

EXHIBIT C

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MARYLAND

LA UNIÓN DEL PUEBLO ENTERO, et al.,

Plaintiffs,

v.

DONALD J. TRUMP, sued in his official
capacity as President of the United States, et
al.,

Defendants.

Civil Action No. 8:19-CV-02710-PX

EXPERT DECLARATION OF DR. WILLIAM P. O'HARE

Overview

1. This report makes six key points:
 - a. Over the past several U.S. Censuses, the empirical evidence shows that groups with lower self-response rates have higher net undercounts and omission rates. This indicates that states and groups with lower self-response rates in the 2020 Census are likely to have higher net undercount and omission rates.
 - b. Census tracts where Hispanics and Blacks are the plurality of the population have lower self-response rates in the 2020 Census than tracts where Non-Hispanic Whites are the plurality of the population in the 2020 Census. This

indicates Hispanics and Blacks are likely to have higher net undercounts and omissions rates than Non-Hispanic Whites in the 2020 Census.

- c. Census tracts where the foreign-born population is a disproportionately high share of the tract population have lower self-response rates in the 2020 Census and are likely to have higher net undercounts and omissions rates than the native-born population in the 2020 census.
- d. Based on data from the 2010 and 2020 Census, households that respond later in the Census data collection period are disproportionately Hispanic, Asian, and Black rather than Non-Hispanic White. This means changes at or near the end of the data collection period are likely to have bigger impact on Hispanics, Asians, and Blacks.
- e. Net undercounts and omissions in the U.S. Census have important implications for the groups missed at the highest rates.
- f. Changing the end date of data collection in the 2020 Census from October 31, 2020 to September 30, 2020, will negatively impact the enumeration of Hispanic, Asians, and Blacks more than Non-Hispanic Whites.

Background

2. I have more than forty years of experience using Census data in a variety of professional settings, including experience in non-profits, philanthropy, state government, and university settings. Since 1987, I have worked at the Population Reference Bureau, the University of Louisville, and the Annie E. Casey Foundation.

3. I have a Bachelor of Science Degree from Michigan State University in Multi-Disciplinary Social Science. I have a master's degree from Michigan State University in Multi-disciplinary Social Science, I have a Ph.D. from Michigan State University in Sociology.

4. I have published many articles in scientific journals and written many books and book chapters based on Census Bureau data. I have authored more than a dozen monographs on subjects such as the well-being of children, poverty, and minorities in America. I have also made many presentations using Census data at professional conferences. While serving as the Director of the KIDS COUNT project within the Annie E. Casey Foundation from 1993 to 2006, I supervised the use of Census data related to measuring and reporting on the well-being of children.

5. I have been a member of the Population Association of America, the Southern Demographic Association, and the American Statistical Association since the 1970s.

6. I served on the Board of Directors and was President of the Southern Demographic Association. I was a founding member of the International Society of Child Indicators, and served on their Board of Directors for many years.

7. From 1995 to 2001, I was a representative from the American Statistical Association on the Census Bureau's Professional Advisory Committee. From 2008 to 2011, I was a representative from the Association of Public Data Users on the Census Bureau's 2010 Census Advisory Committee.

8. I was awarded a National Science Foundation/American Statistical Association/Census Bureau Research Fellowship to do research on census undercounts at the Census Bureau from 2011 to 2013.

9. In 1980, I was awarded a Fulbright Scholarship to teach demographic and social science research methods at the University of San Carlos in the Philippines during their 1980-81 school year.

10. I have been retained by Plaintiffs in *La Unión del Pueblo Entero v. Trump et al.*, Case No. 8-19-cv-02710 (D. Md.). I was asked to assess the impact of truncating the schedule for the 2020 Census, including moving the end date for 2020 Census data collection from October 31, 2020 to September 30, 2020.

11. I am being compensated at a rate of \$100 per hour.

I. The Link Between Self-Response Rates and Census Accuracy.

1.1 Key Concepts and Terms

12. Before presenting the analysis and results in this section of my report, it is important to define some key concepts and terms used in this report. The descriptions in this section of the report focus on census operations prior to the 2020 Census. Analysis in this section focuses on the relationship between census self-response and census accuracy. In the next sections, I focus on the 2020 Census.

1.1.2 Self-Response Rates

13. Briefly, the U.S. decennial Census can be thought of as having two major data collection phases: 1) a self-response phase and 2) a non-response followup (NRFU) phase. The self-response phase consists of households returning the questionnaire that was mailed to them from the Census Bureau. In the 2020 Census for the first time in the history of the decennial census, major modes of self-response operation will include internet and telephone responses

along with mail responses.¹ According to the U.S Census Bureau, (2020d) as of August 16, 2020, 80 percent of the responses submitted have been by Internet, 18.5 percent by paper, and 1.5 percent by telephone.

14. Several weeks after Census day (April 1) the second phase of the Census begins, and households that did not return a completed Census questionnaire are visited by a Census enumerator to gather the information needed for the Census. This is referred to as Nonresponse Followup ((NRFU) operation or phase by the Census Bureau.² A few people belatedly self-respond during the NRFU phase. There are also other Census operations (like update leave and update enumerate)³ that are outside of these two operations, but the vast majority of Census respondents are captured in the self-response and NRFU operations of the Census.

15. Self-response rates reflect the percent of households that return a completed Census questionnaire. In my analysis of the 1990, 2000 and 2010 Decennial Censuses, self-response is measured by two closely related indicators: mail return rates and mail response rates (because historically mail has been the primary mode of self-response). Detailed descriptions of mail return rates and the mail response rates are provided by the Census Bureau (2014b, page 61). In simple terms, the mail return rate is the percentage of occupied households that return completed Census questionnaires. Mail response rates are the percentages of Census questionnaires that were returned from all households whether they were occupied or not.

¹ In the 2010 Census, there were a very small number of people who were able to respond on the internet, but the internet option was not widely available

² The NRFU operational design in the 2020 Census will also use administrative records and third-party data to enumerate occupied housing units. See U.S. Census Bureau, *2020 Census Detailed Operational Plan: 18. Nonresponse Followup Operation (NRFU)*, April 2018 at 9, available at <https://www2.census.gov/programs-surveys/decennial/2020/program-management/planning-docs/NRFU-detailed-operational-plan.pdf>.

³ The Update/Leave operation is conducted in places without regular mail delivery. A census enumerator verifies a housing unit at the address and leaves a paper questionnaire for the household to complete. The Update/Enumerate operation is conducted in very remote areas.

Where available, my analysis uses mail return rate to measure self-response rates. However, the mail return rate was not available in the 1990 Census, so I use the mail response rate to reflect the self-response rate in 1990. As stated earlier, in the 2020 Census, other self-response modes, such as the internet and telephone, are available.

16. The mail return rates, and the mail response rates are calculated by the Census Bureau and these rates have been used by data analysts at the Census Bureau. The mail return rate was used by U.S. Census Bureau (2018d) to measure self-response in a study of the impact of a citizenship question on the 2020 Census questionnaire. In another Census Bureau analysis of the impact of a potential citizenship question on the 2020 Census, (2018b) Census Bureau staff also used self-response for both the 2010 and 2000 Census for which mail was the only self-response option, and for the American Community Survey (ACS) for which mail and internet self-responses were options.

1.3 Net Undercounts and Omissions

17. Net undercount and omissions rates are both measures of Census accuracy, but they capture different parts of Census accuracy (O'Hare 2019b).

18. The net undercount is a balance between people missed (omissions), those included erroneously (meaning those double counted and those inappropriately included in the census, like foreign tourists), and those imputed.⁴ If the number of omissions is higher than the number of erroneous inclusions and whole person imputations, there is a net undercount. If the number of erroneous inclusions and whole person imputations is larger than the number of omissions, there is a net overcount.

⁴ Imputations are people added to the Census count based on some evidence they exist. For example, if a housing unit looks occupied, but there is no self-response, and no one responds to an enumerator, the Census Bureau may impute people into the Census count.

19. In the 2010 Census there were 10,042,000 erroneous enumerations, 5,993,000 whole person imputations, and 15,999,000 omissions (U.S. Census Bureau 2012b, Table 3).

20. Omissions capture the number and share of a population that are missed in the Census and are defined by the Census Bureau (2012b, page 12), “omissions are people who should have been enumerated in the United States Census but were not.” In some ways omissions are a better reflection than net undercount rates of who is missed in the Census. For example, if 10 percent of Hispanics in a state are missed, while an equal number of Non-Hispanic Whites are double counted, the net undercount would be zero, but that does not reflect the fact that a large number of Hispanics were missed. The net undercount for a state can mask important differences in the accuracy of the census data across geographic subunits (like cities and counties) of the state.

21. It is important to understand the net undercount does not tell you how many people were missed in the Census and it is worth noting that even when a net undercount for a group is zero, there are often omissions. For example, the net undercount of Asians in the 2010 Census was essentially zero, but there was an omissions rate of over 5 percent for Asians in the 2010 Census. The net undercount for young children in the 2010 Census was 4.6 percent, but the omissions rate was 10.3 percent (O’Hare 2019a).

22. Undercounts have sometimes been reported as a negative number by the Census Bureau (Velkoff 2011; King et al. 2018; Jensen et al. 2018) and sometimes as a positive number by the U.S. Census Bureau (2012b). In this report, net undercounts are reported as a positive number and net overcounts as a negative number. Measuring net undercounts here as a positive number makes the correlations and the figures easier to interpret.

1.1.4 Correlations

23. Much of the analysis in this report relies on correlation coefficients to show relationships between two variables such as self-response rates and net undercount rates. More specifically, I use the Pearson Product-Moment Correlation Coefficient (Blalock 1972, page 376). This is probably the most widely used correlation calculation.

24. There are three dimensions of correlation coefficients: direction, magnitude, and statistical significance. Direction is indicated by a positive or a negative sign. A positive correlation indicates a higher value on one variable is associated with a higher value in the other variable. The relationship between height and weight reflects a positive correlation, i.e., taller people usually weigh more. A negative sign indicates that a higher value on one variable is associated with a lower value in the other variable. For example, the relationship between exercise and obesity reflects a negative correlation, i.e., people who exercise more are less likely to be obese.

25. The magnitude of a correlation coefficient varies from 0 to 1. A magnitude of zero means no relationship between the two variables and a value of 1 means a perfect correlation between the two variables. The higher the magnitude or value of the correlation coefficient the stronger the relationship between the two measures being examined. When you put direction and magnitude together the value can range from a -1 to +1, and the closer the correlation coefficient is to -1 or +1, the higher the correlation.

26. Statistical significance testing is done to assess how likely the observed results are due to chance. Researchers use different levels of statistical significance depending on the analysis. In this report, all the correlation coefficients deemed statistically significant are significant at the 0.10 level or higher (higher level of significance). This is a commonly used benchmark in social science research and the same level that the Census Bureau typically uses.

The standard used by the Census Bureau in its publications (U.S. Census Bureau 2017b, page 2) and on its website (U.S. Census Bureau 2018a, page 22) is 0.10, which means if something is statistically significant the results would occur by chance alone less than one time out of ten.⁵ Another way of saying this is that with a 0.10 level of significance we can be ninety percent confident the results reflect a real or true relationship between two measures. If the observed results are statistically significant, they are unlikely to be due to chance, and it is highly likely that a correlation coefficient that is statistically significant at the 0.10 level reflects a real relationship, and these are not random results. Most of the correlations in this report are statistically significant at a much higher level than 0.10

27. Since the key element of information needed for my analysis is to determine if a correlation coefficient is negative and statistically significant, a one-tailed test of significance is used. A one-tailed test implies we are only interested in seeing if the correlation is negative and statistically different from zero. This contrasts to a two-tailed test which would tell us if the correlation was statistically different from zero in either direction, that is positive or negative.

28. The statistical significance is largely determined by the size of the correlation and the number of observations upon which the correlation is based. Higher magnitude and more observations lead to a higher-level statistical significance.

1.2. Self-Response and Census Accuracy

29. In this section, I examine the relationship between self-response rates and Census accuracy, as measured by net undercount and omissions rates. The 1990, 2000, and 2010 Census

⁵ ACS “uses the Census Bureau’s standard 90% confidence level.” See American Community Survey Statistical Testing Tool, available at <https://www.census.gov/programs-surveys/acs/guidance/statistical-testing-tool.html>. “The Census Bureau uses 90 percent confidence intervals and 0.10 levels of significance to determine statistical validity.” Sources and Accuracy Estimates for Income and Poverty in the United States: 2016 and Health Insurance Coverage in the United States: 2016, available at <https://www2.census.gov/library/publications/2017/demo/p60-259sa.pdf>.

provide statistical data that can be used to examine this relationship from an empirical perspective. Relationships are shown graphically as well as statistically, as it may be easier to grasp a relationship from a visual presentation.

1.2.1 Examination of Data from the 2010 Census

30. Table 1.1 shows the self-response rates and net undercount rates for eight demographic groups defined by race, Hispanic origin, and tenure (i.e., owner or renter). These are the only demographic groups for which I could find all three measures (self-response, net undercount, and omissions rates) in consistently classified groups.

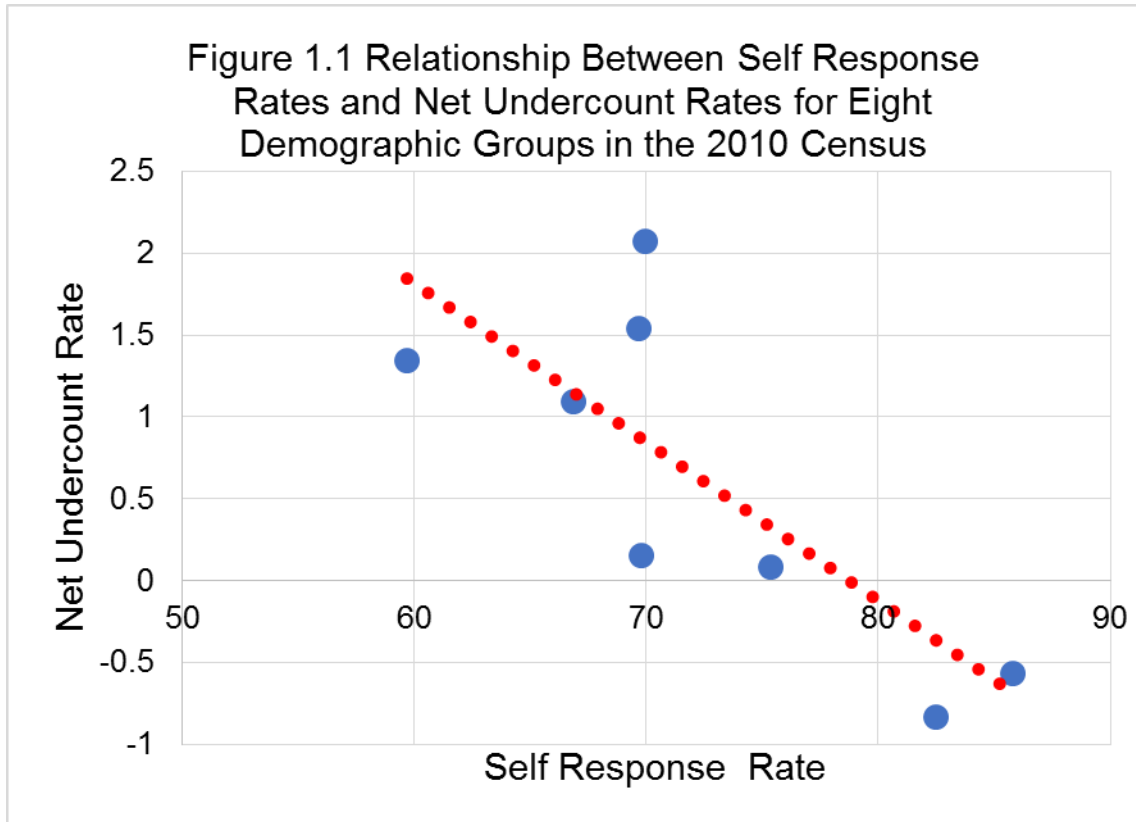
31. The correlation coefficient between the self-response rate and the net undercount rate for the eight groups shown in Table 1.1 is -0.78. This correlation is statistically significantly different than zero at a 90 percent confidence level. This correlation means groups with lower self-response rates have higher net undercount rates.

32. The data in Table 1.1 are very consistent. All the demographic groups that have higher than average self-response rates have net overcounts and all groups with lower than average self-response rates have net undercounts.⁶

⁶ Asians essentially have self-response rates the same as the total population and essentially have a net undercount rate of zero.

Table 1.1 Self-Responses Rates and Net Undercount Rates for Eight Demographic Groups in the 2010 Census		
	Self-Response Rates (Mail Return Rates*)	Net Undercount Rates**
Total	79.3	-0.01
White Alone***	82.5	-0.84
Black Alone	70.0	2.07
American Indian and Alaskan Native Alone	69.8	0.15
Asian Alone	75.4	-0.08
Native Hawaiian or Pacific Islander Alone	59.7	1.34
Hispanic	69.7	1.54
Population in Owner-Occupied Housing Units	85.8	-0.57
Population in Renter- Occupied Housing Units	66.9	1.09
* Source; U.S. Census Bureau (2012) 2010 Census Mail Response/Return Rates Assessment Report. 2010 Census Planning Memorandum Series, No. 198, Tables 10 and 12 (Race groups are Non-Hispanic)		
** This is the net undercount as a percent of the population. Source: U.S. Census Bureau (2012) 2010 Census Coverage Measurement Estimation Report: Summary of Estimates of Coverage for Persons in the United States. , DSSD 2010 CENSUS COVERAGE MEASUREMENT MEMORANDUM SERIES #2010-G-01 Tables 7 and 10 (Net Undercounts shown as a positive number)		
*** for the Net Undercount Rates, this is Non-Hispanic White Alone		

33. The relationship is shown graphically in Figure 1.1. Figure 1.1 shows that groups with lower self-response rates have higher net undercount rates.



34. The red dotted line shown in Figure 1.1 (and all other figures) is the trend line that reflects the statistical relationship between the two measures shown in the Figure. The closer the points are to the line, the higher the correlation.

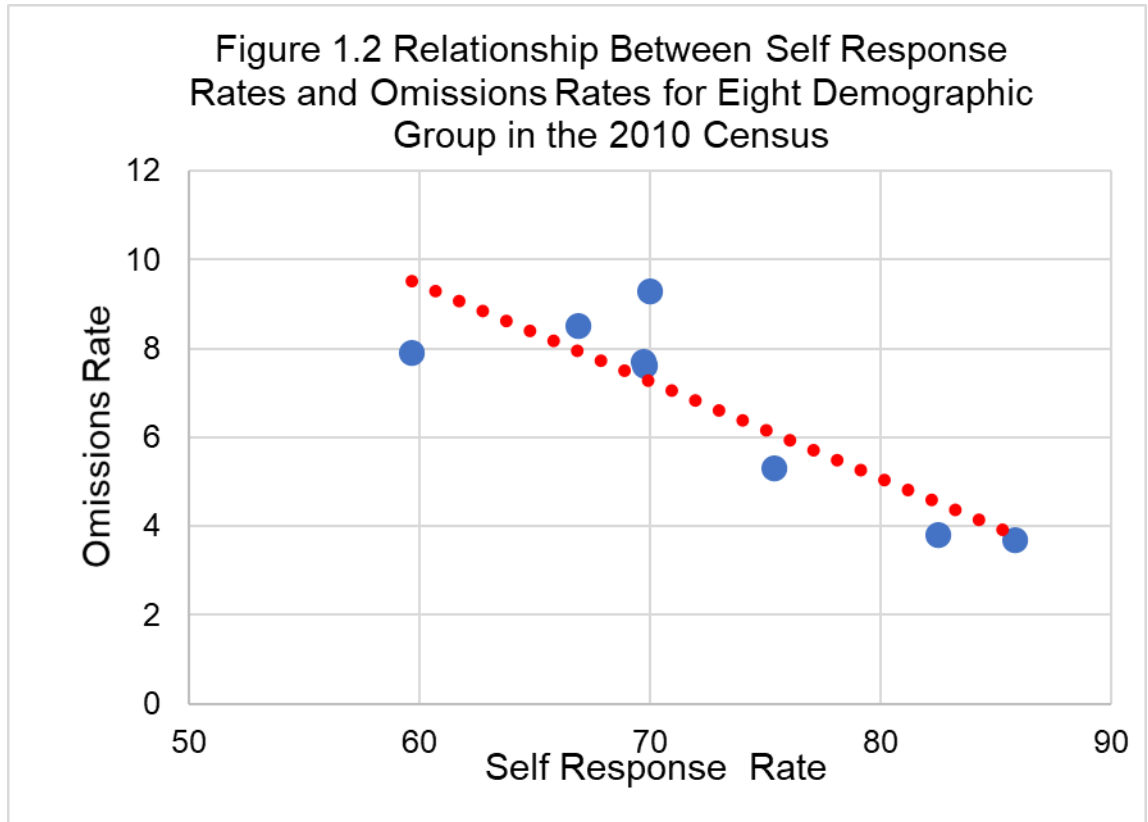
35. Table 1.2 shows 2010 Census self-response rates and omissions rates for the same eight demographic groups shown in Table 1.1. The correlation coefficient between the self-response rates and the omissions rates for the eight groups in Table 1.2 is -0.86 and it is statistically significantly different from zero at a 90 percent confidence level. The correlation means groups with lower self-response rates have higher omissions rates.

Table 1.2 Self-Responses Rates and Omission Rates for Demographic Groups in the 2010 Census		
	Self-Response Rates (Mail Return Rates*)	Omission rates**
Total	75.8	5.3
White Alone***	82.5	3.8
Black Alone	70.0	9.3
American Indian and Alaskan Native Alone	69.8	7.6
Asian Alone	75.4	5.3
Native Hawaiian or Pacific Islander Alone	59.7	7.9
Hispanic	69.7	7.7
Population in Owner-Occupied Housing Units	85.8	3.7
Population in Renter- Occupied Housing Units	66.9	8.5
* Source; U.S. Census Bureau (2012) 2010 Census Mail Response/Return Rates Assessment Report. 2010 Census Planning Memorandum Series, No. 198, Tables 10 and 12		
** This is the number of people missed as a percent of the total population. 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, Tables A and B		
*** for the Omissions Rates, this is Non-Hispanic White Alone		

36. All the groups that have a higher than average self-response rates have below average omissions rates and all the groups with lower than average self-response rates have higher than average omissions rates as shown in Table 1.2.⁷

37. The correlation can be seen graphically in Figure 1.2. This figure shows that groups with lower self-response rates have higher omissions rates.

⁷ Asians essentially have self-response rates that are the same as that total population and have an omissions rate exactly equal to the total population.



38. Table 1.3 shows the self-response rates and net undercount rates for states along with the District of Columbia. Note that none of the net undercount rates in Table 1.3 are statistically significantly different from zero (U.S. Census Bureau 2012c, Table 5). This indicates that the net undercount from state to state was roughly equal in 2010.

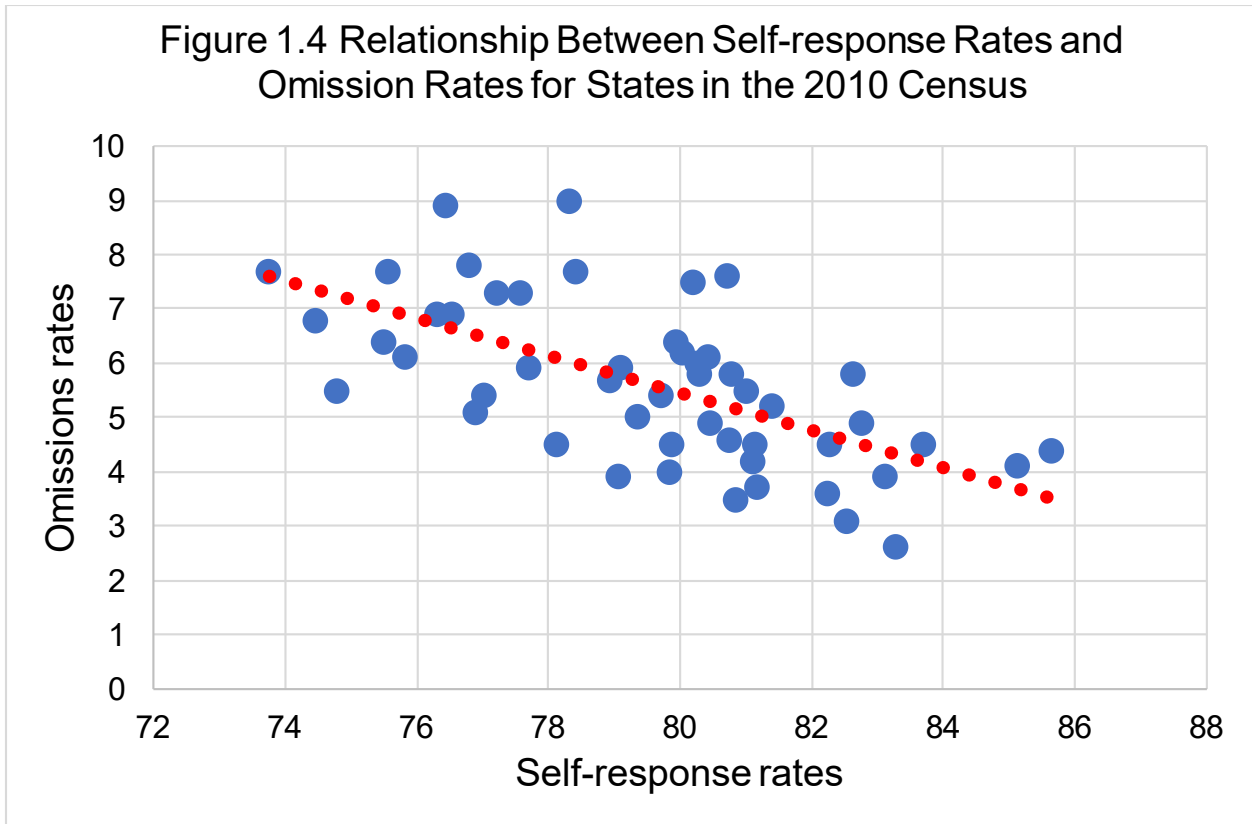
39. Given the lack of measurable variation in the state-level net undercount rates in the 2010 Census, correlation with self-response rates is expected to be low. Indeed, the correlation between self-response rates and net undercount rates across the states is 0.06, which is not statistically significantly different from zero. Given the low correlation between self-response rates and net undercount rates for states, the data are not shown graphically so there is no Figure 1.3.

Table 1.3. 2010 Census Self-response Rates and Net Undercount Rates by State						
State	Self Response Rates (Mail Return Rate*)	Net Undercount Rate**		State	Self Response Rates (Mail Return Rate*)	Net Undercount Rate**
Alabama	78.4	0.13		Montana	80.4	-0.65
Alaska	74.8	-0.85		Nebraska	82.5	-0.54
Arizona	77.6	-0.42		Nevada	76.3	-0.04
Arkansas	77.0	-0.41		New Hampshire	79.4	0.6
California	76.9	0.26		New Jersey	78.1	-0.36
Colorado	79.1	-0.29		New Mexico	73.8	-0.16
Connecticut	79.1	-0.45		New York	75.8	-0.79
Delaware	80.0	0.55		North Carolina	80.7	0.52
District of Columbia	78.3	2.23		North Dakota	83.1	0.09
Florida	80.2	0.45		Ohio	80.8	-0.83
Georgia	77.2	0.91		Oklahoma	75.5	-1.08
Hawaii	76.8	-0.44		Oregon	79.8	0.02
Idaho	82.6	-0.03		Pennsylvania	82.3	0.14
Illinois	80.7	-0.48		Rhode Island	77.7	-0.81
Indiana	82.2	-0.67		South Carolina	81.4	0.41
Iowa	83.3	-0.28		South Dakota	82.7	0.1
Kansas	81.2	-0.67		Tennessee	80.3	0.12
Kentucky	81.0	-0.13		Texas	76.5	0.97
Louisiana	74.5	-0.38		Utah	80.4	-0.48
Maine	81.1	0.65		Vermont	79.7	1.29
Maryland	80.3	0.94		Virginia	80.8	0.57
Massachusetts	78.9	-0.52		Washington	79.9	-0.1
Michigan	83.7	-0.66		West Virginia	75.6	-1.43
Minnesota	85.6	-0.56		Wisconsin	85.1	-0.17
Mississippi	76.4	0.24		Wyoming	79.9	-0.51
Missouri	81.1	-0.66		Total	79.3	-0.01
* Source: U.S. Census Bureau, State Mail Return Rates 2010 Census downloaded on August 21 at https://www2.census.gov/dssd/2010_census_public_rates/excel/						
** Net undercount as a percent of the total population. Source: U.S. Census Bureau (2012)." 2010 Census Coverage Measurement Estimation Report: Summary of Estimates of Coverage for Persons in the United States," DSSD 2010 Census Coverage Measurement Memorandum Series #2010-G-01. U.S. Census Bureau, Washington, DC. G-01 Table 14 (Net undercounts are shown as a positive number)						

40. Table 1.4 shows self-response rates and omissions rates for states and the District of Columbia in the 2010 Census. The correlation between self-response rates and omissions rates is -0.63, and it is statistically significantly different from zero at a 90 percent confidence level. States that have lower self-response rates have higher omissions rates.

Table 1.4. 2010 Census Self-response Rates and Omissions Rates by State						
State	Self Response Rates (Mail Return Rate*)	Omissions Rate**		State	Self Response Rates (Mail Return Rate*)	Omissions Rate**
Alabama	78.4	7.7		Montana	80.4	6.1
Alaska	74.8	5.5		Nebraska	82.5	3.1
Arizona	77.6	7.3		Nevada	76.3	6.9
Arkansas	77.0	5.4		New Hampshire	79.4	5.0
California	76.9	5.1		New Jersey	78.1	4.5
Colorado	79.1	5.9		New Mexico	73.8	7.7
Connecticut	79.1	3.9		New York	75.8	6.1
Delaware	80.0	6.2		North Carolina	80.7	7.6
District of Columbia	78.3	9.0		North Dakota	83.1	3.9
Florida	80.2	7.5		Ohio	80.8	3.5
Georgia	77.2	7.3		Oklahoma	75.5	6.4
Hawaii	76.8	7.8		Oregon	79.8	4.0
Idaho	82.6	5.8		Pennsylvania	82.3	4.5
Illinois	80.7	4.6		Rhode Island	77.7	5.9
Indiana	82.2	3.6		South Carolina	81.4	5.2
Iowa	83.3	2.6		South Dakota	82.7	4.9
Kansas	81.2	3.7		Tennessee	80.3	5.8
Kentucky	81.0	5.5		Texas	76.5	6.9
Louisiana	74.5	6.8		Utah	80.4	4.9
Maine	81.1	4.2		Vermont	79.7	5.4
Maryland	80.3	6.0		Virginia	80.8	5.8
Massachusetts	78.9	5.7		Washington	79.9	4.5
Michigan	83.7	4.5		West Virginia	75.6	7.7
Minnesota	85.6	4.4		Wisconsin	85.1	4.1
Mississippi	76.4	8.9		Wyoming	79.9	6.4
Missouri	81.1	4.5		Total	79.3	5.3
* Source: U.S. Census Bureau, State Mail Return Rates 2010 Census downloaded on August 21 at https://www2.census.gov/dssd/2010_census_public_rates/excel/						
** Number of people missed as a percent of total population. Source: U.S. Census Bureau (2012). "2010 Census Coverage Measurement Estimation Report: Summary of Estimates of Coverage for Persons in the United States," DSSD 2010 Census Coverage Measurement Memorandum Series #2010-G-01. U.S. Census Bureau, Washington, DC. G-01 Table 14 Net undercounts are shown as a positive number)						

41. Figure 1.4 shows the relationship between self-response rates and omissions rates for states in the 2010 Census graphically. Figure 1.4 shows that states with lower self-response rates have higher omissions rates.



1.2.2 Examination of Data from the 2000 Census

42. Table 1.5 shows self-response rates and net undercount rates from the 2000 Census for eight demographic groups. Note that the racial groups are not defined exactly the same in the two Census Bureau reports from which the data were taken but they are very similar. This is a minor point and unlikely to impact the correlation.

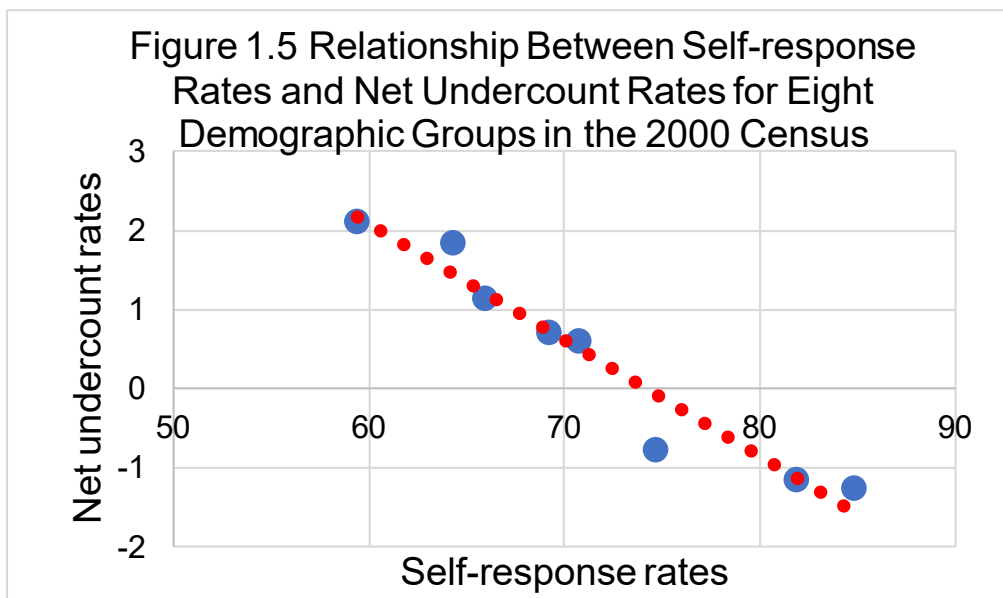
43. The correlation coefficient between self-response rates and net undercount rates in Table 1.5 is -0.97, which is extremely high and statistically significantly different from zero at a 90 percent confidence level. This means that demographic groups that have low self-response rates have high net undercount rates.

Groups	Self Response Rates (Mail Return Rate)*	Groups	Net Undercount Rates (A.C.E. Revision II)**
White Alone	81.8	Non-Hispanic White	-1.13
Black Alone	64.3	Non-Hispanic Black	1.84
Asian Alone	74.6	non-Hispanic Asian	-0.75
Pacific Islander Alone	59.4	Hawaiian or Pacific Islander	2.12
Hispanic	69.2	Hispanic	0.71
American Indian Alone	70.7	AIAN Off Reservations	0.62
Owner-Occupied	84.8	Homeowner	-1.25
Renter-Occupied	65.9	Renter	1.14

* Source: U.S. Census Bureau (2003) Census 2000 Mail Return Rates, Census 2000 Evaluation A.7.b, Herbert Stackhouse and Sarah Brady, January 30, Tables 10 , 12 and 16

**Source: Net undercount as a percent of the total population.U.S. Census Bureau : DSSD A.C.E. REVISION II MEMORANDUM SERIES #PP-54, Table 1. (Net undercounts are shown as positive numbers)

44. The relationship between self-response rates and net undercount rates is shown graphically in Figure 1.5. This figure shows that groups that have lower self-response rates have higher net undercount rates.



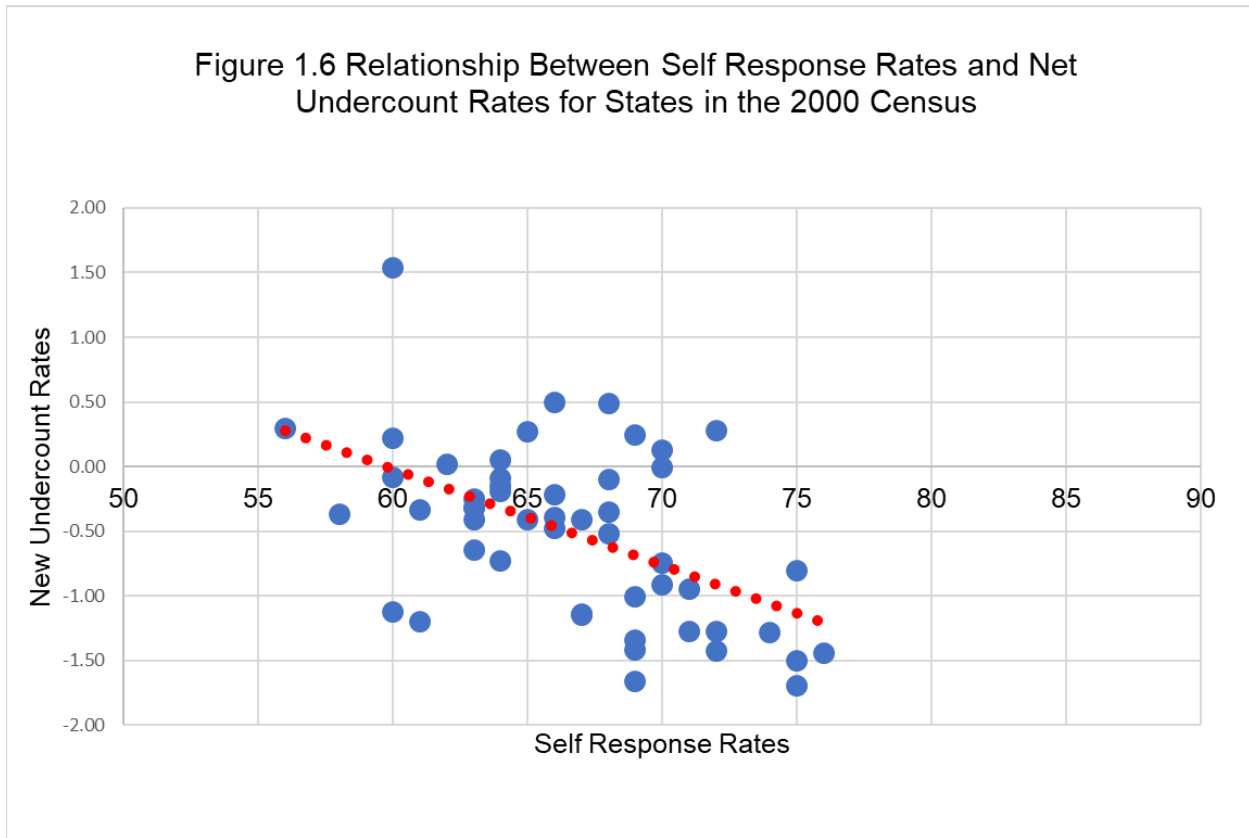
45. Table 1.6 shows the self-response rates and net undercount rates for states and the District of Columbia in the 2000 Census. State omissions rates were not available in 2000. The correlation between self-response rates and net undercount rates across the states is -0.66, which is statistically significantly different from zero at a 90 percent confidence level. States with low self-response rates have high net undercount rates.

State	Self-Response Rates (Mail Return Rates)*	Net Undercount Rates**	State	Response Rates (Mail Return)	Net Undercount Rates
Alabama	76.9	-0.34	Montana	83.2	0.49
Alaska	76.1	0.29	Nebraska	84.6	-0.81
Arizona	76.9	-0.32	Nevada	75.0	0.50
Arkansas	79.0	-0.09	New Hampshire	80.5	-1.15
California	78.6	0.13	New Jersey	78.7	-0.52
Colorado	80.8	-0.01	New Mexico	78.1	0.02
Connecticut	80.2	-0.75	New York	75.2	-0.25
Delaware	78.0	-0.32	North Carolina	78.3	-0.15
District of Columbia	72.1	1.54	North Dakota	85.4	-1.43
Florida	77.8	-0.64	Ohio	82.1	-1.27
Georgia	79.1	0.27	Oklahoma	77.9	-0.20
Hawaii	75.7	0.22	Oregon	81.1	-0.35
Idaho	83.5	-0.41	Pennsylvania	82.4	-0.91
Illinois	80.2	-1.42	Rhode Island	76.9	-1.14
Indiana	81.6	-1.66	South Carolina	76.5	-0.36
Iowa	85.6	-1.44	South Dakota	86.8	-1.28
Kansas	81.8	-1.28	Tennessee	77.1	-0.41
Kentucky	79.9	-0.48	Texas	75.3	0.05
Louisiana	75.2	-0.09	Utah	79.6	-0.10
Maine	80.1	-1.20	Vermont	81.1	-1.12
Maryland	79.3	0.25	Virginia	81.3	0.27
Massachusetts	79.0	-1.00	Washington	78.6	-0.21
Michigan	83.7	-0.95	West Virginia	80.7	-0.73
Minnesota	86.1	-1.70	Wisconsin	87.3	-1.50
Mississippi	78.3	-0.41	Wyoming	83.6	-0.39
Missouri	82.2	-1.35	United States	78.4	0.48

*Source: U.S. Census Bureau, State Mail Return Rates 2010 Census downloaded on August 21 at https://www.2.census.gov/dssd/2010_census_public_rates/excel/

**Net undercount as a percent of the total population. Source: U.S. Census Bureau (2003) A.C.E. Revision II- Adjusted Data for States, Counties, and Places, DSSD A.C.E. REVISION II MEMORANDUM SERIES #PP 60, Table 1 (Net Undercounts Shown as a positive number)

46. This relationship is shown graphically in Figure 1.6. This figure shows that states that have lower self-response rates have higher net undercount rates.



1.2.3. Examination of Data from the 1990 Census

47. The only self-response rates available for states in the 1990 Census were mail response rates. Mail response rates are slightly different than the mail return rates (as explained in Section 1.1), but both are measures of self-response used by the Census Bureau.

48. Table 1.7 shows self-response rates and net undercount rates in the 1990 Census for seven demographic groups. The correlation between the self-response rates and the net undercount rates is -0.60, which is statistically significantly different from zero at a 90 percent confidence level. The direction of the correlation indicates that groups with lower self-response rates have higher net undercount rates.

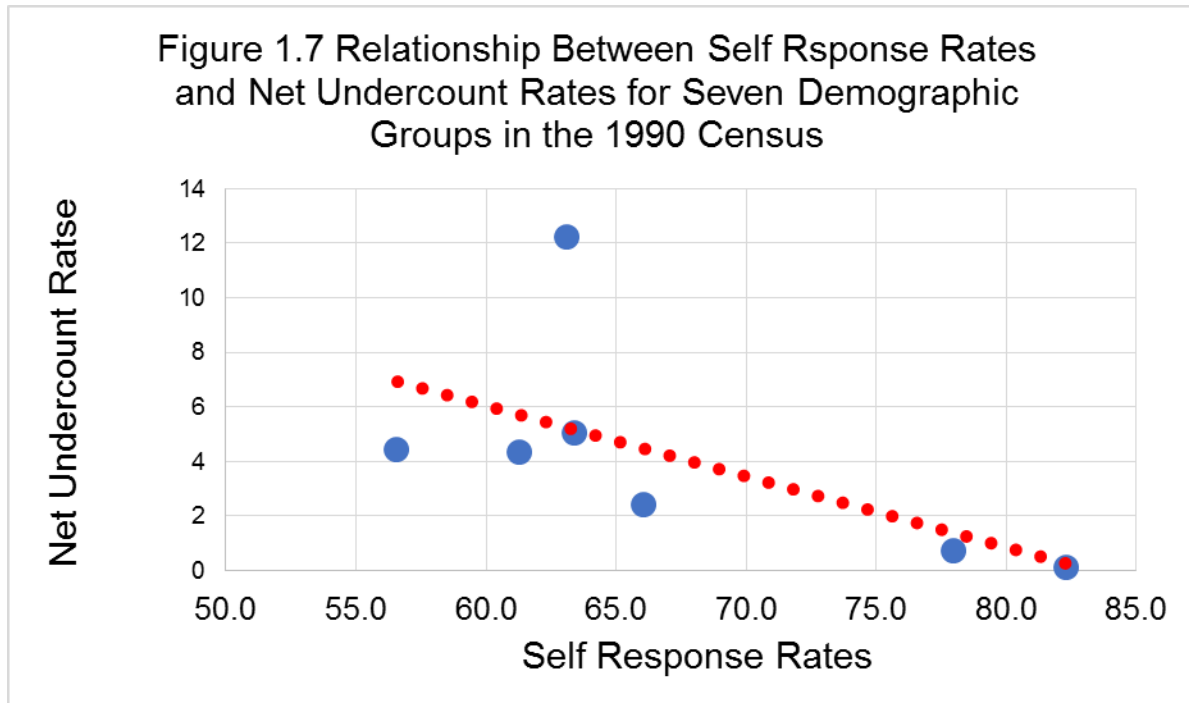
Table 1.7 1990 Census Self Response Rates and Net Undercount Rates for Seven Demographic Groups

	Self Response Rates (Mail Responses Rates)*		Net Undercount Rate **
Non-Hispanic White	78.0	Non-Hispanic White	0.7
Black	56.6	Black	4.4
American Indians, Eskimo and Aleut	63.1	American Indian, Eskimo and Aleut	12.2
Asian and Pacific Islanders	66.1	Asians and Pacific Islander	2.4
Hispanic Origin	63.4	Hispanic Origin	5.0
Owners	82.3	Owners	0.1
Renters	61.3	Renters	4.3

*Source: Derived from Word, D.L., (1997) "Who Responds ? Who Doesn't?: Analyzing Variation in Mail Response Rates During the 1990 Census, Population Division Working Paper No . 19, Table 2.0

**Net undercount as a percent of the total population. Source: Hogan, H. and Robinson G., (1993) What the Census Bureau's Coverage Evaluation Programs tell Us About Differential Undercounts ; Paper Delivered at the 1993 Research Conference on Undercounted Ethnic Populations, May 5-7, Richmond VA. , Table 3 (net undercounts shown as a positive number)

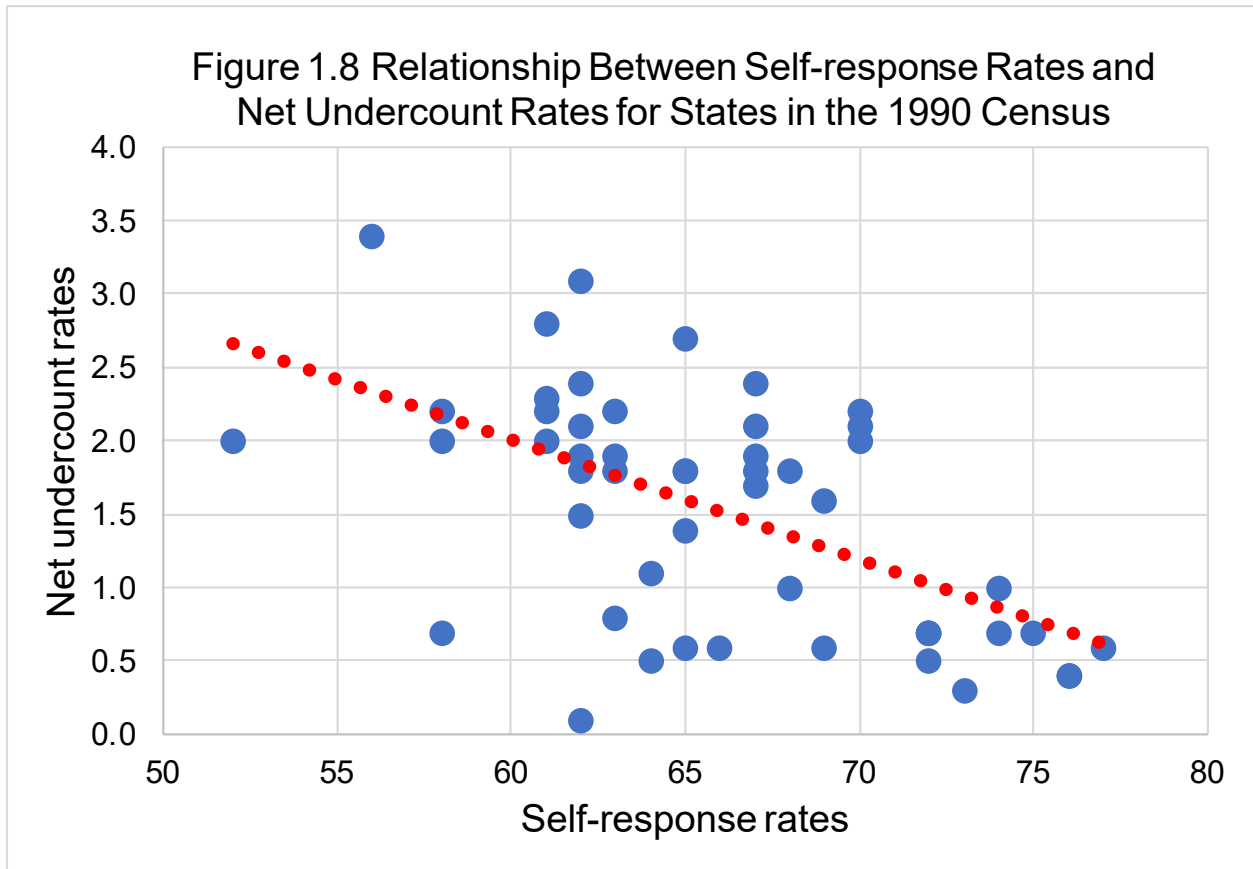
49. This relationship is shown graphically in Figure 1.7. This figure shows that groups that have low self-response rates have higher net undercount rates.



50. Table 1.8 shows 1990 Census self-response rates and net undercount rates for states and the District of Columbia. Omissions rates were not available in 1990. The correlation coefficient between self-response rates and net undercount rates, shown in Table 1.8, is -0.56, which is statistically significantly different from zero at a 90 percent confidence level. This means that states with lower self-response rates have higher net undercount rates.

state	Self Response Rates (Mail Response Rates)*	1990 Net Undercount of Persons**	state	Self Response Rates (Mail Response Rates)*	1990 Net Undercount of Persons**
Alabama	62.0	1.8	Montana	67.0	2.4
Alaska	52.0	2.0	Nebraska	74.0	0.7
Arizona	62.0	2.4	Nevada	61.0	2.3
Arkansas	65.0	1.8	New Hampshire	63.0	0.8
California	65.0	2.7	New Jersey	65.0	0.6
Colorado	67.0	2.1	New Mexico	62.0	3.1
Connecticut	66.0	0.6	New York	62.0	1.5
Delaware	68.0	1.8	North Carolina	63.0	1.9
District of Columbia	56.0	3.4	North Dakota	72.0	0.7
Florida	61.0	2.0	Ohio	75.0	0.7
Georgia	63.0	2.2	Oklahoma	63.0	1.8
Hawaii	62.0	1.9	Oregon	67.0	1.9
Idaho	70.0	2.2	Pennsylvania	73.0	0.3
Illinois	68.0	1.0	Rhode Island	62.0	0.1
Indiana	72.0	0.5	South Carolina	58.0	2.0
Iowa	76.0	0.4	South Dakota	74.0	1.0
Kansas	72.0	0.7	Tennessee	65.0	1.8
Kentucky	69.0	1.6	Texas	61.0	2.8
Louisiana	58.0	2.2	Utah	67.0	1.7
Maine	58.0	0.7	Vermont	64.0	1.1
Maryland	70.0	2.1	Virginia	70.0	2.0
Massachusetts	64.0	0.5	Washington	67.0	1.8
Michigan	72.0	0.7	West Virginia	65.0	1.4
Minnesota	76.0	0.4	Wisconsin	77.0	0.6
Mississippi	62.0	2.1	Wyoming	61.0	2.2
Missouri	69.0	0.6	U.S. Total		1.6
* Source: U.S. Census Bureau 1990 Census Page (/main/www.cen1990.html) 1990 Mail Response rates by 1990 Geography Boundaries.					
**Net undercount as a percent of the total population. Source: U.S. Census Bureau https://www.census.gov/dmd/www/pdf/understate.pdf (Net undercount shown as a positive number)					

51. Figure 1.8 shows the relationship between state 1990 mail response rates and net undercount rates graphically. This figure shows that states that have lower self-response rates have higher net undercount rates.



1.2.4 Summary of Relationship between Self-response Rates and Census Accuracy.

52. Table 1.9 summarizes the correlations between self-response rates and census accuracy for the 1990, 2000 and 2010 Decennial Censuses. Of the eight correlations shown in Table 1.9, all but one of the correlations were in the predicted direction and statistically significant. Based on my 40 plus years of experience as a professional data analyst I would call the correlations coefficients in Table 1.9 (except for 0.06) moderate to high by social science standards.

Table 1.9 Summary of Statistical Relationships between Census Self-Response Rates and Census Accuracy (Net Undercount Rates and Omissions Rates)	
Correlation between Self-Response Rates and:	Correlation Coefficient
2010 Eight Demographic Groups Net Undercount	-0.78
2010 Eight Demographic Groups Omissions	-0.86
2010 States Net Undercount Rates	0.06
2010 States Omissions Rates	-0.63
2000 Eight Demographic Groups	-0.97
2000 States Net Undercount Rates	-0.66
1990 Seven Demographic Groups	-0.61
1990 States Net Undercount Rates	-0.56
Note correlations in BOLD are statistically significant at the .10 level or higher.	

53. Using this analysis to predict the exact increase in net undercounts and omissions based on self-response rates would depend on which correlation in Table 1.9 one relies on. But exact predictions are unnecessary. The preponderance of evidence clearly shows there will be an increase in net undercounts and omissions if there are lower self-response rates in the 2020 Census. The magnitude of the correlations varies from one Census to the next, but they are consistent in showing a negative correlation between self-response rates and census accuracy, which means states and groups with lower self-response rates have higher net undercounts and omission rates.

54. The empirical relationship between self-response rates and census accuracy (net undercounts and omissions) has been recognized by the Census Bureau. The Census Bureau Task Force on the Undercount of Young Children (U.S. Census Bureau 2014a, page ii) concluded, “Research suggests that areas with lowest levels of cooperation have higher levels of coverage and nonresponse error.” A Census Bureau Working Paper (Word 1997, page 1) notes that “response rates and net undercount rates may be causally linked”

55. The connection between self-response rates and census accuracy is underscored by the Census Bureau’s decision to use a self-response related measure to identify Hard-to-Count areas in the 2020 Census. The Low-Response Score developed by Erdman and Bates (2017) is based on the mail return rates in the 2010 Census. In describing the Low-Response Score the Census Bureau (2014b, page 4) states, “This score identifies Block Groups and Tracts whose characteristics predict low Census Mail Return Rate and are highly correlated (negatively) with Census and survey participation.” The implicit association here is that areas where self-response rates are low are more difficult to enumerate. Several characteristics of the kinds of populations and places where it is difficult to get an accurate enumeration are provided by O’Hare (2019a, page 46). This is not a complete list, but some of the characteristics include racial and ethnic minority populations, communities where there are high levels of poverty and unemployment, high levels of renter households and multi-unit structures, and large numbers of undocumented or recent immigrants.

56. It is easy to understand why the relationship between low self-response rates and lower census accuracy exists. Households that do not self-respond end up in the non-response followup (NFRU) universe where the Census Bureau must send out an enumerator to get information from a nonresponding household. Data collected in the NFRU phase of the Census

is more likely to omit a person than data gathered in the self-response phase. In the 2010 Census, 88 percent of the NRFU responses were correct, compared to 97 percent of self-responses (author's calculation from U.S. Census Bureau 2012b, Table 14).

57. In addition, NRFU responses may have to rely on a proxy response. A proxy response is when the information for a housing unit is provided by someone not living in that housing unit, such as a neighbor or landlord. A U.S. Census Bureau paper (2018d, page 42) shows that the responses from the self-response portion of the Census are much more accurate than responses from the NRFU proxy response portion (U.S. Census Bureau 2018d, Table 12). This data showed that 97.3 percent of the responses from the Mailout/Mail back portion of the Census were correct, as compared to just 70.2 percent of those from the NRFU proxy responses. Some of the NRFU proxy response errors are people who are not counted in the Census when they should have been counted.

58. Social scientists typically look for four elements to show causation. First, that the causal agent (referred to as the independent variable by scientists) occurs prior in time to the thing that it is causing (referred to as the dependent variable by scientists); second, that there is an association or correlation between the causal agent and the thing being caused; third, that intervening mechanisms linking the independent variable and the dependent variable can be clearly specified; and finally that other potential explanations have been controlled.

59. My analysis satisfies three out of four of these elements. Self-response occurs prior in time to net undercounting, the self-response rate is moderately to highly correlated with net undercounting, and the intervening mechanism is the fact that groups with lower self-response rates have a higher share of their population counted in the NRFU operation which generates less accurate data, including higher rates of net undercounts and omissions. The only

element my analysis does not address is the need to control for all other potential explanations. The inability to control for all other potential explanations is common in social science research because there are legal and ethical restrictions on how much people can be manipulated for research purposes. The way to control for all other possible explanations is through a randomized control trial (“RCT”). However, the Census Bureau, which is best positioned to conduct an RCT, has not conducted any such RCT measuring the relationship between self-response and undercounting. My analysis evaluates the relationship between self-response rates and census accuracy with best available data, and shows there is a strong robust relationship between self-response and Census accuracy; namely groups that have lower self-response rates have higher net undercount and omissions rates.

60. The magnitude of the correlations varies from one Census to the next, but they are consistent in showing a negative correlation between self-response rates and census accuracy, which means states and groups with lower self-response rates have higher net undercounts and omission rates.

61. The consistency of the correlation (7 out of 8 observations) across multiple Censuses, demographic groups, and states is illustrative of a consistent relationship over time. The analysis demonstrates a clear pattern in the relationship between self-response and undercount rates. While there is some uncertainty in these data (as with all data), uncertainty typically reduces the likelihood of finding a correlation. But here, my analysis demonstrates a correlation despite measurement uncertainty, providing further proof that the relationship is real.

62. The empirical relationship between self-participation rates and census accuracy has been recognized by the Courts. *See New York v. Dep’t of Commerce*, 351 F.Supp.3d 502, 591 (S.D.N.Y. 2019) (“The Court concludes just that: Dr. O’Hare’s testimony provides

affirmative evidence that self-response declines among specific subpopulations directly cause net undercounts of those subpopulations. For the purposes of this litigation, a preponderance of the evidence supports that conclusion.”); *see also Kravitz v. Dep’t of Commerce*, 366 F.Supp.3d 681, 717 (D.Md. 2019) (“Thus, the Court is comfortable finding that Plaintiffs have demonstrated a causal relationship between decreased Census participation and an increased likelihood of net undercounting by a preponderance of the evidence.”).

63. It is my conclusion, that over the past several U.S. Censuses the empirical evidence shows groups with lower self-response rates have higher net undercounts and omission rates. This relationship is important in understanding the significance of self-response rates in the 2020 Census. Furthermore, groups with lower self-response rates in the 2020 Census would benefit disproportionately if the end of the data collection period was October 31, 2020 instead of September 30, 2020, as the Census Bureau had planned a couple of months ago. Conversely, truncation of the data collection period in the 2020 Census will result in greater omissions and net undercounts in groups with lower self-response rates.

2) Self-Reporting Rates in the 2020 Census Indicate Same Patterns as the Past

64. In the following sections, I focus on differences between the largest racial and ethnic minority groups (Hispanics, Blacks, and Asians) in comparison to Whites and Non-Hispanic Whites. These are the groups for which the data are most reliable. States also show wide variations in self-response rates based on currently available data, explained below.

65. The primary measures of 2020 census accuracy (net undercounts and omissions) will not be available until 2021. One metric of census quality that is available now is self-response rates (O’Hare et al. 2020). Self-response rates reflect the extent to which households complete and return the Census questionnaires before they are visited by a census enumerator in

the NRFU operation. In the 2010 Census, when mailing back a completed census questionnaire was the only option for self-response, these were called mail return rates. In the 2020 Census, the self-response could be online, by phone, or by mail.

66. The predictive value of self-response rates was shown in the previous section where empirical evidence linked variations in self-response rates for groups with variations in census accuracy for those groups; namely groups with low self-response rates have higher net undercount and omissions rates.

67. Other demographers have also noted the importance of self-response rates. In the context of the U. S. Census, Swanson (2019, page 6) indicates self-response rates are a key indicator of census success. New York City Demographer Joe Salvo (2020, page 1) also links self-response rates to Census accuracy when he states, “If an area has a low self-response rate, it means:

- More census enumerators will need to knock on doors to count residents in persons: and,
- It is more likely people in the area may be missed or counted inaccurately.”

68. In the 2010 Census, the Census Bureau stopped soliciting self-responses when it started the Nonresponse Followup (NRFU) operation in early May. For the 2020 Census, the Census Bureau is continuing to allow people to self-respond during the NRFU period. However, most of the 2020 Census self-response data shown here is from the 2020 Census data collection period prior to the start of the NRFU operation in early August.

69. Since March 20, 2020, the Census Bureau has been producing 2020 Census self-response rates for many geographic areas including census tracts (U.S. Census Bureau 2020a). A census tract is defined by the Census Bureau (2020b) as “small, relatively permanent statistical

subdivisions of a county,” each with a unique numeric code, and an average of about 4,000 inhabitants, but between a minimum population of 1,200 and maximum population of 8,000. In the 2020 Census there are about 84,000 census tracts in the country.

70. At this point in the 2020 Census cycle there are no publicly available data on self-response rates by the race or Hispanic Origin of the householder but response rates have been developed related to the race and Hispanic composition of census tracts. The staff at Center for Urban Research at the Graduate Center, City University of New York (CUNY) have downloaded and analyzed response rates provided by the Census Bureau and combined them with other information from the Census Bureau about the racial and Hispanic composition of the census tract. Through regular briefings they have made analysis of that information available to the public (Census Funders Initiative 2020).

71. Staff at the Center for Urban Research at the Graduate Center, City University of New York determined the plurality of the population in each census tract by race and Hispanic Origin.⁸ The plurality of the population in a census tract is the largest race or Hispanic Origin population in the census tract.⁹

72. The racial compositions of populations in the tracts are based on the U.S. Census Bureau’s 2014-2018 American Community Survey (ACS). Since the ACS data are produced from a sample of the population, they include sampling error. ACS sampling error for individual tracts indicate large potential errors for these estimates, but when tracts are used collectively, like they are here, sample error is minimal. This is the best data we currently have for calculating the racial/Hispanic composition of the Census tracts in the 2020 Census.

⁸ A small number of census tracts, where were less than 100 people, were not included.

⁹ If one used only tracts where a single race or Hispanic Origin group were the majority rather than the plurality, it would greatly limit the number of tracts available for a analysis. By using the plurality, nearly every census tract in the country is included in the analysis.

73. Race and Hispanic Origin are measured in the U.S. Census as dictated by U.S. Office of Management and Budget (1997). Race and Hispanic Origin are two separate concepts in the definitions used by the federal government. In the Census, respondents are first asked if they are Hispanic or not, then they are asked about what race group(s) they identify with. Starting in 1997, people have been allowed to mark as many race groups as they feel apply. For people who mark only one race, this is referred to as “race alone,” for example Black Alone or Asian Alone. For people who mark more than one race they fall into categories labeled “Alone or in Combination” for example, “Black Alone or in Combination.” In this construction, people can be in more than one group. Someone who marked both Black and White would be included in both Black alone or in combination and the White alone or in combination. Slightly different racial definitions are used in different tables in this report based on what was made available by the Census Bureau. For example, sometimes the Census Bureau reports data for Non-Hispanic White population and sometimes for the White population.

74. In general, these differences are not particularly important in terms of understanding the results of my analysis, but there are couple of clarifications I want to offer. The way the Census Bureau classifies people by race and Hispanic Origin has two key implications for the data reported in the next three sections. Sometimes data were available for all the people who selected the “White” race and sometimes the data was available for Non-Hispanic Whites. Since some Hispanics select the White race, data for all Whites includes some Hispanics. Using data for Non-Hispanic Whites in comparison to minorities is preferable to using data for Whites, but sometimes that was not possible. The distinction between race alone and race alone or in combination is of little significance for the racial groups analyzed here (White, Asian, and Black).

75. Analysis of 2020 Census self-response rates through August 2020 indicates that many of the self-participation patterns from past Censuses are being seen again in the 2020 Census. This suggests that differential census accuracy in the 2020 Census is likely to follow patterns seen in the past censuses and that groups with low self-response rates are likely to experience greater rates of omissions and undercount.

76. Data shown in Table 2.1 indicate the mean self-response rates for Black and Hispanics plurality census tracts are substantially lower than the mean self-response rate for tracts where Non-Hispanic Whites are the largest population of the tract.¹⁰ The self-response rates for Non-Hispanic White plurality tracts (66.6 percent) is 9.7 percentage points higher than that for Hispanic plurality tracts (56.9 percent), and 13 percentage points higher than Black plurality tracts (53.6 percent). The mean response rate for tracts where Asians are the plurality of the population (67.6 percent) is one percentage point higher than that of tracts where Non-Hispanic Whites are the plurality of the population.

77. Since lower self-response rates are related to higher net undercounts and omissions, as shown in Section 1 of this report, the lower self-response rates in the 2020 Census for Hispanics and Blacks shown in Table 2.1 indicate those groups are on course to have higher net undercount and omissions rates in the 2020 Census. If efforts to improve the accuracy of the 2020 Census are reduced by early termination of the data collection period, it is likely to have a disproportionately negative impact on Hispanics and Blacks who have lower self-participation rates.

¹⁰ Table 2.1 shows data released by the Center for Urban Research at the Graduate Center, City University of New York based on self-response rates through August 20, 2020.

Table 2.1. Mean 2020 Census Tract-Level Self-Response Rates by the Plurality of the Population by Race and Hispanic Origin	
Plurality of the Population in the Tract*	Mean Self-Response Rates for Census Tracts by Plurality of Population by Race and Hispanic Origin (through August 20, 2020)
Non-Hispanic White	66.6
Hispanic	56.9
Non-Hispanic Black	53.6
Non-Hispanic Asian	67.6
Source: Obtained from Steve Romalewski, CUNY	
* tract where this population was there largest race or Hispanic Origin group.	

78. Note that the response data shown in Table 2.1 are for census tracts rather than individual households. Nonetheless, it is reasonable to assume an association between the largest population in a census tract and self-response rates in those tracts. In addition, the pattern seen in 2020 is like that seen in previous censuses.

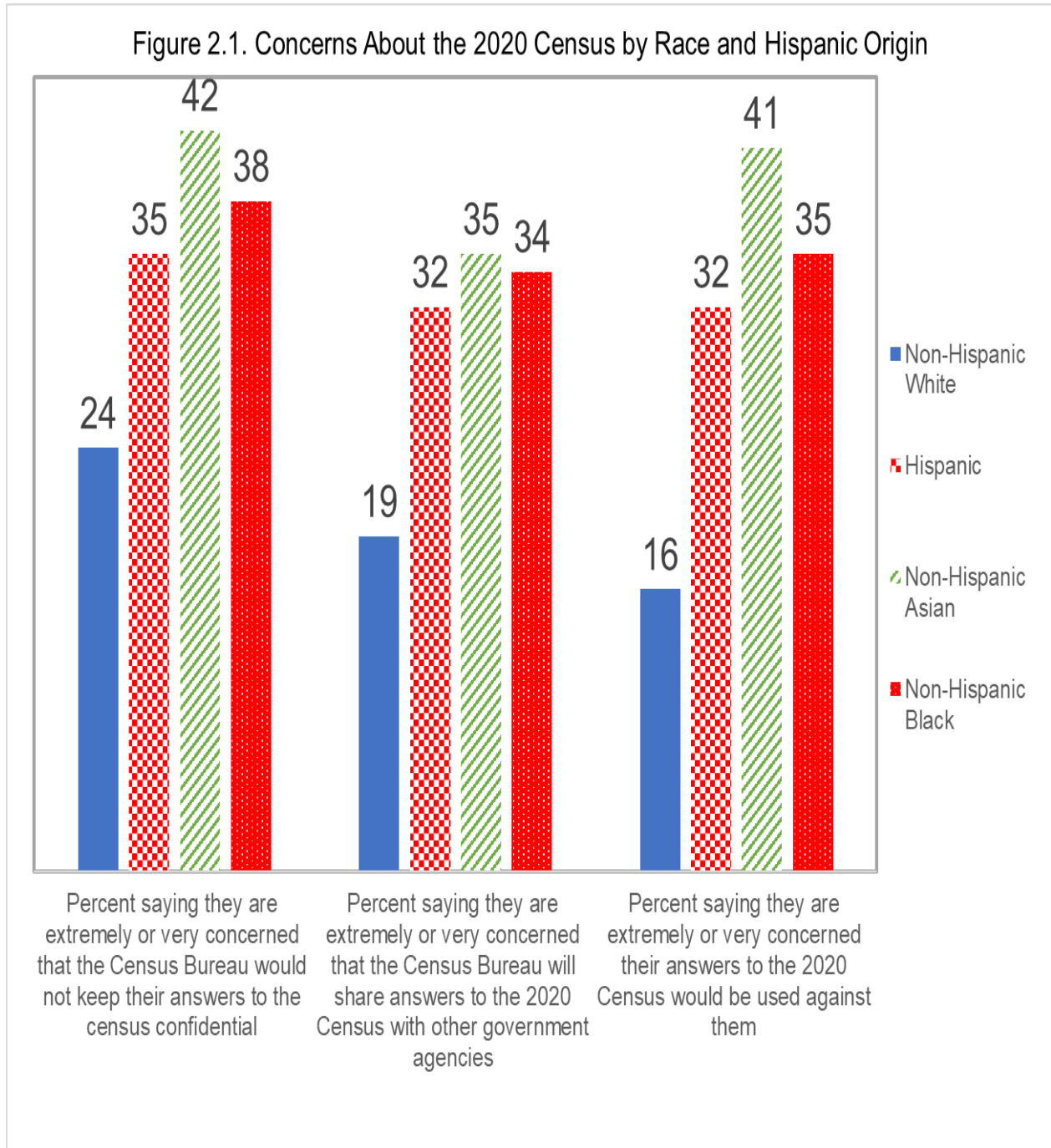
79. While Table 2.1 shows that Asian plurality census tracts have a slightly higher self-response rates than Non-Hispanic White plurality tracts, it is important to recognize that the Asian population is highly diverse and response rates for the overall Asian population are likely to mask big differences among subgroups (U.S. Census Bureau 2012e). One recent report on the Asian population (Lopez, et al. 2017) states, “The U.S. Asian population is diverse. A record 20 million Asian Americans trace their roots to more than 20 countries in East and Southeast Asia and the Indian subcontinent, each with unique histories, cultures, languages and other characteristics.” Some of these differences among Asian subgroups have implications for how the groups interact with census-taking operations (O’Hare 2017 & 2020c: Population Bureau References). Data for the overall Asian population masks important differences for subgroups. For example, poverty is one variable associated with census undercounts and O’Hare (2020c)

shows the young child (age 0 to 9) poverty rates among Asian subgroups vary from a low of 5 percent for Asian Indians to 30 percent in the Hmong population. Consequently, the data for Asians shown in Table 2.1 may not reflect the experiences of many Asian subgroups.

80. One example of this is revealed by noting that Asian plurality tracts in the largest cities of metropolitan areas (over 1 million) have a mean self-response rate (58.8 percent) well below the national response rate (64 percent) and the mean self-response rates for Asian plurality tracts in rural areas (56.9 percent) is well below the national average. On the other hand, Asian plurality tracts in medium-sized cities in metropolitan areas have a mean response rate (71.1 percent) well above the national average. If efforts to improve the accuracy of the 2020 Census are reduced by early termination of the data collection period, it is likely to have a disproportionately negative impact on Asian Americans in the largest cities of metropolitan areas and in rural areas, who have lower self-participation rates. This data is from Center for Urban Research at the Graduate Center, City University of New York.

81. Figure 2.1 shows data from a Census Bureau report (U.S. Census Bureau 2019) indicating the level of concern about the 2020 Census expressed by race and Hispanic Origin groups. Asians, Hispanics, and Blacks express much more concern about the 2020 Census than do Non-Hispanic Whites. These concerns help explain the relatively low self-response rates for

Hispanic and Blacks seen in Table 2.1.



82. The U.S. Census Bureau (2019) Census Barriers and Motivator Survey (CBAMS) survey found 53 percent of respondents thought census data was used “[t]o locate people living in the country without documentation.” And 63 percent thought the Census was used “to help

police and FBI keep track of people who break the law.” Moreover, 28 percent of the CBAMS respondents thought the Census Bureau would not keep answers confidential and 24 percent thought the Census Bureau would share answers with other government agencies. People with this level of distrust in the Census were unlikely to self-respond and resist responding to an enumerator in the NRFU process.

83. With respect to the 2020 Census it is important to note that the foreign-born population and people living in households with foreign-born people are particularly vulnerable to being missed. It is also noteworthy that 34 percent of the people born outside the U.S. are extremely or very concerned that the data they provide in the 2020 Census will be used against them compared to 20 percent of people born in the U.S. (U.S. Census Bureau 2019).

84. Census tracts where the foreign-born population are a disproportionately large share of the total population have lower self-response rates. Data from the Center for Urban Research at the Graduate Center, City University of New York (CUNY) indicates that census tracts where the foreign-born population is more than one-third of the total population had a mean response rate of 59.4 percent on August 20, 2020, compared to a national response rates of 64 percent.¹¹

85. Table 2.2 shows the distribution of the foreign-born population by race and Hispanic Origin. The data in Table 2.2 show that Asians and Hispanics make up the majority (71.4 percent) of the foreign-born population. So, difficulties in getting a complete and accurate

¹¹ The one-third cutoff point for tracts in this analysis was used because it was high enough to make sure the foreign-born was a clearly significant portion of the census tract population but low enough to make sure there were enough tracts meeting the criterion to provide a reliable estimate. Tracts where the foreign-born population was 50 percent or more of the population had even lower mean self-response rates

count of the foreign-born population will affect Hispanics and Asians more than others.

Table 2.2. Foreign-Born Population in the U.S. by Race and Hispanic Origin: 2018	
	Percent of the Foreign-Born Population in 2018
Non-Hispanic White*	17.7
Black*	9.5
Asian*	27.1
Hispanic	44.3
Source: U.S. Census Bureau, 2018 American Community Survey Table S0501, retrieved from Data.census.gov on August 4 2020	
* Race Alone, Hispanic may be included in appropriate race categories	
Total number of foreign-born people	44,728,721

86. The difficulties in getting complete and accurate count of people in immigrant communities is partly due to a fear of interacting with the federal government. The climate of fear among immigrants has greatly escalated since 2010. Even before there were discussions about adding a citizenship question to the 2020 Census, Census Bureau researchers (Meyer and Goerman 2018; U.S. Census Bureau 2017c and 2017d) found respondents less willing to cooperate given the growing climate of fear and mistrust. After careful review, Meyers and Goerman (2018 Slide 24) conclude, “During multilingual pretesting studies conducted in 2017 and 2018, respondents expressed concerns about participating in the Census Bureau surveys because of fears about their confidentiality.”

87. Based on a series of interactions with interviewees and reports from Census Bureau field staff, the Census Bureau (2017c, page 7) concluded, “Overall, these findings, in various languages from respondents, Field Representatives, and Field Supervisors across the country who have participated in recent projects are raising concerns with CSM regarding potential barriers to respondents participation in the 2020 Census, as well as other Census Bureau surveys.”

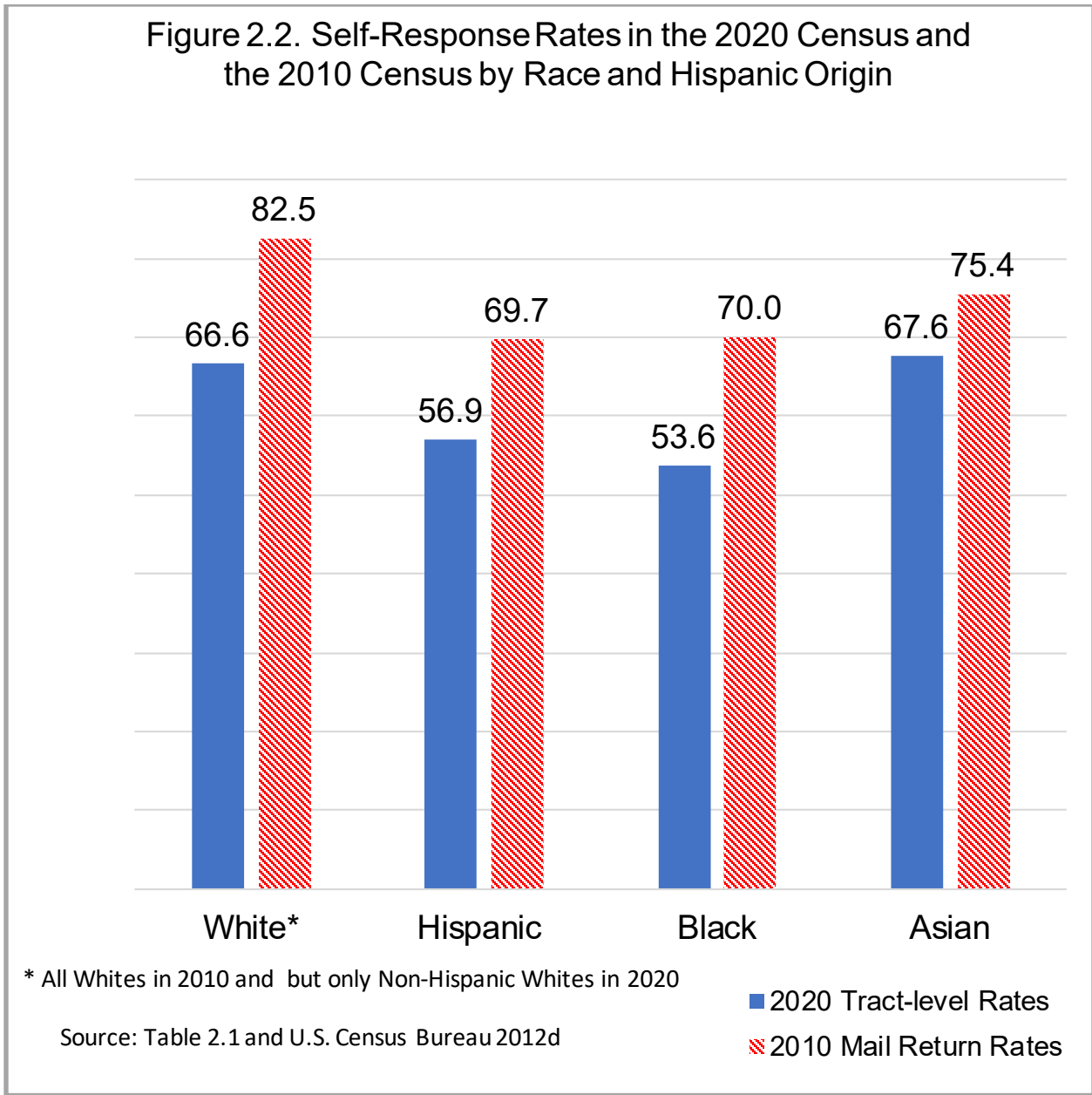
88. In a series of focus groups among Latino adults regarding the 2020 Census conducted by National Association of Latino Elected Officials (2018, slide 4), the study, which included a potential citizenship question, concluded, “Hesitation, fear and cynicism arose among focus group participants when they saw a version of the questionnaire.” Data from a recent National Association of Latino Elected Officials survey (2020) indicate nearly half of all Hispanics thought the citizenship question was still on the 2020 Census questionnaire.

89. In addition to low self-response rates, the difficulty in getting a complete and accurate count of Hispanics and Blacks in the 2020 Census is also reflected in the population composition of census tracts with the lowest self-response rates. Table 2.3 shows the composition of the 20 percent of census tracts with the lowest self-response rates as of August 6, 2020. Hispanics and Blacks are over-represented in these hard-to-count tracts meaning it will be a particularly difficult task to get a complete count of these groups compared to Non-Hispanic Whites.

Table 2.3. Racial and Hispanic Origin Composition of the 20 Percent of Census Tracts with the Lowest Response Rates Compared to U.S. Population		
	Race and Hispanic Origin in the 20% of the Tracts with the lowest self-response rates as of August 6	Race and Hispanic Origin in U.S. Population
Non-Hispanic Whites	44.1	60.2
Hispanics	25.8	18.3
Non-Hispanic Asians	3.5	6.0
Non-Hispanic Black	22.2	12.3
Source: Funders Census Initiative 2020, (August 6 presentation)		

90. Figure 2.2 shows the 2020 Census tract-level self-response rates and the 2010 mail return rates by race and Hispanic Origin. Self-response rates and mail return rates are both measures of census participation. Data for 2010 reflect the race of the householder while data for 2020 reflect the plurality of the population in a census tract.

91. Data in Figure 2.2 show that the pattern of participation in the 2020 Census is similar to that in the 2010 Census with respect to race and Hispanic Origin status. In both the 2010 and 2020 Census, the participation rate for Whites is the highest while the rates for Hispanics and Blacks are lower in both years. This underscores the extent to which patterns and relationships seen in past censuses are being repeated thus far in the 2020 Census. It is reasonable to believe the differential response rates seen so far in the 2020 Census are likely to lead to higher net undercounts and omissions for groups with low self-response rates like they have in past censuses. Furthermore, it is reasonable to believe that early truncation of census data collection in the 2020 Census means there will be less time to gather more census responses and the households that are missed, are likely to be disproportionately Hispanic and Black.



92. The data in Tables 2.1, 2.2, and 2.3 focus on demographic groups, but there are also large variations in the self-response rates by geography. Self-response rate variations by state and counties are addressed below.

93. There is a lot of variation in self-response rates across the states. Data released by the Census Bureau (2020e) on August 27, 2020, show 12 states (Alaska, Arkansas, Louisiana, Maine, Mississippi, Montana, New Mexico, Oklahoma, South Carolina, Vermont, West Virginia,

and Wyoming) have self-response rates below 60 percent. On the other hand, there are 4 states (Minnesota, Nebraska, Washington, and Wisconsin) with self-response rates at 70 percent or above. Some of the variation across states is related to the share of their population that is meant to be captured in Update/leave operation rather than the self-response operation. The Update/Leave operation was delayed because of the COVID-19 pandemic.

94. Given the connection between self-response rates and census accuracy based on data from the 1990, 2000 and 2010 Censuses (shown in Section 1) the states with lower self-response rates in 2020 are likely to have higher net undercount and omissions rates. The remaining part of the 2020 Census data collection process is particularly important for states with low self-response rates.

95. For example, Texas is one of the states where self-response rates in the 2020 Census are well below the national average. U.S. Census Bureau (2020e) data from August 27, 2020, shows the self-response rate for Texas is 60 percent compared to 64.6 percent for the nation as a whole. An undercount because of low self-response rates could cost Texas a congressional seat in the re-apportionment process and their fair share of federal funding.

96. New York is another state with below-average self-response rates in the 2020 Census. The 2020 Census self-response rate on August 27, 2020, was 60.7 percent for New York. A high net undercount in the 2020 Census due to low self-response rates in New York could impact the Congressional seats they get in 2020 Census reapportionment, as well as their share of federal funding.

97. It is worth noting that a lower self-response rate and a higher undercount rate in a large state like Texas or New York, will result in a larger number of people missed in the Census

than the same self-response and undercount rates in a small state. In other words, a high net undercount rate in a large state harms more people than the same rate in a small state.

98. In early August, the Census Bureau started the NRFU operation nationwide. But that has not erased differences across the states. Of the fifty states, 12 have enumerated (including self-response and NRFU) less than 75 percent of the population as of August 27, 2020. If the end of the data collection period remains September 30, 2020, this means they must still enumerate more than 25 percent of the households in their state with slightly more than one month remaining. These states captured less than 75 percent of their population in the first 24 weeks of the 2020 Census data collection period but must capture more than 25 percent in about five weeks.

99. It is important to recognize that substate areas vary even more than states in self-response rates. Data retrieved from the Census Bureau (2020e) on August 21, 2020, shows there are 25 counties where the self-response rate is 80 percent or more and 12 counties where the self-response rates is under 20 percent. The connection between self-response rates and census accuracy discussed in Section 1 of this report indicates that variation in self-response rates among geographic areas makes it more likely that some areas will have net undercounts and omissions in the 2020 Census. States rely on census data to draw state legislative districts and census undercounts result in seats shifting away from regions in which people are undercounted. Communities that suffer high net undercounts due to low self-response rates are unlikely to get their fair share of political power in the redistricting process which takes place after every census, and their fair share of federal funding.

100. It is my conclusion that as of August 24, 2020, Census tracts where Hispanics and Blacks are the plurality of the population have lower self-response rates in the 2020 Census than

tracts where Non-Hispanic Whites are the plurality of the population. This indicates Hispanics and Blacks are on a trajectory to have higher net undercounts and omissions rates in the 2020 Census. Ending the 2020 Census data collection period on September 30, 2020, instead of October 31, 2020, means there will be less time available to address data collection improvements for the demographic groups, such as Hispanics and Blacks, with the lowest self-response rates, and will result greater in omissions and undercounts for these demographic groups. If states and groups with low self-response rates had more time for data collection, there would be more time to recover from the racial and Hispanic and state differentials in data collection that we see so far in the data collection process.

3) Reduction in Differentials in 2010 Census and 2020 Census Self-Response Over the Census Data Collection Period

101. Data from the 2010 Census show Hispanic, Asians, and Blacks were a larger share of the population responding later in the data collection period than those responding in the earlier portion of the data collection period. Consequently, changes to the end of the data collection period impact Hispanics, Asians, and Blacks more than Non-Hispanic Whites.

102. A U.S. Census Bureau (2012d) report provides mail return rates for a date around the middle of the 2010 Census self-response period (April 19, 2010) and at the end of the self-response period (September 7, 2010) by race and Hispanic Origin status. The April 19, 2010 date was used by the Census Bureau because that is when the Census Bureau determined which housing units they would follow up with a visit from a census enumerator. They call this the NRFU universe. The September 7, 2010 date reflects all self-responses in the 2010 Census.

103. The indicator of census participation used in Table 3.1 is the mail return rate. According to the Census Bureau (2012d, page vi) “Mail Return Rates reflect the percentage of

occupied housing unit that returned their questionnaire in time to avoid enumeration in Nonresponse Followup.”

104. Data in Table 3.1 show that between April 19, 2010 and the end of the data collection on September 7, 2010 the mail return rates for Whites increased by 3.2 percent points compared to 4.6 percent for the Black population, 4.5 percentage points for the Hispanic population, and 4.4 percent for the Asian population. In other words, Blacks, Hispanics, and Asians were responding at a higher rate than Whites during the latter part of the data collection period (April 19, 2010 to September 7, 2010). Hispanics, Asians, and Blacks were a disproportionately high share of those responding between April 19, 2010 and the end of data collection period than they were between the start of data collection and April 19, 2010. Given the higher response rates of Hispanics, Asians, and Blacks near the end of the data collection process, changes in the collection process near the end of the data collection process are more likely to impact those groups.

Table 3.1 Percentage Point Difference Between the Middle and the End of Self-Response Phase of the 2010 Census by Race and Hispanic Origin			
	Mail Return Rates*		Percentage Point Changes from April 19 to September 7 2010
	as of April 19, 2010	as of September 7, 2010	
White* Alone	79.3	82.5	3.2
Black Alone	65.4	70.0	4.6
Asian Alone	71.0	75.4	4.4
Hispanic	65.2	69.7	4.5
* Source;; U.S. Census Bureau (2012). "2010 Census Mail Response Rate/Return Rates Assessment Report," 2010 CENSUS PLANNING MEMORANDUM SERIES, No. 198, U.S. Census Bureau, Washington DC.			
* Data for Non-Hispanic Whites not available			

105. There is another way of looking at this data that leads to the same conclusion.

Table 3.2 shows the percentage point gap between the mail return rates of Whites and minorities

(Hispanic, Asians and Blacks) around the middle of the 2010 Census data collection period (April 19, 2010) and at the end of that period (September 7, 2010). For Hispanics, Asians and Blacks, the gaps between their self-response rates and those of Whites are smaller at the end of the data collection period than it was at the middle of the data collection period. This suggests that the longer the data collection period lasts, the smaller the gap between self-response rates of minorities and Whites.

	Mail Return Rates		Percentage Point Difference Between White and Minorities April 19, and September 7, 2010 (Minority-White)	
	as of April 19, 2010	as of September 7, 2010	as of April 19, 2010	as of September 7, 2010
White Alone*	79.3	82.5		
Black Alone	65.4	70.0	-13.9	-12.5
Asian Alone	71.0	75.4	-8.3	-7.1
Hispanic	65.2	69.7	-14.1	-12.8

Source: U.S. Census Bureau (2012). " 2010 Census Mail Response Rate/Return Rates Assessment Report," 2010 CENSUS PLANNING MEMORANDUM SERIES, No. 198, U.S. Census Bureau, Washington DC.

* Data for Non-Hispanic White not available

106. The Census Bureau data for 2010 Census mail return rates are not available for Non-Hispanic Whites, only for Whites. This is important because some Hispanics are counted in the White race category but are not included in the Non-Hispanic White category. Since Hispanics have lower self-response rates than Whites, including some Hispanics in the White category depresses the White rate and leads to false comparison between minorities and the majority population. Since the data for “Whites” include data for some Hispanics these figures do not reflect the real difference between minorities and Non-Hispanic Whites. The difference

between Whites and minorities shown in Table 3.1 and 3.2 would undoubtedly be larger if we had data for Non-Hispanic Whites.

107. Data from the 2020 Census show a similar pattern to the 2010 Census with respect to a larger share of the population responding later in the data collection period being Hispanic, Asian, and Black. Table 3.3 shows the mean response rates on April 30, 2020, and August 20, 2020, for tracts by the race and Hispanic Origin plurality of the population in the tract. From April 30, 2020, to August 20, 2020, the percentage point increase in the mean response rates for Hispanic plurality tracts, Asian plurality tracts, and Black plurality tracts was larger than for Non-Hispanic White plurality tracts. The increase was 7.4 percentage points for tracts where Non-Hispanic Whites were the plurality of the tract, compared to 9.6 percentage points for Hispanic plurality tracts, 10.3 percentage points for Asian plurality tracts, and 8.3 percent for Black plurality tracts.

	Self-Response Rates		Percentage Point Change May 1, 2020 to August 20, 2020
	as of April 30, 2020	as of August 20, 2020	
Plurality of Population In Tract			
Non-Hispanic White*	59.2	66.6	7.4
Hispanic	47.3	56.9	9.6
Non-Hispanic Asian*	57.3	67.6	10.3
Non-Hispanic Black*	45.3	53.6	8.3
Source: Data from April 30, 2020 Funders Census Initiative 2020 and data for August 20, 2020 obtained from Steve Romalewski at CUNY			
*Race Alone or in Combination			

108. Table 3.4 shows differences between Whites and minorities (Hispanic, Asians and Blacks) in terms of 2010 Census mail return rates, net undercount rates, and omission rates. The

intervening census operation that occurs after mail return rates and the calculation of census accuracy measures (net undercount and omission) is the NRFU operation. The fact that the differences between Whites and minorities are smaller for net undercounts and omission than for mail return rates, means minorities were a disproportionately large part of the population counted in NRFU. Meaning Blacks, Hispanics and Asians were a disproportionately large share of the population counted later in the data collection period (i.e. during NRFU) rather than earlier in the data collection period. This suggests that a shorter data collection period in 2020 will be more harmful to Blacks, Hispanics, and Asians than for Non-Hispanic Whites.

	2010 Census Mail Return Rates (September 7)	Net Undercount Rates	Omissions Rates	Percentage Point Difference Between Minorities and Whites in <u>Mail Return Rates</u> (September 7, 2020) Minority Rate Minus White Rate	Percentage Point Difference Between Minorities and Whites in <u>Net Undercount Rates</u> Minority Rate Minus White Rate	Percentage Point Difference Between Minorities and Whites in <u>Omissions Rates</u> Minority rate Minus White Rate
White*	82.5	-0.84	3.8			
Black Alone	70	2.07	9.3	-12.5	2.9	5.5
Asian Alone	75.4	-0.08	5.3	-7.1	0.8	1.5
Hispanic	69.7	1.54	7.7	-12.8	2.4	3.9

Source: Data for Mail Return Rates is from U.S. Census Bureau (2012d) and source for net undercounts and omissions is O'Hare (2019)

* Data for Non-Hispanic White not available for Mail Return Rates, but Net Undercount and Omissions Rates reflect non-Hispanic Whites.

109. In addition to the lower self-response rates, data analysis by Center for Urban Research at the Graduate Center, City University of New York indicate minority populations are over-represented in the census tracts that are hardest to count. As of August 6, 2020, analysis by the Center for Urban Research at the Graduate Center, City University of New York show the population in the hardest to count census tracts (i.e. those in the bottom 20 percent of self-response rates) was only 44.1 percent Non-Hispanic White even though Non-Hispanic Whites are 60.2 percent of the total population of the U.S. Thus, 65.9 percent of the population in the

hardest to count tracts were minorities (i.e. those other than Non-Hispanic Whites) even though they are only 39.8 percent of the population. In other words, racial and Hispanic minorities are a disproportionately high share of the population in the hardest to count census tracts as of early August 2020.

110. There is a consistent pattern of responses over the data collection period in the 2010 and 2020 Censuses. Non-Hispanic Whites are a disproportionately large share of the responses early in the data collection period, and Hispanics, Asians and Blacks are a disproportionately large share of the responses near the end of data collection period. This means the end of the data collection period contributes more to the final census count of Blacks, Hispanics, and Asians than for Non-Hispanic Whites.

111. It is my conclusion based on data from the 2010 and 2020 Censuses that households responding later in the Census data collection period are disproportionately Hispanic, Asian, and Black rather than Non-Hispanic White. Early truncation of census data collection in the 2020 Census means there will be less time to gather more census responses and the households that are missed are likely to be disproportionately Hispanic, Asian, and Black. Thus, truncating data collection and NRFU operations one month early is likely to result in a failure to enumerate households that would have been captured if the data collection period and NRFU continued through the end of October, and that will increase the undercount of minorities more than the undercount of Non-Hispanic Whites.

4) Impact of NRFU Truncation on Count of Hispanics Asians and Blacks in the 2020 Census

112. Collecting data in the NRFU operation is different than collecting data in the self-response operation. The portion of the population that is most willing to respond to the Census typically does so early in the self-response phase. The population less willing to respond to the

census is concentrated in the NRFU population. This means data collection in NRFU is typically more difficult than in the self-response phase. With respect to the NRFU process relative to the self-reporting operation in the 2020 Census, former Census Bureau Director Kenneth Prewitt (2020) stated, “The census self-reporting phase successfully reached 62 percent of the population. An achievement to applaud. But the next phase is orders of magnitude more difficult. We’re in the NRFU/Hard-to-count territory.”

113. One indicator of the difficulty in getting data from the final segment of households is reflected in the 2010 Census NRFU evaluation (U.S. Census Bureau 2012a, Table 18) which shows there were about 8 million households that required four or more contact attempts in the 2010 Census.

114. Another reflection of the difficulty in getting respondents to participate in the NRFU operation is the large share of responses that are “proxy” responses. Proxy responses involve someone other than a household member providing data for the household. According to the U.S. Census Bureau (2012a, page 66), “Information we collected for more than half of all NRFU housing units by proxy respondent – either someone who moved in after April 1, or a neighbor or other proxy (landlord, property manager, etc.)”. In the 2010 Census NRFU process, data was collected from a household member only 47 percent of the time. Data collected by proxies is less accurate than data collected from a household member. Ending the NRFU operation a month earlier than previously planned is likely to increase reliance on proxy responses in the 2020 Census and thus result in less accurate data with more omissions and counting higher net undercount.

115. The 2010 Census NRFU workload was an estimated 48 million housing units (U.S. Census Bureau 2012a) and it was conducted in about ten weeks. In describing the 2010

NRFU operation, the U. S. Census Bureau (2012a) stated, “The first Nonresponse Followup operation in the field was Nonresponse Followup and officially began on May 1, although a few areas began work before that date. All but one of 494 local census offices reported finishing Nonresponse Followup by July 9th.”

116. As of August 6, 2020, there were approximately 56 million non-responding housing units in the 2020 Census. In the 2020 Census, the U.S. Census Bureau (2020d) says they are now planning on only 7 weeks for NRFU (August 11 to September 30). Truncation of the data collection and NRFU operations in 2020 means the Census Bureau will try to visit and enumerate 8 million more homes than in 2010, in 7 weeks instead of 10. The number of housing units to visit increased by 8 million while the number of weeks devoted to the NRFU process was shortened by 3 weeks. The truncation of the data collection period means the Census Bureau has less time to do more work.

117. The Census Bureau is allowing people to self-respond through the end of the data collection period. The self-response rate only increased by 0.6 of a percentage point from August 19 to 27, 2020. This indicates that the vast majority of census responses in the remaining data collection period will come from NRFU.

118. In addition to the possible early truncation of the NRFU operation in the 2020 Census, there are several reasons why one might expect the 2020 Census NRFU operation to be more difficult than the NRFU operation in the 2010 Census.

119. It is widely acknowledged that the COVID-19 pandemic has made census data collection more difficult. The pandemic has resulted in delayed census data collection and has complicated getting responses from household in personal visits. The pandemic has also negatively affected census hiring.

120. Natural disasters such as hurricanes and forest fires have also made 2020 census data collection more problematic. When hundreds of thousands of people leave their homes when a hurricane hits or threatens, they are not available to respond to a census enumerator. In addition, some housing units that were occupied on April 1 no longer exist after a hurricane. It is easy to understand how this complicates a complete and accurate census. Typically, the decennial census data collection is over before the heart of the hurricane seasons hits. Shortening the amount of time for data collection will compound these problems and produce higher net undercounts and omission rates. The U.S. Census Bureau's truncation of data collection in the 2020 Census from October 31, 2020, to September 30, 2020 is likely to impact the NRFU operation more than the self-response operation (U.S. Census Bureau 2020d). This change shortens the NRFU period by about one third (one month out of three) but it only shortens the self-response phase by about one-sixth (one month out of six).

121. The NRFU operation is always challenging and reducing the time available to collect data will make a difficult situation worse. Since Hispanics, Asians, and Blacks are more dependent on the NRFU process this change will likely result in higher net undercount and omission rates for those groups. Shortening the NRFU period by a month, is also likely to have a disproportionate negative impact on the foreign-born population by reducing the number of those who are counted in the Census.

5) Implications of Net Undercounts and Omissions in the Census

122. According to the U.S. Census Bureau, data from the Decennial Census (U.S. Census Bureau 2017e) is used for:

- Allocating political representation
- Distribution of federal funds through funding formulas

- Civil rights enforcement
- Business applications
- Post-Census population estimates and projections
- Providing weights for sample surveys
- Denominators for rates
- Community planning
- Economic and social science research

123. In particular, it is noteworthy that communities that experience a census undercount do not get their fair share of political representation and federal dollars distributed through funding formulas dependent on the Census counts (O'Hare 2019, Chapter 2). They also miss getting their fair share of dollars distributed by state governments based on census population counts (O'Hare 2020). According to Reamer (2019) there are 316 federal programs that distribute funds on the basis of census-related data, and they distributed more the \$1.5 trillion in Fiscal Year 2016. In addition, there are more than 10,000 single member political districts which are drawn on the basis of census data (O'Hare, 2019). Often it is the communities most in need of assistance that do not get their fair share of help because they are undercounted in the census.

124. Census undercounts and omissions are likely to have multiple negative ramifications for states and localities. Communities that are undercounted do not get their fair share of government resources such as political representation and money, and they are often overlooked in private sector decision-making as well.

6) Conclusion


125. The preponderance of empirical evidence from the 2010, 2000 and 1990 Census shows lower self-participation rates leads to higher net undercount rates and omissions rates. The differential self-response rates in the 2020 Census by race and Hispanic Origin suggests that differential undercount patterns by race and Hispanic Origin seen in the past are likely to be repeated in the 2020 Census. Thus, Hispanics and Blacks are on track to have higher net undercount rates and omissions rates than Non-Hispanic Whites in the 2020 Census.

126. Evidence indicates Hispanics, Asians and Blacks are a disproportionately large share of the population counted at the end of the data collection period. Consequently, reducing data collection efforts at or near the end of the data collection period will result in greater omissions and undercounts for Hispanics, Asians, and Blacks compared to Non-Hispanic Whites.

127. Given the facts laid out above, it is my conclusion that changing the end of the 2020 Census data collection period from October 31, 2020, to September 30, 2020, will result in greater omissions and undercounts for Hispanics, Blacks, and Asians compared to Non-Hispanic Whites (and exacerbate differential net undercounts among these groups) in the 2020 Census. States with lower self-response rates will result in higher net undercounts and omissions compared to state with higher self-response rates in the 2020 Census.

Executed on August 3, 2020 at Cape Charles, Virginia.

I declare under penalty of perjury that the foregoing is true and correct.



William P. O'Hare

APPENDIX 1

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