HRS | HEALTH AND RETIREMENT STUDY
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Representativeness of the oversamples of Blacks and Hispanics in the Health and Retirement Study: A geographic analysis of 2020

Documentation Report

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Abstract

The HRS oversamples of Blacks and Hispanics are based on oversampling of geographic areas with above-average densities of those population groups. This raises the question of whether the resulting samples are representative of the US population of older Blacks and Hispanics with respect to the geographic distribution of particular characteristics. We demonstrate here that they are representative by comparing the national distribution of Blacks and Hispanics age 55 and older to the HRS 2020 sample, also age 55 and older, by census tract characteristics. We identified several key tract level characteristics including median income, the proportion of Blacks, Hispanics, persons with a disability, and persons with health insurance. We use estimates of the older Black and Hispanic population derived from the ACS 2020 5-yr summary files as national benchmarks and compare them to similar point estimates and 95% confidence intervals calculated from the HRS 2020 core and exit respondents. Our results show that most of the ACS benchmark estimates fall inside the HRS 2020 95% confidence intervals. Therefore, these results suggest that the HRS minority oversample provides strong geographic representation of the US population of older Blacks and Hispanics.

Overview

The goal of the HRS sample design is to obtain a probability sample of respondents who represent the population of older adults in the United States while also producing an oversample of minorities. This oversample of Blacks and Hispanics is critical to facilitate reliable estimates for these important subgroups. The purpose of this user guide is to show that the distribution of the HRS minority oversample looks similar to the national distribution of older Blacks and Hispanics by geographic characteristics.

We use Census tract information obtained from the US Census ACS2020 5-year summary files to characterize each tract by its demographic composition, including the proportion of Blacks, the proportion of Hispanics, median income, proportion of those with a disability, and the proportion with health insurance. Then we categorize all census tracts into five groups based on each demographic domain and obtain the distribution of the 9.8 million Blacks and 10.3 million Hispanics age 55 and older who fall into each category. These distributions serve as the national benchmarks to which we compare similar estimates calculated from the HRS 2020 oversample of Black and Hispanic adults. We calculate point estimates and 95% confidence intervals from HRS 2020 while carefully accounting for the complex sample design features of HRS. If the national benchmarks fall within the HRS confidence intervals, then this is a good indication that the HRS 2020 oversample is geographically representative of older Blacks and Hispanics in the US.

ACS 2020 summary file 5-year tract level benchmark proportions of Blacks and Hispanics

To assess the geographic representativeness of the HRS2020 oversample, we leverage publicly available information from the ACS 2020 5-year summary file data[1] (ACS). This analysis uses census tract as our geography because it is the lowest level at which race and age specific population counts are available. For each of the 85,395 census tracts, we calculate the following demographic characteristics:

- Percent of total population that is Black alone or Black in combination with another race
- Percent of total population that is Hispanic
- Median past 12-month income for those age 15 and older
- Percent of noninstitutionalized civilians who identify as disabled
- Percent of noninstitutionalized civilians with health insurance

Then we divide tracts into 5 categories based on each characteristic. Category cutoffs were selected by balancing interpretability with the number of tracts that fall into each category. Table 1 shows the number of tracts, along with the total population of Blacks age 55 and older (9.8 million) and the total population of Hispanics age 55 and older (10.3 million), by category. The proportions of Blacks or Hispanics that fall into each category represent the population benchmarks for this analysis.

HRS 2020 proportion of Blacks and Hispanics by census tract characteristics

The next step is to estimate similar metrics using HRS 2020 core and exit interview respondents. Respondent addresses are geocoded to determine the census tract in which each respondent resides. For the 15,447 respondents with tract information (which include 3,335 Blacks and 2,433 Hispanics), we

[1] https://www.census.gov/programs-surveys/acs/data/summary-file/sequence-based.2020.html#list-tab-1020540470

append the ACS tract level characteristics calculated above. Then we calculate point estimates and 95% confidence intervals for the proportions of Blacks and Hispanics in each category while accounting for the HRS complex sample design weights, strata, and cluster codes.

Results: Black geographic representation

Overall the weighted distribution of Black HRS2020 respondents is geographically representative of the US Black population age 55 and older; see Figure 1. For example, HRS estimates that 20.7% (95% CI [16.8%, 24.6%]) of Black individuals live in census tracts where the median income is <$20,000. According to ACS2020, 18.2% of all Blacks 55 and older live in similar census tracts, which falls within the HRS2020 confidence interval. We see similar results in all the racial and disability composition categories and 4 of the 5 median income and health insurance categories.

There are two instances where the national percentage of older Blacks falls just outside the HRS 95% confidence intervals. The ACS estimates that 24.3% of older Blacks live in census tracts with a median income of $30,000-$39,999, which is just above the HRS 95% confidence interval (17.8%, 24.1%). The HRS also slightly underrepresents older Blacks from census tracts with <85% health insurance, where the HRS 95% confidence interval (22.25%, 28.25%) narrowly misses the ACS estimate of 22.17%. However, these fall just slightly outside the 95% confidence intervals, so this is little cause for concern.

Results: Hispanic geographic representation

Similarly, the weighted distribution of Hispanic HRS2020 respondents is generally geographically representative of the US Hispanic population age 55 and older; see Figure 2. For the tract level Hispanic composition, median income, and disability categories all of the 95% confidence intervals estimated from HRS 2020 contain the ACS population proportions of Hispanics. For example, the ACS estimates that 68.8% of Hispanics live in tracts where 30% or more of persons in the tract are Hispanic, which is captured by the HRS 95% confidence interval (61.6%, 75.3%).

There are two categories from the health insurance domain where the ACS estimates fall outside the HRS interval: tracts with [90% - 95%) and [95% - 98%) rates of health insurance. The ACS estimates 29.3% and 17.0% of Hispanics live in tracts with [90% - 95%) and [95% - 98%) health insurance rates, respectively. These fall slightly above the corresponding HRS 95% confidence intervals, which are (16.5%, 27.7%) and (9.2%, 15.8%), respectively. However, the categories for rates of health insurance are narrow since the overall national rate of health insurance is so high in the US, and the ACS estimates fall close to the HRS confidence intervals, so again there is little cause for concern.

Table 1. ACS 2020 Summary File 5-yr tract characteristics with % Black/Hispanic population

Tract characteristics	All US Tracts	% of Tracts	Black person 55+	% Of all 55+ Black persons	Hispanic person 55+	% Of all 55+ Hispanic persons
% Black alone or Black in combination with another race (all ages)						
<1%	16,547	19%	41,389	0.4%		
1%-4.99%	23,897	28%	468,230	4.8%		
5%-9.99%	13,122	15%	685,408	7.0%		
10%-29.99%	18,563	22%	2,455,250	25.0%		
30%+	13,266	16%	6,161,338	62.8%		
Total	**85,395**	**100%**	**9,811,615**	**100.0%**		
% Hispanic (all ages)						
<1%	10,578	12%			34,096	0.3%
1%-4.99%	22,307	26%			396,345	3.8%
5%-9.99%	14,990	18%			603,726	5.9%
10%-29.99%	21,327	25%			2,181,398	21.1%
30%+	16,193	19%			7,104,468	68.8%
Total	**85,395**	**100%**			**10,320,033**	**100.0%**
Median income						
<$20k	7,795	9%	1,765,364	18.2%	1,199,609	13.0%
$20k - $29,999	27,123	33%	3,920,205	40.5%	3,929,184	42.6%
$30k - $39,999	24,976	30%	2,346,802	24.3%	2,383,817	25.8%
$40k - $54,999	16,973	20%	1,305,622	13.5%	1,313,152	14.2%
$55k +	6,518	8%	338,533	3.5%	402,715	4.4%
Total	**83,385**	**100%**	**9,676,526**	**100%**	**9,228,477**	**100.0%**
% with a disability						
<5%	5,460	6%	267,621	2.7%	408,185	3.96%
5% - 9.99%	23,235	27%	2,074,427	21.1%	3,068,928	29.74%
10% - 14.99%	27,507	32%	3,087,218	31.5%	3,379,686	32.75%
15% - 19.99%	17,080	20%	2,377,688	24.23%	1,850,375	17.93%
20% +	12,113	14%	2,004,661	20.4%	1,612,859	15.63%
Total	**85,395**	**100%**	**9,811,615**	**100%**	**10,320,033**	**100.00%**
% with health insurance						
<85%	14,555	17%	2,175,196	22.17%	2,981,686	28.9%
85% - 89.99%	13,856	16%	2,181,865	22.2%	2,042,925	19.8%
90% - 94.99%	25,955	30%	3,211,641	32.7%	3,023,978	29.3%
95% - 97.99%	21,191	25%	1,725,529	17.6%	1,754,843	17.0%
98% +	9,838	12%	517,384	5.3%	516,601	5.0%
	85,395	**100%**	**9,811,615**	**100%**	**10,320,033**	**100%**

Figure 1. Percent of Blacks 55 and older by ACS tract characteristics

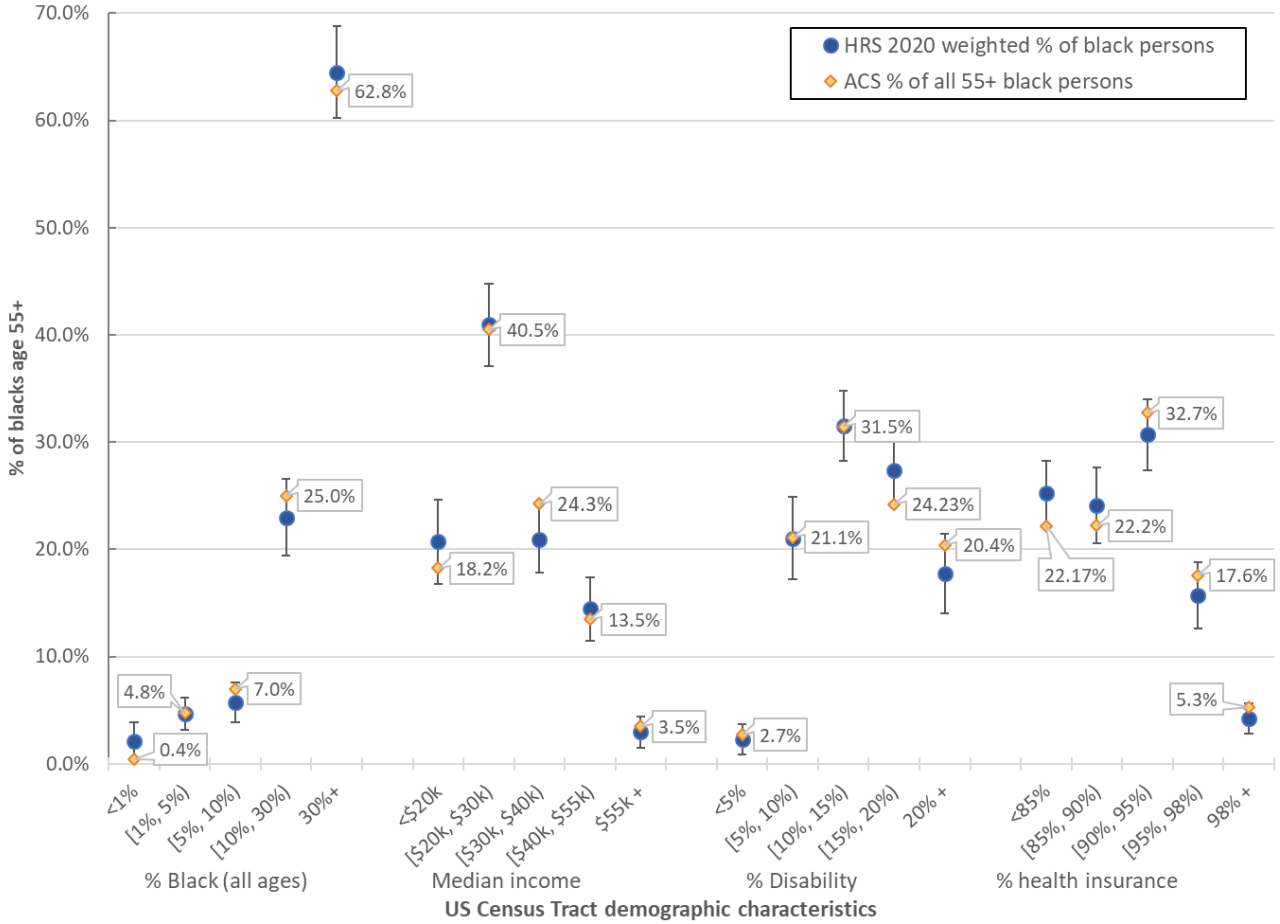

Figure 2. Percent of Hispanics 55 and older by ACS tract characteristics