correlation bias refers to the fact that the kinds of people missed in the census are also missed in DSE's post-enumeration survey. If someone is missed in both the census and the post-enumeration survey, they will not be identified as an omission.

However, recent research by the Census Bureau's Task Force on the Undercount of Young Children provides updated omissions rate estimates for several age/sex groups, including young children, by taking advantage of the strengths of both the DA and the DSE methods.[11] These improved estimates for omissions, along with net undercount rates, are shown in Table 3.1.

Table 3.1. 2010 Census Net Undercount and Omissions Rates and Number Omitted, by Age and Sex

Age and Sex	Census Bureau's Adjusted DA-Based Population Estimates (in thousands)*	Net Undercount Rate**	Omissions Rate**	Number of People Missed (in thousands)
Ages 0 to 4	21,127	4.6	10.3	2,172
Ages 5 to 9	20,777	2.2	7.3	1,517
Ages 10 to 17	33,270	-0.5	4.8	1,625
Males ages 18 to 29	23,901	-0.3	7.9	1,883
Females ages 18 to 29	23,551	-1.4	6.4	1,514
Males ages 30 to 49	41,227	2.3	7.3	3,012
Females ages 30 to 49	41,120	-1.7	2.9	1,171
Males ages 50+	44,653	-0.5	4.0	1,793
Females ages 50+	50,678	-2.5	1.9	949
Total	300,304	0.01	5.2	15,636[†]
*This is household population only. It does not include the group quarters population or the population in remote Alaska.				
**Demographic Analysis estimates. Negative figures reflect net overcounts.				
[†]The total number of omissions here differs from those shown elsewhere in this paper because they come from a different source.				
Source: U.S. Census Bureau (2016), 2020 Census Memorandum Series, Investigating the 2010 Undercount of Young Children - A New Look at 2010 Census Omission by Age, July 2016, Table 3 and Figure 2.				

The revised rates are similar to the DSE omissions rates released by the Census Bureau in 2012 with two exceptions. For young children, the updated omissions rate (10.3 percent) was much higher than the DSE rate published in 2012 (6.6 percent). Young children not only had the highest net undercount rate, but also the highest omissions rate of any age group. The 10.3 percent omissions rate for children ages 0 to 4 translates into nearly 2.2 million young children omitted from the 2010 Census.

For young adults ages 18 to 29, the omissions rates from the updated analysis are somewhat lower than those from the original DSE. The updated omissions estimate for males ages 18 to 29 is 7.9 percent, compared with 9.3 percent in the original estimates from DSE. For females ages 18 to 29, the updated omissions rate is 6.4 percent, compared with 7.6 percent in the original DSE calculations. The relatively low net undercount for people in the 18-to-29 age range reflects a high omissions rate coupled with a high rate of erroneous enumerations and whole-person imputations.

There are several broad patterns evident in Table 3.1 Among adults, older people had lower omissions rates in the 2010 Census than younger adults. In every adult age group, males had higher omissions rates than females. Both of these patterns are consistent with other analyses of census accuracy.[12]

Omissions by Race and Hispanic Origin

Table 3.2 shows net undercount and omissions rates for racial and Hispanic/Latino origin groups based on the DSE method. Racial/Hispanic minorities (that is, anyone other than those who are non-Hispanic white alone) accounted for more than half (54.6 percent) of all omissions in the 2010 Census. Of the 15.9 million people missed, 8.7 million were racial or Hispanic

minorities. In general, racial and Hispanic minorities had higher net undercount and omissions rates than non-Hispanic whites. Each of the racial and Hispanic minority groups had higher omissions rates than the non-Hispanic white alone population.

Table 3.2. 2010 Census Omissions Rates and Number Omitted, by Race and Hispanic Origin

Race and Hispanic Origin	Census Bureau's DSE-Based Population Estimates (in thousands)*	Net Undercount Rate**	Omissions Rate	Number Omitted‡ (in thousands)
Total	300,667	0.01	5.3	15,999
Non-Hispanic White Alone	190,413	-0.83	3.8	7,236
Black Alone or in Combination†	40,999	2.06	9.3	3,813
Asian Alone or in Combination†	16,969	0.00	5.3	899
American Indian and Alaska Native Alone or in Combination†	5,063	0.15	7.6	385
Native Hawaiian or Pacific Islanders Alone or in Combination†	1,201	1.02	7.9	95
Hispanic Origin	50,356	1.54	7.7	3,877
*This is household population only. It does not include the group quarters population or the population in remote Alaska.				
**Census Coverage Measurement estimates. Negative figures reflect net overcounts.				
†Includes Hispanics who selected this race. Hispanics are also included in the Hispanic Origin category.				
‡The number of people missed is calculated by multiplying the the Census Bureau's DSE-based population estimates by the estimated omissions rates. The omissions rates come from a sample and therefore contain some sampling error. Small differences may be due to random chance, so data should be used cautiously.				
Source: U.S. Census Bureau (2012), "2010 Census Coverage Measurement Estimation Report: Components of Census Coverage for the Household Population in the United States," DSSD 2010 Census Coverage Measurement Memorandum Series #2010-G-04, Tables 1 and 2.				

The racial categories used in Table 3.2 are not mutually exclusive; each racial group—except non-Hispanic white alone—includes people who selected that racial group either alone or in combination with other racial/Hispanic groups.

The omissions rates vary considerably more than the net undercount rates. Less than a 3 percentage-point difference separates the highest and lowest net undercount rates (a 0.8 percent net *overcount* of non-Hispanic whites compared with a 2.1 percent net undercount rate for blacks). For omissions, there is a 5.5 percentage-point difference between the highest and lowest rates (a 9.3 percent omissions rate for blacks compared with a 3.8 percent rate for non-Hispanic whites.)

The overall omissions rate for Hispanics (7.7 percent) was more than twice that of the non-Hispanic white population (3.8 percent). Table 3.2 shows that there were about 3.9 million Hispanics omitted in the 2010 Census.

Examination of omissions rates are particularly important for the Asian population because the net undercount rate of zero could leave people with the impression that no Asians were missed in the 2010 Census. The data in Table 3.2 show that is not the case. The omissions rate for Asians (5.3 percent) was 39 percent higher than that of the non-Hispanic white population (3.8 percent). Table 3.2 shows there were about 900,000 Asians omitted in the 2010 Census.

Omissions rates are also revealing for the American Indian and Alaska Native population, which had a net undercount rate around zero but a relatively high omissions rate—7.6 percent, which

is double the rate for non-Hispanic whites (3.8 percent). Table 3.2 shows that about 385,000 American Indian/Alaska Natives were missed in the 2010 Census.

The omissions rate for Native Hawaiian or Pacific Islanders (7.9 percent) is slightly more than double that of the non-Hispanic white population (3.8 percent). About 95,000 Native Hawaiian or Pacific Islanders were missed in the 2010 Census.

Table 3.2.1 provides DSE omissions rates for major racial/ethnic groups by age and sex. Children under age 10 are not included because DSE omissions rates for that age group may not be reliable due to correlation bias.[13]

Table 3.2.1. Omissions Rates in the 2010 Census by Race, Hispanic Origin, Age and Sex

Age and Sex	Total Population	Non-Hispanic White Alone	Hispanic	Black	Asian Alone or in Combination	American Indian and Alaska Native Alone or in Combination	Native Hawaiian or Pacific Islander Alone or in Combination
All Ages	5.3	3.8	7.7	9.3	5.3	7.6	7.9
Ages 10 to 17	4.4	3.1	5.9	6.9	3.3	8.1	5.0
Males ages 18 to 29	9.3	6.6	12.4	15.6	8.4	11.2	15.7
Females ages 18 to 29	7.6	6.2	9.6	9.7	8.4	10.3	7.7
Males ages 30 to 49	8.5	6.2	10.9	16.7	7.8	9.9	6.4
Females ages 30 to 49	4.1	3.0	5.8	6.2	4.4	5.5	7.2
Males ages 50+	4.2	3.5	5.5	9.2	3.7	5.9	4.5
Females ages 50+	2.0	1.7	2.5	2.8	3.6	3.2	7.6

Source: U.S. Census Bureau. (2012), "2010 Components of Census Coverage for Race Groups and Hispanic Origin by Age, Sex, and Tenure in the United States," DSSD 2010 Census Coverage Measurement Memorandum Series #2010-E-51.

Omissions rates are lower for non-Hispanic whites across all major age/sex groups. For every age/sex group shown in Table 3.2.1, racial/ethnic minorities have higher omissions rates than non-Hispanic whites. Several of the detailed groups have very high omissions rates. Seven cells have omissions rates above 10 percent, led by black males ages 30 to 49 with an omissions rate of 16.7 percent (that is, one out of six).

Omissions by Tenure

Table 3.3 shows net census undercounts and omissions rates by tenure. For the population living in renter-occupied households, the omissions rate was 8.5 percent compared to 3.7 percent for the population living in owner-occupied housing units. (See O'Hare 2019, Chapter 12 for more information on this topic.)

The difference in the net undercount rate between renters and homeowners is less than 2 percentage points, but the difference in omissions rates is 4.8 percentage points. The higher omissions rate for people living in rental housing units underscores the importance of housing stability.[14]

Table 3.3. 2010 Census Net Undercount and Omissions Rates and Number Omitted, by Tenure

Tenure	Census Bureau's DSE-Based Population Estimates (in thousands)*	Net Undercount Rate**	Omissions Rate	Number Omitted[†] (in thousands)
Population Living in Owner-Occupied Housing Units	200,109	-0.57	3.7	7,404
Population Living in Renter-Occupied Housing Units	100,558	1.09	8.5	8,547
*This is household population only. It does not include the group quarters population or the population in remote Alaska.				
**Negative figures reflect net overcounts.				
[‡]The number of people missed is calculated by multiplying the the Census Bureau's DSE-based population estimates by the estimated omissions rates. The omissions rates come from a sample and therefore contain some sampling error. Small differences may be due to random chance, so data should be used cautiously.				
Source: U.S. Census Bureau (2012), "2010 Census Coverage Measurement Estimation Report: Components of Census Coverage for the Household Population in the United States," DSSD 2010 Census Coverage Measurement Memorandum Series #2010-G-04, Table 3.				

4. Omissions for States, Large Counties, and Large Cities

The Census Bureau's omissions rates for states, large counties, and large cities provide one of the few measures of census accuracy available at a subnational level. These rates are arguably the best source of state-, county-, and city-level data on 2010 Census accuracy. While net undercount rates for states and large cities were also produced by the Census Bureau, none of those net undercount rates are statistically significantly different than zero. Obtaining an accurate count of state and local populations is important because the data affect the balance of political power across geographic areas and are used widely for state and local decision-making. For example:

- Seats in the U.S. House of Representatives are apportioned based on decennial census data.

- More than $850 billion in federal aid was distributed in FY 2016 based on state and local census data.[15]

- Planners use local census data to decide where to build new roads, schools and hospitals.

- Businesses use census data to inform their location or relocation decisions.

Omissions for States

The 2010 Census Coverage Measurement operation provides state-level estimates of net undercounts and omissions using the DSE method. All the state-level omissions rates are statistically significantly different than zero, but none of them is statistically significantly different than the national rate.

The omissions rates for states range from a low of 2.6 percent in Iowa to a high of 8.9 percent in Mississippi (see Table 4.1 on page 13). In other words, people living in Mississippi were more than three times as likely to be omitted in the 2010 Census as those living in Iowa. In general, states with the lowest omissions rates are in the Midwest (Indiana, Iowa, Kansas, Nebraska, and Ohio), and many of the states with the highest omissions rates are in the South and Southwest (Alabama, Florida, Mississippi, New Mexico, and North Carolina). There are four states with more than one million omissions each (California, Florida, New York, and Texas). These four states account for 6.1 million (38 percent) of the 16 million omissions in the 2010 Census.

Omissions Rates in Large Counties

Table 4.2 (on page 14) shows the census omissions rates for the 50-largest counties in 2010. The collective omissions rate for the 50-largest counties was 6.3 percent. The average omissions rate in the 50-largest counties was 6.1 percent, and the average number of omissions per county was 114,000 people.

Table 4.1. States Ranked by 2010 Census Omissions Rates

Rank	State	Census Bureau's DSE-Based Population Estimates (in thousands)*	Omissions Rate	Number of People Missed** (in thousands)
1	Mississippi	2,882	8.9	257
2	Hawaii	1,312	7.8	102
3	Alabama	4,670	7.7	360
3	New Mexico	2,013	7.7	155
3	West Virginia	1,778	7.7	137
6	North Carolina	9,327	7.6	709
7	Florida	18,463	7.5	1,385
8	Arizona	6,227	7.3	455
8	Georgia	9,522	7.3	695
10	Nevada	2,663	6.9	184
10	Texas	24,804	6.9	1,711
12	Louisiana	4,389	6.8	298
13	Oklahoma	3,600	6.4	230
13	Wyoming	547	6.4	35
15	Delaware	878	6.2	54
16	Montana	954	6.1	58
16	New York	18,644	6.1	1,137
18	Maryland	5,688	6.0	341
19	Colorado	4,899	5.9	289
19	Rhode Island	1,002	5.9	59
21	Idaho	1,538	5.8	89
21	Tennessee	6,200	5.8	360
21	Virginia	7,806	5.8	453
24	Massachusetts	6,276	5.7	358
25	Alaska	624	5.5	34
25	Kentucky	4,208	5.5	231
27	Arkansas	2,826	5.4	153
27	Vermont	608	5.4	33
29	South Carolina	4,505	5.2	234
30	California	36,530	5.1	1,863
31	New Hampshire	1,284	5.0	64
32	South Dakota	781	4.9	38
32	Utah	2,705	4.9	133
34	Illinois	12,469	4.6	574
35	Michigan	9,592	4.5	432
35	Missouri	5,777	4.5	260
35	New Jersey	8,574	4.5	386
35	Pennsylvania	12,294	4.5	553
35	Washington	6,578	4.5	296
40	Minnesota	5,140	4.4	226
41	Maine	1,301	4.2	55
42	Wisconsin	5,528	4.1	227
43	Oregon	3,745	4.0	150
44	Connecticut	3,440	3.9	134
44	North Dakota	648	3.9	25
46	Kansas	2,756	3.7	102
47	Indiana	6,255	3.6	225
48	Ohio	11,138	3.5	390
49	Nebraska	1,766	3.1	55
50	Iowa	2,940	2.6	76
	U.S.	300,667	5.3	15,999

*This is household population only. It does not include the group quarters population or the population in remote Alaska.

**The number of people missed is calculated by multiplying the the Census Bureau's DSE-based population estimates by the estimated omissions rates. The omissions rates come from a sample and therefore contain some sampling error. Small differences may be due to random chance, so data should be used cautiously.

Note: Data for the District of Columbia are not included in this table.

Source: U.S. Census Bureau (2012), "2010 Census Coverage Measurement Estimation Report: Components of Census Coverage for the Household Population in the United States," DSSD 2010 Census Coverage Measurement Memorandum Series #2010-G-04, Table A1.

Table 4.2. Fifty-Largest Counties Ranked by Omissions Rates in 2010 Census

Rank	County	State	Census Bureau's DSE-Based Population Estimates (in thousands)*	Omissions Rate	Number of People Missed** (in thousands)
1	Orange County	Florida	2,975	10.8	321
2	Kings County	New York	2,406	10.4	250
3	Dallas County	Texas	2,380	9.7	231
4	Mecklenburg County	North Carolina	912	9.6	88
5	Pima County	Arizona	953	9.0	86
6	Bronx County	New York	1,333	8.9	119
7	Salt Lake County	Utah	1,012	8.8	89
8	Broward County	Florida	1,746	8.5	148
8	Hillsborough County	Florida	1,213	8.5	103
10	Bexar County	Texas	1,679	7.9	133
11	Clark County	Nevada	1,924	7.8	150
11	Westchester County	New York	915	7.8	71
13	Honolulu County	Hawaii	918	7.7	71
14	Riverside County	California	2,151	7.5	161
15	Shelby County	Tennessee	919	7.4	68
16	Palm Beach County	Florida	1,308	7.2	94
17	Maricopa County	Arizona	3,750	7.0	262
18	Philadelphia County	Pennsylvania	1,459	6.9	101
19	Queens County	New York	2,159	6.8	147
20	Cook County	Illinois	5,071	6.6	335
20	Miami-Dade County	Florida	2,483	6.6	164
20	Oakland County	Michigan	1,182	6.6	78
23	Cuyahoga County	Ohio	1,241	6.5	81
24	New York County	New York	1,509	6.4	97
25	Travis County	Texas	1,013	6.0	61
26	Harris County	Texas	4,109	5.9	242
27	San Bernardino County	California	1,998	5.5	110
27	Montgomery County	Maryland	971	5.5	53
29	Los Angeles County	California	9,696	5.4	524
29	Tarrant County	Texas	1,805	5.4	97
29	Fresno County	California	917	5.4	49
32	Santa Clara County	California	1,757	5.3	93
33	St. Louis County	Missouri	973	5.2	51
34	Suffolk County	New York	666	5.1	34
35	Wayne County	Michigan	1,786	5.0	89
36	Orange County	California	2,975	4.9	146
37	Fairfax County	Virginia	1,081	4.7	51
38	San Diego County	California	2,991	4.6	138
39	Franklin County	Ohio	1,129	4.4	50
40	Alameda County	California	1,478	4.3	64
41	Nassau County	New York	1,307	4.1	54
42	Middlesex County	Massachusetts	1,441	3.9	56
43	Fairfield County	Connecticut	893	3.8	34
44	Allegheny County	Pennsylvania	1,184	3.7	44
45	Contra Costa County	California	1,039	3.6	37
46	Sacramento County	California	1,395	3.2	45
47	DuPage County	Illinois	897	3.0	27
48	King County	Washington	1,891	2.9	55
49	Hennepin County	Minnesota	1,122	2.7	30
50	Milwaukee County	Wisconsin	919	2.5	23

*This is household population only. It does not include the group quarters population or the population in remote Alaska.

**The number of people missed is calculated by multiplying the the Census Bureau's DSE-based population estimates by the estimated omissions rates. The omissions rates come from a sample and therefore contain some sampling error. Small differences may be due to random chance, so data should be used cautiously.

Source: U.S. Census Bureau (2012), "2010 Census Coverage Measurement Estimation Report: Components of Census Coverage for the Household Population in the United States," DSSD 2010 Census Coverage Measurement Memorandum Series #2010-G-04, Table A1.

Considerable variation exists in omissions rates across the 50-largest counties. Omissions rates ranged from a low of 2.5 percent in Milwaukee County, Wisconsin to a high of 10.8 percent in Orange County, Florida—an 8 percentage-point difference. The number of omissions ranged from a low of 23,000 in Milwaukee County, Wisconsin to a high of 524,000 in Los Angeles County, California.

More than a third (5.7 million out of 16.0 million) of all omissions in the 2010 Census occurred in one of these large counties.

Omissions Rates in Large Cities

The Census Bureau only produced omissions rates for 33 cities (places)—those with populations of 500,000 or more in 2010. Table 4.3 shows the omissions rates for these cities. Collectively there were 2.8 million omissions in these large cities, and the collective omissions rate for the 33 large cities was 7.3 percent. The average omissions rate in the 33 large cities was 7.1 percent and the average number of omissions was 85,000.

Table 4.3 Large Cities* Ranked by Omissions Rates in the 2010 Census

Rank	Place	State	Census Bureau's DSE-Based Population Estimates (in thousands)*	Omissions Rate	Number of People Missed[‡] (in thousands)
1	Boston city	Massachusetts	564	15.1	85
2	Dallas city	Texas	1,209	13.3	161
3	Baltimore	Maryland)	609	11.6	71
4	Charlotte city	North Carolina	727	11.0	80
5	District of Columbia[†]	DC	575	9.0	52
6	Memphis city	Tennessee	639	8.7	56
6	Chicago city	Illinois	2,624	8.7	228
8	Jacksonville	Florida	805	8.5	68
9	San Antonio	Texas	1,307	8.2	107
10	Denver city	Colorado	587	8.0	47
11	New York city	New York	7,858	7.9	621
12	Austin city	Texas	782	7.4	58
12	Houston	Texas	2,108	7.4	156
14	Nashville-Davidson metropolitan	Tennessee	580	6.9	40
14	Phoenix city	Arizona	1,425	6.9	98
14	Philadelphia	Pennsylvania	1,459	6.9	101
17	San Francisco city	California	782	6.8	53
17	San Jose city	California	937	6.8	64
19	Detroit city	Michigan	699	6.7	47
20	El Paso city	Texas	639	6.4	41
21	Oklahoma city	Oklahoma	570	6.3	36
21	Las Vegas city	Nevada	575	6.3	36
23	Fort Worth	Texas	736	5.7	42
24	Los Angeles	California	3,735	5.6	209
25	Albuquerque	New Mexico	538	5.5	30
25	Columbus	Ohio	761	5.5	42
27	San Diego city	California	1,257	5.0	63
28	Louisville/Jefferson County	Kentucky	586	4.7	28
29	Portland	Oregon	565	4.1	23
30	Tucson city	Arizona	499	3.5	17
31	Milwaukee city	Wisconsin	575	3.2	18
32	Indianapolis city	Indiana	799	3.1	25
33	Seattle	Washington	585	2.0	12
	33 Cities Collectively		38,695	7.3	2,814

*Population of 500,000 or more.

**This is household population only. It does not include the group quarters population or the population in remote Alaska.

[†]Data for District of Columbia are included along with state data in the Census Bureau report but are included along with data for large cities in this report.

[‡]The number of people missed is calculated by multiplying the the Census Bureau's DSE-based population estimates by the estimated omissions rates. The omissions rates come from a sample and therefore contain some sampling error. Small differences may be due to random chance, so data should be used cautiously.

Source: U.S. Census Bureau (2012), "2010 Census Coverage Measurement Estimation Report: Components of Census Coverage for the Household Population in the United States," DSSD 2010 Census Coverage Measurement Memorandum Series #2010-G-04, Table A2.

Omissions rates ranged from a low of 2.0 percent in Seattle to a high of 15.1 percent in Boston. The number of omissions ranged from a low of 12,000 in Seattle to a high of 621,000 in New York City. The relatively high omissions rates in large cities reflect the difficulty in getting an accurate census count in large urban areas.

Seven cities each had more than 100,000 omissions (Chicago, Dallas, Houston, Los Angeles, New York, Philadelphia, and San Antonio). Collectively, these seven cities accounted for about 1.6 million (9.9 percent) of the 16 million omissions in the 2010 Census.

5. Summary

Although net undercount rates are widely used to measure census accuracy, they do not identify how many people were missed in a census. The number of people missed in the census is reflected in omissions. The Census Bureau reports that there were nearly 16 million people missed in the 2010 Census and the omissions rate was 5.3 percent.

Many of the people omitted in the 2010 Census were "counter balanced" by people counted erroneously (mostly double counted) and whole-person imputations—resulting in a net undercount of near zero. However, an important distinction exists between the accuracy of the total population count at the national level and the accuracy of the data for subareas or subpopulations.

To a large extent, the demographic groups that have high net undercount rates also have relatively high omissions rates, but typically the gaps are larger for omissions than for net undercounts and overcounts. Young children have a higher omissions rate than any other age group. More than 10 percent of children ages 0 to 4 in 2010 were missed in the 2010 Census.

The omissions rate was not distributed evenly across states, counties, or cities. The omissions rates in states ranged from a low of 2.6 percent in Iowa to a high of 8.9 percent in Mississippi. Among the 50-largest counties, the omissions rates ranged from a low of 2.5 percent in Milwaukee County, Wisconsin to a high of 10.8 percent in Orange County, Florida. In large cities, omissions rates ranged from a low of 2.0 percent in Seattle to a high of 15.1 percent in Boston.

Obtaining an accurate count of state and local populations is important because the data affect the balance of political power across geographic areas and are widely used for state and local decision-making. A comprehensive picture of census accuracy requires assessment of the number, characteristics, and geographic locations of those who are missed in the census in addition to analysis of net undercount rates. By understanding who was omitted in the 2010 Census, community leaders, advocates, and others can better target geographic areas and population subgroups for Get-Out-the-Count efforts to reduce the number of people who are missed in the 2020 Census and improve the accuracy of the count for state and local populations.

6. Appendix A. Methods Used by the Census Bureau to Measure Omissions

The Census Bureau began evaluating the coverage error or accuracy of decennial censuses with the 1940 Census. Two primary methods are used: dual system estimation (DSE) and Demographic Analysis (DA). DSE involves conducting an independent survey and case-by-case matching of persons in the survey with those enumerated in the census to determine who was missed or who was counted in error. Demographic Analysis involves the use of administrative records to develop an independent set of national population estimates by age, sex, and race to compare with the counts from the census to assess differences.

Starting with the 1980 Census, the Census Bureau began using a post-enumeration survey with dual system estimation (DSE) to measure coverage error. This DSE approach is the only method that provides omissions rates in the decennial census. In the DSE methodology, the Census Bureau conducts an independent data collection in a sample of census tracts across the nation about four to five months after the April 1 census count. This is called a post-enumeration survey or PES. Records from PES are matched on a case-by-case basis with the records in the census to determine the demographic characteristics of those counted correctly and those who were missed. As a coverage measurement program, the DSE method (with a PES) has had different names with each decennial census since 1980. For the 2010 Census, it was called Census Coverage Measurement or CCM, while for the 2000 Census it was called the Accuracy and Coverage Evaluation or A.C.E. The CCM program for the 2010 Census produced measures of coverage error (net undercounts, omissions and erroneous enumerations) for demographic groups, geographic areas, and key census operations.

In more technical terms, omissions are estimates of the true population (based on DSE) minus the number of correct enumerations.[16] That information, along with administrative data on the number and characteristics of whole-person imputations, provides the components of census coverage.

Some people who are categorized as omitted might actually be captured in the whole-person imputations, but the Census Bureau does not know how often this happens. Moreover, most of the omissions occur in households that return a census questionnaire, where the whole-person imputation operation is not used.[17] This suggests a relatively small share of omissions were also included in whole-person imputations. It is important to note that DSE-based population and coverage error estimates exclude the populations living in group quarters and in remote Alaska.

The Demographic Analysis (DA) methodology for evaluating census coverage error or accuracy develops a set of national population estimates by age, sex, and race from administrative records that are compared with population counts from the decennial census. The DA population estimates rely on data on births and deaths from vital statistics, data from Medicare for the population ages 65 and older, and estimates of net international migration. The DA population estimates for specific age and sex groups are compared with the census counts to provide estimates of net undercount for those groups. DA estimates have usually been disaggregated by sex and single year of age, but estimates by race have been limited to black and non-black. Because vital statistics data on birth records are generally viewed to be accurate and complete, many experts consider DA-based estimates of undercount for young children (ages 0 to 10) to be more reliable than those based on the DSE method.

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