NHATS Technical Paper #37

NATIONAL HEALTH AND AGING TRENDS STUDY (NHATS) Development of Round 12 Survey Weights

November 2023

Suggested Citation: Jiao, Rui, Freedman, Vicki A., Schneider, Benjamin, Schrack, Jennifer. 2023. National Health and Aging Trends Study Development of Round 12 Survey Weights. NHATS Technical Paper #37. Baltimore: Johns Hopkins Bloomberg School of Public Health. Available at <u>www.NHATS.org</u>. We thank Victoria Owens and Irene Molina Manrique, who played an instrumental role in the development of the Round 12 weights and produced several tabulations that appear in this paper. This technical paper was prepared with funding from the National Institute on Aging (U01AG032947).

1. Introduction

The NHATS public use data originally supported weighted analysis of Medicare beneficiaries ages 65 and older living in the contiguous United States on September 30, 2010. The original cohort has been interviewed annually. Replenishment took place in Rounds 5 and 12 so that the sample could be used to study disability trends as well as individual trajectories. The Round 5 replenishment sample was drawn as of September 30, 2014 and the Round 12 replenishment sample was drawn as of September 30, 2014 and selection are available elsewhere (Montaquila et al. 2012a, DeMatteis et al. 2016a, and Jiao et al. 2023).

For Round 12, as for Rounds 5 through 11, separate sets of weights are provided for analyses pertaining to the original target population (the "2011 Cohort") and for analyses pertaining to the target population added in Round 5 (the "2015 Cohort"). Beginning in Round 12, additional sets of weights are provided for analyses pertaining to the new target population (the "2022 Cohort"), Medicare beneficiaries ages 65 and older living in the contiguous United States on September 30, 2021. The survey weights included with the Round 12 public use file account for differential probabilities of selection and adjust for potential bias related to unit nonresponse to the Round 1 through 12 interviews.

As in prior rounds, for Round 12 of NHATS, two types of sampling weights have been produced for each cohort: a tracker weight and an analytic weight, whose respective purposes are described in Section 6. The tracker weights are available on the Tracker file and the analytic weights are available on the Sample Person file. For variance estimation (see Section 7), we include replicate weight variables for replication method, variance stratum and variance cluster for Taylor series linearization method.

Table 1 lists each set of weights and their respective variable names in Round 12. In each set of weights, the full-sample weight has a variable name that ends with 0, while the replicate weight variable names end with the numbers 1 through 56. Variance stratum and variance cluster variables are named the same for both sets of weights across three cohorts.

Cohort	Weight	Round 12 Weight Name	Variance stratum	Variance cluster
2022 Cohort Weights	Tracker	w12trfinwgt0-56	w12varstrat	w12varunit
	Analytic	w12anfinwgt0-56		
	Tracker	w12tr2015wgt0-56	w12varstrat	w12varunit
	Analytic	w12an2015wgt0-56		
2011 Cohort Weights	Tracker	w12tr2011wgt0-56	w12varstrat	w12varunit
	Analytic	w12an2011wgt0-56		

Table 1 Analytic and Tracker Weight Names

The methodology that was used to develop these weights and appropriate uses of each of these weights are discussed in the following sections. The next section provides an overview of how cases were classified for purposes of weight development. Sections 3 and 4 detail the creation of the tracker and analytic weights, respectively. Section 5 reports on the effect of weighting adjustments on the precision of NHATS survey estimates. Section 6 provides guidance on the use of the tracker and analytic weights. A final section provides information on the proper calculation of variance estimates to account for the complex design and estimation procedures used in NHATS. For additional information on application of

weights and variance estimation in NHATS analyses, see Accounting for Sample Design in NHATS and NSOC Analyses: Frequently Asked Questions (Freedman et al. 2022).

2. Definition of Respondent

In the development of survey weights, an important first step is the classification of cases into groups based on eligibility and response status. For Round 12 of NHATS, Tables 2.1 and 2.2 show how the disposition codes map into respondent, ineligible, nonrespondent, and eligibility unknown statuses. Table 2.1 splits cases into Round 12 continuing sample and Round 12 replenishment samples (the main replenishment and the Hispanic supplement). Table 2.2 further breaks the continuing sample into Round 1 original sample and Round 5 replenishment sample.

For the 2022 Cohort weights, cases from the continuing sample, and Round 12 replenishment samples were included. In the computation of the 2015 Cohort weights, both the original sample and Round 5 replenishment sample cases were included. In the computation of the 2011 Cohort weights, only cases in the original sample were included.

2.1. 2022 Cohort Weights

The 2022 Cohort Round 12 Tracker weight estimates the population of Medicare beneficiaries ages 65 and older living in the contiguous United States on September 30, 2021. Round 11 respondents from the continuing sample who were alive as of September 30, 2021¹ and the Round 12 replenishment sample cases that were retained in the field² were classified into weighting statuses: Respondent, Nonrespondent, Ineligible and Eligibility unknown. Of those, positive weights are only assigned to those classified as Respondent and Ineligible (n=7,048). For the purposes of the tracker weight, respondents are those cases for which at least one survey component is available (codes 60, 61, 62, 63, 64), including those cases for whom a Round 12 Last Month of Life (LML) interview was completed for a death occurring after September 30, 2021. The ineligible cases consist of those who moved outside the contiguous U.S. (code 83) as well as Round 12 replenishment sample cases who died prior to their interview and after the sample was drawn (code 81).

For the 2022 Cohort Round 12 Analytic weight, only respondents (codes 60, 61, 63; n=6,236) are assigned a positive weight. For the purposes of the analytic weights, cases in residential care other than nursing homes that completed a facility questionnaire (FQ) but not an SP interview (code 64) are considered nonrespondents. The LML cases (code 62) are considered Not applicable (N/A) and have a zero weight since the LML interview is only collected for the continuing cases. For the SP interview, cases were required to have completed the self-reported disability protocol (through the section on Participation; PA) to be considered complete.

2.2. 2015 Cohort Weights

¹ 16 Round 11 respondents died before September 30, 2021 were considered out-of-scope for the 2022 Cohort. All of them completed the LML interview with disposition code 62.

² In the Round 12 replenishment samples, 4,800 cases were subsampled out from the field and they were excluded from the computation of the 2022 Cohort weights. See Jiao et al. 2023 for details of the subsampling procedure.

For the 2015 Cohort Round 12 Tracker weight, only the original 2011 sample cases and the 2015 replenishment sample cases that were eligible as of September 30, 2014 and were classified in Round 12 as respondents or ineligible are assigned a positive weight (n=6,419). Cases for which at least one survey component is available (codes 60, 61, 62, 63 and 64) are considered respondents for purposes of the tracker weight.

Cases who became ineligible for the Round 12 interviews after they were selected, either due to death prior to their interview or due to moving outside the contiguous U.S., also have positive Round 12 Tracker weights. Replenishment sample cases added in 2022 do not have positive 2015 Cohort Round 12 Tracker weights.

For the 2015 Cohort Round 12 Analytic weight, only respondents (codes 60, 61, 62, 63; n=3,197) are assigned a positive weight. For the SP interview, cases were required to have completed the self-reported disability protocol (through the section on Participation; PA) to be considered complete.

2.3. 2011 Cohort Weights

For the 2011 Cohort Round 12 Tracker weight, only original sample cases classified as Respondents and Ineligible are assigned a positive weight (n = 5,581). Original sample cases for which at least one survey component is available (codes 60, 61, 62, 63 and 64) are considered respondents for purposes of the tracker weight.

Original sample cases, who became ineligible after they were selected, either because they died or moved out of the contiguous U.S. by the time of the fieldwork, have positive Round 12 Tracker weights. Those who became ineligible in subsequent rounds for an interview because they moved out of the contiguous U.S. or completed a Last Month of Life (LML) interview because they died also have positive tracker weights in Round 12. Replenishment sample cases added in 2015 or in 2022 do not have positive 2011 Cohort Round 12 Tracker weights.

For the 2011 Cohort Round 12 Analytic weight, only original sample Respondents (codes 60, 61, 62, 63; n=1,618) are assigned a positive weight. For the SP interview, cases were required to have completed the self-reported disability protocol (through the section on Participation; PA) to be considered complete.

Table 2.1. Classification of Round 12 NHATS Sample for Weight Development Process

		Continuing Sar	nple		Main Replenish	ment &
		(Round 1 & Rou	nd 5)		Hispanic Suppl	ement
		Classification for	Classification for		Classification for	Classification for
Disposition code	N	Tracker Weight	Analytic Weight	Ν	Tracker Weight	Analytic Weight
60-Complete, NH or residential care	248	Respondent	Respondent	101	Respondent	Respondent
60 Complete, community	2,674	Respondent	Respondent	2,838	Respondent	Respondent
61 Complete, NH facility	11	Respondent	Respondent	101	Respondent	Respondent
62 Complete, SP deceased, proxy interview	240	Deceased respondent+	Respondent+	0	N/A	N/A
63 Complete SP, FQ not complete	24	Respondent	Respondent	15	Respondent	Respondent
64 Complete FQ, SP not complete	48	Respondent	Nonrespondent	27	Respondent	Nonrespondent
75 Physically/mentally unable to participate, no proxy	6	Nonrespondent	Nonrespondent	11	Nonrespondent	Nonrespondent
76 Too ill to participate, no proxy	22	Nonrespondent	Nonrespondent	70	Nonrespondent	Nonrespondent
77 Refusal, Sample Person	107	Nonrespondent	Nonrespondent	2,386	Nonrespondent	Nonrespondent
78 Language barrier	0	Nonrespondent	Nonrespondent	65	Nonrespondent	Nonrespondent
79 Unable to locate	8	Eligibility unknown++	Eligibility unknown++	323	Eligibility unknown++	Eligibility unknown++
80 Unavailable during field period	23	Nonrespondent	Nonrespondent	69	Nonrespondent	Nonrespondent
81 Deceased, new sample only	0	N/A	N/A	679	Ineligible	Ineligible
82 Outside of Primary Sampling Unit	0	Nonrespondent	Nonrespondent	29	Nonrespondent	Nonrespondent
83 Ineligible (moved out of contiguous US)	4	Ineligible	Ineligible	54	Ineligible	Ineligible
85 Refusal, facility	1	Nonrespondent	Nonrespondent	12	Nonrespondent	Nonrespondent
86 Deceased, no proxy	32	Deceased nonrespondent+	Nonrespondent+	0	N/A	N/A
87 Refusal, proxy	18	Nonrespondent	Nonrespondent	7	Nonrespondent	Nonrespondent
88 Work stopped	0	Nonrespondent	Nonrespondent	1,208	Nonrespondent	Nonrespondent
Not attempted in Round 12						
Deceased in Round 1, 2, 3, or 4	2,127	Ineligible [#]	Ineligible [#]	0	N/A	N/A
Deceased in Round 5, 6, 7, 8, 9, 10, or 11	3,107	Ineligible [#]	Ineligible [#]	0	N/A	N/A
Other Round 1, 2, 3, or 4 ineligible	120	Ineligible [#]	Ineligible [#]	0	N/A	N/A
Other Round 5, 6, 7, 8, 9, 10, or 11 ineligible	63	Ineligible [#]	Ineligible [#]	0	N/A	N/A
Rounds 1-11 nonrespondent	10,647	Nonrespondent**	Nonrespondent**	0	N/A	N/A
Total	19,530			7,995		
		Number Assigned	Number Assigned		Number Assigned	Number Assigned
		Tracker Weight	Analytic Weight		Tracker Weight	Analytic Weight
2022 Cohort Weights		3,233	2,957		3,815	3,055
2015 Cohort Weights		6,419	3,197		0	0
2011 Cohort Weights		5,581	1,618		0	0

⁺ For the continuing sample, the weights of deceased SPs were adjusted separately from those of living SPs. Continuing sample cases who died before September 30, 2021 (N=16) were excluded from the 2022 Cohort Tracker Weight calculations. All continuing sample cases who were deceased in Round 12 (N=240 code 62) were excluded from the 2022 Cohort Analytic Weight calculations. ⁺⁺ Due to the very low proportion of fielded cases in this category in the continuing sample, these cases were treated as living nonrespondents in the computation of weights. The same approach was computed for Rounds 2 to 4, 6 to 11 weights and the original sample cases of Round 5 weights. For the replenishment sample, these cases were treated as cases with unknown eligibility in Round 12 weights. The same approach was used in Round 5.

**These cases were previously adjusted for in the Rounds 1 to 11 nonresponse adjustment to the tracker weight; the Round 11 nonresponse adjusted tracker weight was used as input to the Round 12 weighting process, so these cases are not included in the Round 12 nonresponse adjustment.

SP=Sample Person interview; FQ=Facility Questionnaire

*These categories apply to the 2011 Cohort.

[^]These categories apply to the 2015 Cohort.

Table 3.2. Classification of Round 12 NHATS Continuing Sample for Weight Development Process

		Continuing Sar	nple		Continuing Sa	mple
		(Round 1 original	sample)		(Round 5 replenishm	ent sample)
		Classification for	Classification for		Classification for	Classification for
Disposition code	N	Tracker Weight	Analytic Weight	Ν	Tracker Weight	Analytic Weight
60-Complete, NH or residential care	159	Respondent	Respondent	89	Respondent	Respondent
60 Complete, community	1,289	Respondent	Respondent	1,385	Respondent	Respondent
61 Complete, NH facility	7	Respondent	Respondent	4	Respondent	Respondent
62 Complete, SP deceased, proxy interview	146	Deceased respondent+	Respondent+	94	Deceased respondent+	Respondent+
63 Complete SP, FQ not complete	17	Respondent	Respondent	7	Respondent	Respondent
64 Complete FQ, SP not complete	29	Respondent	Nonrespondent	19	Respondent	Nonrespondent
75 Physically/mentally unable to participate, no proxy	3	Nonrespondent	Nonrespondent	3	Nonrespondent	Nonrespondent
76 Too ill to participate, no proxy	14	Nonrespondent	Nonrespondent	8	Nonrespondent	Nonrespondent
77 Refusal, Sample Person	48	Nonrespondent	Nonrespondent	59	Nonrespondent	Nonrespondent
78 Language barrier	0	Nonrespondent	Nonrespondent	0	Nonrespondent	Nonrespondent
79 Unable to locate	5	Eligibility unknown++	Eligibility unknown++	3	Eligibility unknown++	Eligibility unknown++
80 Unavailable during field period	14	Nonrespondent	Nonrespondent	9	Nonrespondent	Nonrespondent
81 Deceased, new sample only	0	N/A	N/A	0	N/A	N/A
82 Outside of Primary Sampling Unit	0	Nonrespondent	Nonrespondent		Nonrespondent	Nonrespondent
83 Ineligible (moved out of contiguous US)	1	Ineligible	Ineligible	3	Ineligible	Ineligible
85 Refusal, facility	1	Nonrespondent	Nonrespondent		Nonrespondent	Nonrespondent
86 Deceased, no proxy	12	Deceased nonrespondent+	Nonrespondent+	20	Deceased nonrespondent+	Nonrespondent+
87 Refusal, proxy	10	Nonrespondent	Nonrespondent	8	Nonrespondent	Nonrespondent
88 Work stopped	0	Nonrespondent	Nonrespondent	0	Nonrespondent	Nonrespondent
Not attempted in Round 12						
Deceased in Round 1, 2, 3, or 4	2,127	Ineligible [#]	Ineligible [#]	0	N/A	N/A
Deceased in Round 5, 6, 7, 8, 9, 10, or 11	1,675	Ineligible [#]	Ineligible [#] ^	1,432	Ineligible# ^	Ineligible [#] ^
Other Round 1, 2, 3, or 4 ineligible	120	Ineligible [#]	Ineligible [#]	0	N/A	N/A
Other Round 5, 6, 7, 8, 9, 10, or 11 ineligible	11	Ineligible [#]	Ineligible [#]	52	Ineligible [#] ^	Ineligible [#] ^
Rounds 1-11 nonrespondent	6,723	Nonrespondent**	Nonrespondent**	3,924	Nonrespondent**	Nonrespondent**
Total	12,411			7,119		
		Number Assigned	Number Assigned		Number Assigned	Number Assigned
		Tracker Weight	Analytic Weight		Tracker Weight	Analytic Weight
2015 Cohort Weights		3,334	1,618		3,085	1,579
2011 Cohort Weights		5,581	1,618		0	0

⁺ For the continuing sample, the weights of deceased SPs were adjusted separately from those of living SPs.

⁺⁺ Due to the very low proportion of fielded cases in this category in the continuing sample, these cases were treated as living nonrespondents in the computation of weights. The same approach was computed for Rounds 2 to 4, 6 to 11 weights and the original sample cases of Round 5 weights. For the replenishment sample, these cases were treated as cases with unknown eligibility in Round 12 weights. The same approach was used in Round 5.

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**These cases were previously adjusted for in the Rounds 1 to 11 nonresponse adjustment to the tracker weight; the Round 11 nonresponse adjusted tracker weight was used as input to the Round 12 weighting process, so these cases are not included in the Round 12 nonresponse adjustment.

SP=Sample Person interview; FQ=Facility Questionnaire

*These categories apply to the 2011 Cohort.

[^]These categories apply to the 2015 Cohort.

3. Computation of Round 12 Tracker Weights

3.1. 2022 Cohort Tracker Weights

3.1.1. Weight to Account for Subsampled-out Cases

During data collection, 4,800 sampled persons (SPs) in the replenishment samples were pulled out of the field, referred to as the subsampled-out cases. The first step in the computation of the 2022 Cohort Tracker weight was to adjust the base weight of the replenishment samples retained in the field to account for the subsampled-out cases. For the SPs who were eligible for the subsampling selection and were retained in the field, their base weight was calculated as the inverse of the probability of selection for the replenishment samples then multiplied by the subsample factor. For the remaining SPs in the replenishment samples, their base weight was just the inverse of the probability of sample selection. See Jiao et al. (2023) for information about Round 12 sample design and the subsample factor.

3.1.2. Weight Compositing to Account for Overlapping Population

The 2022 Cohort consists of three samples, the continuing sample (Rounds 1 and 5), the main replenishment, and the Hispanic supplement. The target populations represented by the three samples contain substantial overlap. The overlapping population between the continuing sample and the two replenishment samples includes Medicare beneficiaries who were ages 65 or older, and residing in the U.S. as of September 30, 2014 and who were still residing in the U.S. as of September 30, 2021. Overlap of non-Hispanic cases is present in two samples (the continuing sample and the main replenishment sample) and overlap of Hispanic cases is present in all three samples. There is also overlap in the target population across the main replenishment and Hispanic supplement, which both include Hispanic beneficiaries who were 65 or older, residing in the U.S. and receiving Medicare as of September 30, 2021 but not as of September 30, 2014.

Compositing (a weighting approach that essentially averages the weights of two or more samples that represent the same population) was used to account for the overlap in samples. The weights used in the compositing step are the Round 11 nonresponse adjusted tracker weight (prior to raking) for the continuing sample, and the base weight (which accounts for the probability of selection and subsample factor if applicable) for the replenishment samples. The Round 11 weight accounted for differential probabilities of selection, compositing of Round 1 and Round 5 samples, and included adjustments for nonresponse from the Round 1 to the Round 11 interviews but was not raked to the population totals. Refer to Montaquila et al. (2012, 2014, 2015a, 2015b, 2016, 2017, 2018, 2019, 2020, 2021) and Jiao et al. (2022) for information about the methodologies used in computing and adjusting the weights in Rounds 1 through 11, respectively.

In the compositing step, beneficiaries eligible for the sample in which they were selected but not eligible for the other samples (i.e., non-Hispanic beneficiaries in replenishment sample who were not enrolled in Medicare as of September 30, 2014) retained their weights.

For non-Hispanic beneficiaries eligible for both the continuing sample and the main replenishment, the weights were decreased by the factor

$$\gamma = \frac{neff_S}{neff_{cont} + neff_{replen}}$$

where $neff_{cont}$ and $neff_{replen}$ are the effective sample sizes (accounting for unequal weighting design effects) for the continuing sample and the main replenishment, respectively, based on the weights that were used as input to the compositing process, and $neff_S$ is the effective sample size for the sample into which the beneficiary was selected (either $neff_{cont}$ or $neff_{replen}$).

For Hispanic beneficiaries eligible for all three samples, the weights were adjusted by the factor

$$\gamma = \frac{nef f_S}{nef f_{cont} + nef f_{replen} + nef f_{hispsupp}}$$

where $nef f_{hispsupp}$ is the effective sample size (accounting for unequal weighting design effects) for the Hispanic supplement, based on the weights that were used as input to the compositing process, and $nef f_S$ is the effective sample size for the sample into which the beneficiary was selected (either $nef f_{cont}$, $nef f_{replen}$ or $nef f_{hispsupp}$).

For Hispanic beneficiaries only eligible for the new samples, the weights were adjusted by the factor

$$\gamma = \frac{neff_S}{neff_{replen} + neff_{hispsupp}}$$

where $nef f_S$ is the effective sample size for the sample into which the beneficiary was selected (either $nef f_{replen}$ or $nef f_{hispsupp}$).

3.1.3. Unknown Eligibility and Nonresponse Adjustments

To produce the 2022 Cohort Round 12 tracker weight, three additional adjustments were made to the composited weight—an adjustment for Round 12 unknown eligibility cases, an adjustment for Round 12 nonresponse and a raking adjustment to estimated population totals from the Medicare Enrollment Database (EDB).

The adjustment for unknown eligibility was conducted for the new sample cases (and is conducted only in replenishment rounds). Their composited weights were distributed to the other response statuses in the replenishment samples: respondent, ineligible, and nonrespondent.

The adjustment for Round 12 nonresponse was done separately for the continuing sample and the replenishment samples. This approach was taken because response rates differed considerably, and response mechanisms likely differed as well (since members of the continuing sample had been engaged in the study for multiple rounds).

Potential variables for creating nonresponse cells for the 2022 Cohort Round 12 tracker weights came from five sources:

 Beneficiary information from the sampling frame (the 20% HISKEW File for the Round 1 sample; the 20% extract of the Medicare Enrollment Database for the Round 5 sample and Round 12 replenishment samples), including demographic characteristics of the beneficiary (e.g., age as of September 30, 2021, gender) and geographic information (e.g., census division, metro and micropolitan status) based on the beneficiary's address from the EDB;

- County-level demographic information (e.g., percent of beneficiaries in the county who are Black and percent of beneficiaries in the county who are Hispanic, based on 5% extract of the EDB as of September 30, 2021; percent of 2021 poverty of all ages in the county, estimated by the Census Bureau) for the county linked to the beneficiary's address from the EDB;
- Census tract-level information based on the 2017-2021 5-year American Community Survey (e.g. tract-level demographic information), based on linkages to the beneficiary's address from the EDB;
- For the continuing sample, variables from the NHATS Rounds 1 to 11 interviews (race/ethnicity, highest education, and residential settings); and
- For the replenishment samples, an indicator of whether the beneficiary's latest address (either from the EDB or from the field updates) matches an address on a list of licensed assisted living facilities in 2021³ and an indicator of whether the beneficiary could be considered a nursing home resident based on a match to records from the Minimum Data Set (MDS), which contains periodic assessments for all Medicare or Medicaid certified nursing homes. The latter indicator was based on an algorithm developed by Kasper, Edwards, and Freedman to identify beneficiaries who had a pattern of records in the MDS from January 1, 2022-September 31, 2022 consistent with a long-term resident rather than short-term skilled nursing stays. (See Appendix A of Montaquila, Freedman, Spillman, and Kasper, 2012 for further details.)

Appendix Table 1 provides weighted Round 12 response rates for the 2022 Cohort (using the composited weights for the continuing sample, unknown-eligibility adjusted weights for the replenishment samples) by categories of the various indicators. We used these variables as input to a classification tree analysis to determine which of these variables were associated with nonresponse. This approach uses SAS HPSPLIT to identify variables associated with response propensities. At each step in the process, chi-square tests were performed to determine the strongest predictor of response, given the set of conditions already specified in the particular "branch." We also set a minimum cell size of 50.

Because underlying nonresponse processes differed, we fit separate classification trees for several subgroups of the continuing and replenishment samples. For the continuing sample, separate trees were fit for:

- all living non-nursing home cases (Figure 1),
- nursing home residents (Figure 2)⁴, and
- deceased SPs (Figure 3)

For the replenishment sample, separate trees were fit for:

- non-nursing home cases (Figure 4), and
- nursing home residents (Figure 5).

³The 2021 list was compiled by Kali Thomas at Brown University and includes all licensed residential settings that are staffed 24-hours daily, provide meals, primarily serve an older adult population, and are not nursing homes.

⁴ For the continuing sample, nursing home residents include both recruitment round nursing home residents who were not required to complete an SP Interview and new Rounds 2 through 11 nursing home cases who were eligible for the SP interview in Round 12.

Appendix Table 1 indicates the variables used in the final non-response cells for the 2022 Cohort Tracker weights. We use a different superscript to indicate variables retained for the various samples, as follows (with number of nonresponse cells shown parenthetically; see Appendix Figures 1-5):

- "a" for the non-nursing home cases for the continuing sample (24);
- "b" for the nursing home cases for the continuing sample (1);
- "c" for the deceased continuing sample (4);
- "d" for the non-nursing home cases for the replenishment samples (12); and
- "e" for the nursing home cases for the replenishment samples (2).

3.1.4. Raking Adjustment

The final step in creating the 2022 Cohort tracker weight involved raking the nonresponse adjusted weights to control totals developed from the 5% EDB extract (of Medicare beneficiaries as of September 30, 2021) that was used for sampling. For consistency, the raking adjustment also included the ineligibles (primarily deaths), since the frame that served as the source of the control totals also includes beneficiaries who were ineligible for NHATS. In Round 12, weight trimming was done in conjunction with this raking adjustment, due to a few outlier weights; this is discussed further in section 5.

Five dimensions were used in this Round 12 raking adjustment⁵:

- (1) Age category (65-69, 70-74, 75-79, 80-84, 85-89, 90+) by sex by race ethnicity from the EDB (Black; non-Black with Hispanic origin; non-Black with no Hispanic origin);
- (2) Age category (65-69, 70-74, 75-79, 80-84, 85-89, 90+) by Census region;
- (3) Age category (65-69, 70-74, 75-79, 80-84, 85-89, 90+) by MSA status⁶ (metro vs. non-metro);
- (4) A binary indicator of whether the SP was enrolled in Medicare prior to age 65; and
- (5) Whether or not the beneficiary was eligible for selection into the last replenishment, Round 5 sample (i.e., age 65 or older and enrolled in Medicare as of September 30, 2014).

Dimensions 2, 3, and 4 were also used in Rounds 1 through 11. Compared to those rounds, Dimension 1 was tweaked by expanding the non-Black category to two race/ethnicity groups according to whether the enhanced Hispanic origin was indicated in EDB. This approach maintains the race groups that have been controlled in previous rounds with the addition of Hispanic origin. Dimension 5 was updated to incorporate eligibility in Round 5.

3.2. 2015 Cohort Tracker Weights

To produce the 2015 Cohort Round 12 Tracker weight, two adjustments were made to the Round 11 nonresponse adjusted tracker weight—an adjustment for Round 12 nonresponse and a raking adjustment to estimated population totals from the Medicare Enrollment Database (EDB).

3.2.1. Nonresponse Adjustment

⁵ For purposes of raking, age categories refer to age at Round 12 sampling.

⁶ Census March 2020 source.

Although the response rates for the two samples are converging, there is still some difference between the members of the original Round 1 sample and members recruited in Round 5. Additionally, to keep the consistency of the weighting method it is worth adjusting the two samples separately for Round 12 nonresponse.

Potential variables for creating nonresponse cells for the 2015 Cohort Round 12 Tracker weights came from four sources:

- Beneficiary information from the sampling frame (the 20% HISKEW File for the original sample; the 20% extract of the EDB for the replenishment sample⁷), including demographic characteristics of the beneficiary (e.g., age as of September 30, 2014, gender) and geographic information (e.g., census division, metro and micropolitan status) based on the beneficiary's address on the frame;
- County-level demographic information (e.g., percent of beneficiaries in the county who are Black and percent of beneficiaries in the county who are Hispanic, based on 5% extract of the EDB as of September 30, 2021; percent of 2021 poverty of all ages in the county, estimated by the Census Bureau) for the county linked to the beneficiary's address from the EDB;
- Census tract-level information based on the 2017-2021 5-year American Community Survey (e.g. tract-level demographic information), based on linkages to the beneficiary's address from the EDB;
- Variables from the NHATS Rounds 1 to 11 interviews (race/ethnicity, highest education, and residential settings).

Appendix Table 2 provides weighted response rates (using the 2015 cohort Round 11 Tracker nonresponse adjusted weights) by categories of the various indicators. We used these variables as input to a classification tree analysis to determine which of these variables were associated with nonresponse. This approach uses SAS HPSPLIT to identify variables associated with response propensities. At each step in the process, chi-square tests were performed to determine the strongest predictor of response, given the set of conditions already specified in the particular "branch." We also set a minimum cell size of 50.

Because underlying nonresponse processes differed, we fit separate classification trees for several subgroups of the original sample and the Round 5 replenishment sample. For the original sample, separate trees were fit for:

- living non-nursing home cases (Figure 6)
- nursing home residents⁸ (Figure 7), and
- deceased SPs (Figure 8)

Likewise, for the Round 5 replenishment sample, separate trees were fit for:

- living non-nursing home cases (Figure 9)
- nursing home residents⁸ (Figure 10), and
- deceased SPs (Figure 11).

⁷ The HISKEW file was a 20% sample of the Medicare EDB (as of Sept. 30, 2010) that served as the sampling frame for the original selection. At the time of selection of the replenishment sample, CMS no longer created HISKEW files, but instead, a customized extract of the EDB was created.

⁸ For the original and Round 5 replenishment samples, nursing home residents include both recruitment round nursing home residents who were not required to complete an SP Interview and new Rounds 2 through 11 nursing home cases who were eligible for the SP interview in Round 12.

Appendix Table 2 indicates the variables used in the final non-response cells for the 2015 Cohort Tracker weights. We use a different superscript to indicate variables retained for the various samples, as follows (with number of nonresponse cells shown parenthetically; see Appendix Figures 6-11):

- "a" for the non-nursing home cases for the original sample (20);
- "b" for the nursing home cases for the original sample (1);
- "c" for the deceased original sample (2);
- "d" for the non-nursing home cases for the Round 5 replenishment sample (20);
- "e" for the nursing home cases for the replenishment sample (1); and
- "f" for the deceased replenishment sample (2).

3.2.2. Raking Adjustment

The final step in creating the 2015 Cohort Round 11 Tracker weight involved raking the nonresponse adjusted weights to control totals developed from the 5% EDB extract (of Medicare beneficiaries as of September 30, 2014) that was used for sampling. For consistency, the raking adjustment also included the ineligibles (primarily deaths), since the frame that served as the source of the control totals also includes beneficiaries who were ineligible for NHATS. In Round 12, weight trimming was done in conjunction with this raking adjustment, due to a few outlier weights; this is discussed further in section 5.

As in Rounds 1 through 11, four dimensions were used in this Round 12 raking adjustment⁹:

- (1) Age category (65-69, 70-74, 75-79, 80-84, 85-89, 90+) by sex by race from the EDB (Black; non-Black);
- (2) Age category (65-69, 70-74, 75-79, 80-84, 85-89, 90+) by Census region;
- (3) Age category (65-69, 70-74, 75-79, 80-84, 85-89, 90+) by MSA status (from the EDB); and
- (4) A binary indicator of whether the SP was enrolled in Medicare prior to age 65.

In addition, as in Rounds 5 through 11, a fifth dimension—whether or not the beneficiary was eligible for selection into the original sample (i.e., age 65 or older and enrolled in Medicare as of September 30, 2010)—was used.

3.3. 2011 Cohort Weights

The 2011 Cohort Round 12 Tracker weight applies only to the original sample. To produce the 2011 Cohort Round 12 Tracker weight, two adjustments were made to the Round 11 nonresponse adjusted tracker weight—an adjustment for Round 12 nonresponse and a raking adjustment to estimated population totals from the EDB.

3.3.1. Nonresponse Adjustment

Potential variables for creating nonresponse cells for the 2011 Cohort Round 12 Tracker weights came from four sources:

⁹ For purposes of raking, age categories refer to age at Round 5 sampling.

- Beneficiary information from the sampling frame (the 20% HISKEW File for the original sample), including demographic characteristics of the beneficiary (e.g., age computed as of September 30, 2010 based on birthdate, gender) and geographic information (e.g., census division, metro and micropolitan status) based on the beneficiary's address in the EDB;
- County-level demographic information (e.g., percent of beneficiaries in the county who are Black and percent of beneficiaries in the county who are Hispanic, based on 5% extract of the EDB as of September 30, 2021; percent of 2021 poverty of all ages in the county, estimated by the Census Bureau) for the county linked to the beneficiary's address from the EDB;
- Census tract-level information based on the 2017-2021 5-year American Community Survey (e.g. tract-level demographic information), based on linkages to the beneficiary's address from the EDB; and
- Variables from NHATS Rounds 1 through 11 (race/ethnicity, highest education, and residential settings).

Appendix Table 3 provides weighted response rates (using the Round 11 nonresponse adjusted tracker weights that were the basis for the 2011 Cohort Round 12 Tracker weights) by categories of the various indicators. We used these variables as input to a classification tree analysis to determine which of these variables were associated with nonresponse. This approach uses SAS HPSPLIT to identify variables associated with response propensities. At each step in the process, chi-square tests were performed to determine the strongest predictor of response, given the set of conditions already specified in the particular "branch." We also set a minimum cell size of 50.

Because underlying nonresponse processes differed, separate trees were fit for all living non-nursing home cases (Figure 12), nursing home residents¹⁰ (Figure 13), and deceased SPs (Figure 14).

Appendix Table 3 indicates the variables used in the final non-response cells for the 2011 Cohort Tracker weights. We use a different superscript to indicate variables retained for the various samples, as follows (with number of nonresponse cells shown parenthetically; see Appendix Figures 12-14):

- "a" for the non-nursing home cases for the original sample (20);
- "b" for the nursing home cases for the original sample (1); and
- "c" for the deceased original sample (3).

3.3.2. Raking Adjustment

The final step in creating the 2011 Cohort Round 12 Tracker weight involved raking the nonresponse adjusted weights to control totals developed from the 5% HISKEW as of September 30, 2010 that was used for sampling of the original sample. For consistency, the raking adjustment also included the ineligibles (primarily deaths), since the frame that served as the source of the control totals also includes beneficiaries who were ineligible for NHATS. In Round 12, weight trimming was done in conjunction with this raking adjustment, due to a few outlier weights; this is discussed further in section 5.

As in Rounds 1 through 11, four dimensions were used in this Round 12 raking adjustment¹¹:

¹⁰ For the original sample, nursing home residents include both Round 1 residents who were not required to complete an SP Interview and new Rounds 2 through 11 nursing home residents who were eligible for the SP interview in Round 12.

¹¹ For purposes of raking, age categories refer to age at Round 1 sampling.

- (1) Age category (65-69, 70-74, 75-79, 80-84, 85-89, 90+) by sex by race from the EDB (Black; non-Black);
- (2) Age category (65-69, 70-74, 75-79, 80-84, 85-89, 90+) by Census region;
- (3) Age category (65-69, 70-74, 75-79, 80-84, 85-89, 90+) by MSA status (from the HISKEW); and
- (4) A binary indicator of whether the SP was enrolled in Medicare prior to age 65.

4. Computation of Round 12 Analytic Weights

As with the tracker weights, separate Round 12 Analytic weights were computed for the 2022 Cohort, the 2015 Cohort, and the 2011 Cohort. The analytic weight calculations differ with respect to the inclusion of LML cases. The analytic weights for the 2022 Cohort were designed for analysis of living beneficiaries at the Round 12 interview of all samples combined (the original sample, the Rounds 5 and 12 replenishment samples). Consequently, the LML cases are not included.. The analytic weights for the 2015 and 2011 Cohorts were designed for analysis of living beneficiaries by the last round's interview. Consequently the LML cases are included. The 2015 Cohort is for the original and Round 5 samples combined, the 2011 Cohort is for the original sample alone.

The computation of the analytic weights begins with the final Round 12 Tracker weight for the respective cohort. A weighting class adjustment was developed for the class of nonrespondents who were eligible for but did not complete the SP interview: those living in nursing homes or non-nursing home residential care in Round 12 who had completed a facility interview (FQ) but not a Sample Person (SP) interview (n=75 for the 2022 Cohort, n=48 for the 2015 Cohort, and n=29 for the 2011 Cohort; designated as code 64). Round 12 nursing home residents who were nursing home residents at the time of their recruitment (code 61) were not eligible for an SP interview in Round 12, thus are not part of the analytic weight nonresponse adjustment). The approach was designed to preserve the tracker weight distributions by Round 12 residence type (nursing home, non-nursing home). That is, we allowed the weights of residential care cases with both a completed FQ and a completed SP interview (n=349 for the 2022 Cohort, n=248 for the 2015 Cohort, and n=159 for the 2011 Cohort) to be adjusted to account for similar cases missing the SP Interview.

4.1. 2022 Cohort Analytic Weights

Because the response mechanisms differ between the continuing (Rounds 1 and 5) and new (main replenishment and Hispanic supplement) samples, adjustments for Round 12 analytic nonresponse were made separately. Since the sample size is much smaller for this nonresponse adjustment, only a subset of variables used in the tracker weight classification tree analysis was considered for the analytic weight nonresponse adjustments. Additionally, two variables were included reflecting where the sample person lived—in a nursing home or a residential care facility—and a third variable indicated the level of care (independent, assisted, special care unit, or other) in the facility (see Appendix Table 4).

In order to preserve the tracker weight distribution for each sample separately by Round 12 residence type, the first split in the tree for the continuing sample cases was forced to be Round 12 nursing home status. All subsequent splitting was based on response propensities. For the continuing sample, 2 variables (designated with "o" in Appendix Table 4) were retained in the final classification tree, forming 3 cells (see Appendix Figure 15); for the replenishment samples, one variable (designated with "r" in Appendix Table 4) was retained in the final classification tree, forming 2 cells (see Appendix Figure 16).

As a final step, we applied a raking procedure so that marginal totals based on the analytic weights would match the totals at replenishment sampling by: 5-year age groups, sex, race ethnicity (Black, Non-Black Hispanic, Non-Black Non-Hispanic), region, micro/metropolitan status, and whether Medicare was received before age 65. Similarly, to the Tracker weight, the Analytic weight trimming was done in conjunction with this raking adjustment; this is discussed further in section 5.

4.2. 2015 Cohort Analytic Weights

The Round 1 original sample and the Round 5 replenishment sample were adjusted separately for Round 12 analytic nonresponse. Since the sample size is much smaller for this nonresponse adjustment, only a subset of variables used in tracker weight classification tree analysis were considered for the analytic weight nonresponse adjustments. Additionally, two variables were included reflecting where the sample person lived—in a nursing home or a residential care facility—and a third variable indicated the level of care (independent, assisted, special care unit, or other) in the facility (see Appendix Table 5).

In order to preserve the tracker weight distribution, for each sample separately by Round 12 residence type, the first split in each tree was forced to be Round 12 nursing home status. (All subsequent splitting was based on response propensities.) For the original sample, one variable other than Round 12 nursing home status (designated with "o" in Appendix Table 5) was retained in the final classification tree, resulting in 3 cells (see Appendix Figure 17); for the Round 5 replenishment sample, no variables other than Round 12 nursing home status (designated with "r" in Appendix Table 5) were retained in the final classification tree, the Round 12 nursing home status (designated with "r" in Appendix Table 5) were retained in the final classification tree, resulting in 2 cells (see Appendix Figure 18).

As a final step, we applied a raking procedure so that marginal totals based on the analytic weights would match the totals at replenishment sampling by: 5-year age groups, sex, race, region, micro/metropolitan status, and whether Medicare was received before age 65.

4.3. 2011 Cohort Analytic Weights

As with the 2011 Cohort Round 12 Tracker weight, the 2011 Cohort Round 12 Analytic weight applies only to the original sample. Since the sample size is much smaller for this nonresponse adjustment, only a subset of variables used in tracker weight classification tree analysis was considered for the analytic weight nonresponse adjustments. Additionally, two variables were included reflecting where the sample person lived—in a nursing home or a residential care facility—and a third variable indicated the level of care (independent, assisted, special care unit, or other) in the facility (see Appendix Table 6).

In order to preserve the tracker weight distribution by Round 12 residence type, the first split was forced to be Round 12 nursing home status. (All subsequent splitting was based on response propensities.) Two variables (designated with "*" in Appendix Table 6) were retained in the final classification tree, forming 3 cells (see Appendix Figure 19).

As a final step, we applied a raking procedure so that marginal totals based on the analytic weights would match the totals at sampling by: 5-year age groups, sex, race, region, micro/metropolitan status, and whether Medicare was received before age 65.

5. Design Effects Related to Weighting

Although weighting adjustments are aimed at reducing bias, increased variation in weights generally increases the variances of survey estimates (Kish, 1965). Thus, in the development and implementation of the weighting methodology for NHATS, care was taken to balance the bias reductions against the potential increases in variance.

The estimated overall design effect due to variation in the Round 1 nonresponse adjusted tracker weights was 1.28. After applying Round 2 nonresponse adjustments within cells determined by the classification tree results, the estimated overall design effect due to unequal weighting increased to 1.33. Incorporating the Round 3 nonresponse adjustments, the estimated overall design effect due to unequal weighting was 1.35, and after Round 4 nonresponse adjustment this overall design effect was 1.34. Then the replenishment samples were selected in Rounds 5 and 12 to form the 2015 Cohort and the 2022 Cohort, respectively, and the design effects were calculated separately for each cohort since then.

5.1. 2022 Cohort Weights

The composited weights used in computing the 2022 Cohort Round 12 Tracker weights had an overall design effect (due to variation in the weights) of 1.61. After the Round 12 unknown eligibility adjustment, the design effect for the tracker weights was 1.62, and after the nonresponse adjustment the design effect for the tracker weights was 2.19, with the increase being due to the variation in response propensities between continuing sample versus replenishment samples, cases eligible for subsampling versus those were not subject to. In order to limit further variation in the weights, after the raking adjustment, trimming of the tracker weights was considered; 9 cases were identified as influential outliers. After the raking adjustment, the design effect for the final 2022 Cohort Round 12 Tracker weights was 2.21.

After the adjustments applied in computing the analytic weight (nonresponse adjustment and raking), no cases were identified as influential outliers and hence no trimming was conducted. After raking the analytic weights, the design effect for the final 2022 Cohort Round 12 Analytic weights was 2.16 for all living SPs.

5.2. 2015 Cohort Weights

The composited weights used in computing the 2015 Cohort Round 5 Tracker weights had an overall design effect (due to variation in the weights) of 1.34. After Round 5 nonresponse adjustment, the overall design effect was 1.55, with the increase being due to the extent of variation in response propensities between and within the two samples (the original sample and Round 5 replenishment sample). The nonresponse adjusted Tracker weights for Rounds 6 through 11 had overall design effects of 1.62, 1.64, 1.65, 1.66, 1.67, and 1.64, respectively. The nonresponse adjusted Round 12 Tracker weights had an overall design effect of 1.62. In order to limit the variation in the weights, after the raking adjustment, trimming of the tracker weights was considered; 1 case was identified as an influential outlier. After the raking adjustment, the design effect for the final 2015 Cohort Round 12 Tracker weights was 1.65.

After the adjustments applied in computing the analytic weight (nonresponse adjustment and raking), one cases was identified as influential outliers, and its analytic weight was trimmed; following trimming, the weights were re-raked. After the re-raking, the design effect for the final 2015 Cohort Round 12 Analytic weights was 1.63 overall, and 1.62 for living SPs and 1.66 for deceased SPs.

5.3. 2011 Cohort Weights

For the 2011 Cohort weights, after Round 5 nonresponse adjustment, the overall design effect was 1.33. After nonresponse adjustments for Rounds 6 through 11, the overall design effects were 1.32, 1.32, 1.31, 1.30, 1.29, and 1.26, respectively. After adjusting for Round 12 nonresponse, the overall design effect was 1.25. In order to limit the variation in the weights, after the raking adjustment, the tracker weights were trimmed and then re-raked; six cases with extreme weights were trimmed at this point. After the raking adjustment and trimming, the design effect for the final 2011 Cohort Round 12 Tracker weights was 1.27.

After the adjustments applied in computing the analytic weight (nonresponse adjustment and raking), no cases were identified as influential outliers. After raking, the design effect for the final 2011 Cohort Round 12 Analytic weights was 1.27 overall, and 1.26 for living SPs and 1.26 for deceased SPs.

6. Use of the Tracker vs. Analytic Weight

When using the tracker weight from any round, respondents are weighted up to represent all Medicare beneficiaries ages 65 and older who were alive on or as of the target date for the cohort (September 30, 2021 for the 2022 cohort; September 30, 2014 for the 2015 Cohort; September 30, 2010 for the 2011 Cohort) and residing in the contiguous United States. In contrast, the analytic weight represents the round-specific population.

For the replenishment round of a given cohort, the analytic weight produces only those alive and eligible for NHATS during that round fieldwork period, i.e., the 2022 Cohort R12 Analytic weight represents those alive and eligible for NHATS during the Round 12 fieldwork period and thus cases with an LML interview have a zero weight.

For follow-up rounds of a given cohort, the analytic weight reproduces those alive and eligible for NHATS during the prior round fieldwork period (with the exception of a small number of persons from the prior round who are deemed ineligible in the current round because they relocated outside the contiguous U.S.). Thus, the Round 12 Analytic weights for Cohorts 2015 and 2011 reproduce those alive and eligible for NHATS during the Round 11 fieldwork period (including Round 12 LML cases).

The only other difference between the tracker and analytic weights is the treatment of respondents who live in residential care settings other than nursing homes. In cases where an FQ interview was completed but an (eligible) SP interview was not completed in Round 12, the Round 12 tracker weight for that case is positive whereas the Round 12 analytic weight for that case is zero. The analytic weights of individuals with both an SP and FQ interview have been adjusted to represent these cases (persons assigned both an SP and FQ interview but with only an FQ). For all other respondents (including LML cases for Cohorts 2015 and 2011) the analytic and tracker weights are equal.

Most often analyses will use the analytic weight. The tracker weight is appropriate for making national estimates using the FQ information (e.g., for services available to older adults living in residential care settings) and for investigating the role of mortality on successive cross-sectional estimates.

Another important consideration is which round-specific weight to use (Round 1, 2, etc.) and which cohort weight to use (the 2022 Cohort, 2015 Cohort, or 2011 Cohort). A useful rule of thumb is to always

consider the population to which an estimate is being generalized. To estimate characteristics of people ages 75 and older in Round 12, the Round 12 weight should be used for the 2022 Cohort. The latest cohort weight has 'finwgt' in the weight name whereas earlier cohorts have the cohort year embedded (e.g. 2011, 2015).

For additional guidance on using weights in NHATS analyses, see Accounting for Sample Design in NHATS and NSOC Analyses: Frequently Asked Questions (Freedman et al. 2022).

7. Variance Estimation

Two broad classes of methods have been developed for computation of standard errors of estimates from complex sample surveys: (1) Taylor series linearization and (2) replication methods. The NHATS data files contain the information necessary for analysts to use either of these approaches to compute standard errors.

The "stratum" and "cluster" variables that allow users to compute variance estimates using Taylor series linearization are provided on the NHATS Tracker and SP files as the variables w12varstrat and w12varunit, respectively.

The replication approach that was used in NHATS (Montaquila et al. 2012b) is the modified balanced repeated replication (BRR) method suggested by Fay (Judkins 1990). When estimating the variance of ratios of rare subsets, one problem that occasionally arises from standard BRR is that one or more replicate estimates will be undefined due to zero denominators. Instead of increasing the weights of one half-sample by 100 percent and decreasing the weights of the other half-sample to zero as in standard BRR, Fay's method perturbs the weights by ±100(1-K) percent where K is referred to as "Fay's factor." The perturbation factor for standard BRR is 100 percent, or K=0. For NHATS, K = 0.3 was used.

The compositing, nonresponse, and raking adjustments applied to the full-sample weights were repeated for each set of replicate weights. As a result, variance estimation using the replicate weights approximately reflects the contribution of variance due to the various stages of weight adjustment. For each set of weights, the full-sample weights to use for estimation have a variable name ending with the number 0. The corresponding replicate weights for each set of weight have variable names ending with the numbers 1 through 56. The weight variables of the full sample and the replicates for each cohort are shown in Table 1.

For additional information on application of weights and variance estimation in NHATS analyses, see *Accounting for Sample Design in NHATS and NSOC Analyses: Frequently Asked Questions* (Freedman et al. 2022).

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Appendix: Variables Used in Nonresponse Adjustment for Round 12 NHATS Weights

Appendix Table 1. Response Rates by Various Indicators: NHATS Round 12 2022 Cohort

Variable & Valu		Weighted Response	Variable & Val	105	Weighted Response
		50.2%		ues ortilos)	Kale
		50.278	Household Income ^{3,a}		
	(H AGECAT R12)		1: 1st quartile	(C_AOO_IIII_INC)	19 0%
		36.0%	2: 2nd quartile		50.6%
2. 70-74		45 9%	3: 3rd quartile		49 3%
3.75-79		64 9%			131370
			4: 4th quartile		52.0%
4: 80-84		62.6%	9: Missing		100.0%
5: 85- 89		67.2%	Median Household Income ^{3,a,a}	(C_MED_HH_INC)	
6: 90+	(11.65)()	63.2%	1: 1st quartile		50.8%
Gender ^{1,a}	(H_SEX)		2: 2nd quartile		52.4%
1: Male		49.5%	3: 3rd quartile		49.8%
2: Female		50.7%	4: 4th quartile		47.7%
Lensus Region-	(S_REGION)	47.00/	9: Missing	3	74.3%
1: Northeast		47.9% E1.0%	Median Household Income 65+		
2: Mildwest 2: South		51.0%	1: 1st quartile	_IVIED_HH_INC_05)	E1 10/
3. South		JI.0%	1. 1st qual tile		51.1%
4. West		40.3%	2. 2nd quartile		52.0%
1: Now England			3. Stu quartile		30.1%
2: Middle Atlantic		33.0%	4. 4th quartie		49.0%
2: Fast North Central		44.0% 54.0%	% Households with Adult 65± ^{3,a}		45.5%
A: West North Central		34.0% 46.7%	1. 1st quartile	(C_FC1_HH_03)	16.1%
5: South Atlantic		40.7% 52.1%	2: 2nd quartile		51 5%
6: East South Central		5/ 3%	3: 3rd quartile		/0.3%
7: West South Central		50.1%	4: 4th quartile		52 0%
8: Mountain		54.2%	9: Missing		100.0%
9: Pacific		47.4%	% Households in Poverty ³	(C PCT HH POV)	100.070
Census Metro/Micro Area Desig	nation (2020) ^{2,a,d}	-77770	1: 1st quartile	(0_101_111_101)	50.1%
	(S METMICRO)		2: 2nd quartile		50.2%
1. Metropolitan area	(0_1112111110110)	49 5%	3: 3rd quartile		49 1%
2. Micropolitan area		52.9%	4: 4th quartile		51.6%
3: Non-metro		54.0%	9: Missing		100.0%
Health Maintenance Organizati	on Beneficiary ^{1,d}	0	% Households Reporting Public	Assistance ³	
	(HMOTYPE)		(C	PCT HH PUBASST)	
0: Yes		49.3%	1: 1st quartile		51.3%
9: No		50.8%	2: 2nd guartile		52.0%
Age First Enrolled in Medicare ¹	(MEDIC BEG)		3: 3rd guartile		48.7%
1: Prior to age 65	· _ /	51.7%	4: 4th quartile		48.4%
2: At or after age 65		50.0%	9: Missing		100.0%
R1/R5 RACE ETHNICITY ^{4 #}	RL5DRACEHISP_R)		% Households Reporting Retire	ment Income ^{3,a,d}	
1: White, non-Hispanic		94.7%	(C_F	CT_HH_RETIREINC)	
2: Black, non-Hispanic		92.7%	1: 1st quartile		45.9%
3: Other, non-Hispanic		89.5%	2: 2nd quartile		48.2%
4: Hispanic		89.4%	3: 3rd quartile		51.3%
5: DK/RF		95.5%	4: 4th quartile		53.1%
Enhanced Race Indicator ^{1^,d}			9: Missing		100.0%
	(H_ENHRACEETH)				
1: Black, non-Hispanic		44.5%			
2: Hispanic		29.6%			
3: Other, non-Hispanic		35.9%			

Variable & Value	s	Weighted Response Rate	Variable & Valu	IPS	Weighted Response Bate
BENEFICIARY INDICATORS	•	Nate	TRACT-LEVEL INDICATORS (Qua	rtiles)	Nate
B1/R5 HIGHEST EDUCATION ^{4, ^,a,c}	:		% Households Reporting Social 9	Security ^{3,a}	
(FI				PCT HH SOCSEC)	
0: Not applicable	Lonidoroch_itz)	83 5%	1: 1st quartile		45 4%
		94 7%	2: 2nd quartile		48.9%
2: Below high school		92.9%	3: 3rd quartile		51 7%
3: High school		93.1%	1: Ath quartile		52.5%
A: Above High school		95.0%	9. Missing		100.0%
4. Above fingil school		55.070	% Households Reporting SSI ^{3,d}		100.070
COUNTY LEVEL INDICATORS			1: 1st quartile	(c_i ci_iii_333)	50.1%
% Black 65+ (deciles) ^{2,a,d}	(PCTBLK)		2: 2nd quartile		50.170
0: 1st decile	(I CIDER)	55 1%	2: 2nd quartile		51 5%
1: 2nd decile		52.6%	4: Ath quartile		18 1%
2: 2rd docilo		JJ.0%	4. 4th quartie		100.0%
2: Jth decile		47.8% 52.0%	% Households Owning Their Ho	mo ^{3,a,d}	100.070
4: 5th decile		32.3%	% Households Owning Their Hol		
4. Still decile		47.7%	1: 1st quartila		EO 09/
5. oth decile			1. Ist quartile		40.0%
7: 8th decile		47.5% E4 10/	2. 2nd quartile		40.9%
7. oth decile		54.1%	5. Stu quartile		
8: 9th decile		48.9%	4. 4th quartile		51.1%
9: 10th decile		40.4%	9: Wissing	· Hama3	100.0%
% Hispanic 65+ (deciles)-/*	(PCTHISP)		% Households 65+ Owning Their		
0: Ist declie		54.4%	(C_PC		47 20/
1: 2nd declie		53.6%	1: 1st quartile		47.2%
2: 3rd declie		49.8%	2: 2nd quartile		50.4%
3: 4th declie		53.3%	3: 3rd quartile		50.5%
4: 5th decile		54.2%	4: 4th quartile		51.9%
5: 6th decile		51.4%	9: Missing	3 3	100.0%
6: /th decile		48.5%	% Households 65+ Below Pover		
7: 8th decile		45.7%		(C_PC1_POV_65)	
8: 9th decile		44.0%	1: 1st quartile		48.0%
9: 10th decile		38.9%	2: 2nd quartile		50.7%
0: 1st decile		54.4%	3: 3rd quartile		49.8%
% Poverty (deciles) ^{2,a,c}	(PCTPOV)	47 40/	4: 4th quartile		51.9%
0: 1st decile		47.4%	9: Missing	/ ····	100.0%
1: 2nd decile		52.8%	Per Capita Income ^{3,a}	(C_PER_CAP_INC)	
2: 3rd decile		54.4%	1: 1st quartile		49.3%
3: 4th decile		53.1%	2: 2nd quartile		53.4%
4: 5th decile		50.4%	3: 3rd quartile		49.2%
5: 6th decile		48.2%	4: 4th quartile		48.8%
6: 7th decile		44.7%	9: Missing		100.0%
7: 8th decile		50.8%			
8: 9th decile		52.6%	OTHER INDICATORS		
9: 10th decile		45.2%	R11 RESIDENTIAL CARE STATUS ⁴	(R11DRESID)	
			1: Community		94.3%
OTHER INDICATORS			2: Residential Care Resident not	nursing home	95.6%
Licensed Assisted Living Match In	dicator ^{5, ^}		(SP interview complete)		
((ALADDRMATCH)		3: Residential Care Resident not	nursing home	81.3%
0: Address not matched to assiste	d living facility	35.8%	(FQ only)		
1: Address matched to an assisted	l living facility	54.4%	4: Nursing home (SP interview co	omplete)	93.3%
			5: Nursing home (FQ only)		96.3%
MDS Match Algorithm Indicator ^{5,}	^ (MDSMATCH)		7: Residential Care Resident not	nursing home in R1	77.4%
1: NH Resident		68.8%	and R5 (FQ only)		
2: Not NH Resident		49.5%	8: Nursing home in R1 and R5 (F0	Q only)	90.7%

¹Based on information from the following sources: the September 30, 2010 CMS 20% Health Insurance Skeleton Eligibility Write-Off (HISKEW) file if the case is in the Round 1 sample; the September 30, 2014 CMS 20% Enrollment Database (EDB) extract if the case is in the Round 5 replenishment sample; and the September 30, 2021 CMS 20% EDB extract if the case is in one of the Round 12 replenishment samples.

²Based on county-level information from the September 30, 2021 CMS 5% EDB extract linked to the beneficiary's EDB address. ³Based on tract-level information from the 2017-2021 5-year American Community Survey file linked to the beneficiary's EDB address. ⁴Based on responses to items in the Rounds 1 to 11 interviews.

⁵Match indicator, either based on record linkage matching addresses of fielded Round 12 replenishment sample cases to a 2021 list of addresses of assisted living facilities provided by the Brown University Center for Gerontology and Healthcare Research, or based on a match to records from the Minimum Data Set (MDS).

[#]Response rates were computed only for the continuing sample from Rounds 1 and 5.

[^] Response rates were computed only for the Round 12 replenishment samples.

a=retained in classification tree analysis for living SP non-nursing home branch of the continuing sample

b=retained in classification tree analysis for living SP nursing home branch of the continuing sample

c=retained in classification tree analysis for deceased SP branch of the continuing sample

d= retained in classification tree analysis for living SP non-nursing home branch of the Round 12 replenishment samples

e= retained in classification tree analysis for living SP nursing home branch of the Round 12 replenishment samples

f= retained in classification tree analysis for deceased SP branch of the Round 12 replenishment samples

N=10,385 (6,311 respondents and 4,074 non-respondents)

Variable names used in classification trees shown parenthetically.

Appendix Table 2. Response Rates by Various Indicators: NHATS Round 12 2015 Cohort

	Weighted		Weighted
	Response		Response
Variable & Values	Rate	Variable & Values	Rate
OVERALL	93.9%	TRACT-LEVEL INDICATORS (Quartiles)	
BENEFICIARY INDICATORS		Household Income ^{3,a} (C_AGG_HH_INC)
Age ^{1,a,d} (H_AGECAT_R5)		1: 1 st quartile	93.8%
1: 65-69	93.7%	2: 2 nd quartile	94.6%
2: 70-74	95.2%	3: 3 rd quartile	93.4%
3: 75-79	93.8%	4: 4th quartile	93.5%
4: 80-84	92.3%	9: Missing	100.0%
5: 85- 89	92.3%	Median Household Income ³ (C_MED_HH_INC	
6: 90+	87.4%	1: 1 st quartile	92.9%
Gender ^{1,a} (H_SEX)		2: 2 nd quartile	94.1%
1: Male	94.7%	3: 3 rd quartile	93.6%
2: Female	93.3%	4: 4 th quartile	94.7%
Census Region ^{2,a} (S_REGION)		9: Missing	100.0%
1: Northeast	94.6%	Median Household Income 65+ ^{3,a,d}	
2: Midwest	93.9%	(C_MED_HH_INC_65)
3: South	94.3%	1: 1 st quartile	92.9%
4: West	92.6%	2: 2 nd quartile	95.0%
Census Division ^{2,a,c,d,f} (DIVISION)		3: 3 rd quartile	93.6%
1: New England	98.8%	4: 4 th quartile	94.8%
2: Middle Atlantic	92.5%	9: Missing	90.9%
3: East North Central	96.3%	% Households with Adult 65+ ^{3,a} (C PCT HH 65)
4: West North Central	90.7%	1: 1 st quartile	93.4%
5: South Atlantic	93.1%	2: 2 nd guartile	94.9%
6: East South Central	96.2%	3: 3 rd guartile	92.4%
7: West South Central	95.6%	4: 4 th guartile	94.7%
8: Mountain	92.6%	9: Missing	100.0%
9: Pacific	92.6%	% Households in Poverty^{3,a,d} (C PCT HH POV)
Census Metro/Micro Area Designation $(2020)^2$	52.070	1: 1 st quartile	, 95.1%
(S METMICRO)		$2 \cdot 2^{nd}$ quartile	93.4%
1: Metropolitan area	9/ 1%	3: 3 rd quartile	94 5%
2: Micropolitan area	01 0%	$4: 4^{\text{th}}$ quartile	۵۶ ۲%
2: Non-metro	91.9%	4.4 qualitie Q: Missing	100.0%
Health Maintenance Organization Repoficiary ^{1,d}	93.970	9. Wissing % Households Poporting Public Assistance ^{3,a,d}	100.078
	04 4%	1: 1 st quartilo	06 5%
0: No	94.4% 02.7%	2: 2 nd quartile	90.3%
9. NO Age First Enrolled in Medicare ¹ (MEDIC REC)	93.770	2: 2 rd quartile	93.970 02.19/
Age First Enrolled III Medicare (MEDIC_BEG)	02 70/	5.5° quartile	95.1%
1. Phot to age 65	95.7%	4.4 qualitie	91.9%
2. At of after age 05	95.9%	9. Wissing	100.0%
RI/RS RACE ETHNICITY (RESURACERISP_R)	04 70/	% Households Reporting Retirement income	
2: Plack per Hispanic	94.7%		01.00/
2: Black, non-Hispanic	92.6%	1: 1° quartile	91.8%
3: Other, non-Hispanic	89.7%		93.7%
	87.9%	5: 5 ^{°°} quartile	94.1%
	94.6%	4: 4 th quartile	94.8%
K5 HIGHEST EDUCATION ~ /~ (EL5HIGSTSCHL_R)	74 40/	9: IVIISSING	100.0%
	/1.4%	% Households Reporting Social Security 3/4	
	93.0%	(C_PCT_HH_SOCSEC	
2: Below high school	90.5%	1: 1 ^a quartile	93.4%
3: High school	92.3%	2: 2 nd quartile	93.6%
4: Above High school	94.9%	3: 3'° quartile	94.3%
		4: 4 ^{ui} quartile	94.0%
		9: Missing	100.0%

		Weighted Response		Weighted Response
Variable & Va	lues	Rate	Variable & Values	Rate
R1 HIGHEST EDUCATION^{4 #}	(EL1HIGSTSCHL R)		TRACT-LEVEL INDICATORS (Quartiles)	
0: Not applicable	/	100.0%	% Households Reporting SSI ^{3,a,d} (C PCT HH SSS)
1: DK/RF		100.0%	1: 1 st quartile	, 95.2%
2: Below high school		93.7%	2: 2 nd guartile	93.5%
3: High school		93.7%	3: 3 rd guartile	92.9%
4: Above High school		95.1%	4: 4 th guartile	94.2%
0			9: Missing	100.0%
COUNTY LEVEL INDICATORS			% Households Owning Their Home ^{3,d}	
			(C PCT OWNHOME)
% Black 65+ (deciles) ^{2,a,d}	(PCTBLK)		1: 1 st quartile	, 91.7%
0: 1 st decile		94.1%	2: 2 nd guartile	93.5%
1: 2 nd decile		93.6%	3: 3 rd guartile	94.7%
2: 3 rd decile		94.4%	4: 4 th guartile	94.8%
3: 4 th decile		97.5%	9: Missing	100.0%
4: 5 th decile		95.3%	% Households 65+ Owning Their Home ^{3,d}	
5: 6 th decile		92.4%	(C PCT OWNHOME 65)
6: 7 th decile		91.7%	1: 1 st quartile	, 91.5%
7: 8 th decile		94 2%	$2 \cdot 2^{nd}$ quartile	94.8%
8: 9 th decile		92 7%	3: 3 rd quartile	95.0%
9: 10 th decile		90.0%	$4 \cdot 4^{\text{th}}$ quartile	93.7%
5.10 accile		50.070	9. Missing	100.0%
% Hispanic 65+ (deciles) ^{2,d}	(PCTHISP)		% Households 65+ Below Povertv ^{3,a,d}	1001070
0: 1 st decile	(1011131)	96 7%	(C PCT POV 65)
1: 2 nd decile		93.6%	1: 1 st quartile	95.6%
2: 3 rd decile		95.0%	$2 \cdot 2^{nd}$ quartile	94.3%
3: 4 th decile		94 1%	3: 3 rd quartile	92.9%
$4:5^{\text{th}}$ decile		93.2%	$4: A^{\text{th}}$ quartile	93.2%
5: 6 th decile		95.0%	9. Missing	100.0%
6: 7 th decile		96.8%	Per Capita Income ^{3,d} (C PER CAP INC)
7: 8 th decile		92.8%	1: 1 st quartile	, 91.0%
8: 9 th decile		90.8%	$2 \cdot 2^{nd}$ quartile	93.8%
9: 10 th decile		88.6%	3: 3 rd quartile	95.7%
5.10 accile		00.070	$4 \cdot 4^{\text{th}}$ quartile	94 5%
% Poverty (deciles) ^{2,a,d}	(PCTPOV)		9. Missing	100.0%
0.1^{st} decile	(101101)	96 4%	OTHER INDICATORS	100.070
1: 2 nd decile		92.9%	R11 RESIDENTIAL CARE STATUS ⁴ (R11DRESID)
2: 3 rd decile		94.0%	1. Community	, 93.9%
3: 4 th decile		96.4%	2: Residential Care Resident not nursing home	95.9%
4. 5 th decile		95.8%	(SP interview complete)	55.570
5: 6 th decile		89.0%	3. Residential Care Resident not nursing home	82 5%
6: 7 th decile		93.6%	(EQ only)	02.370
7: 8 th decile		92.0%	4: Nursing home (SP interview complete)	92 7%
8:9 th decile		97 1%	5: Nursing home (FO only)	97.1%
9: 10 th decile		89.8%	7: Residential Care Resident not nursing home in R	1 68.1%
			8: Nursing home in R1 and R5 (FQ only)	88.2%

¹Based on information from either the September 30, 2010 CMS 20% Health Insurance Skeleton Eligibility Write-Off (HISKEW) file if the case is in the Round 1 sample, or the September 30, 2014 CMS 20% Enrollment Database (EDB) extract if the case is in the Round 5 replenishment sample.

²Based on county-level information from the September 30, 2021 CMS 5% EDB extract linked to the beneficiary's EDB address. ³Based on tract-level information from the 2017-2021 5-year American Community Survey file linked to the beneficiary's EDB address.

⁴Based on responses to items in the Rounds 1 to 11 interviews.

[#]Response rates were computed only for the original Round 1 sample.

[^] Response rates were computed only for the Round 5 replenishment sample.

a=retained in classification tree analysis for living SP non-nursing home branch of the original sample b=retained in classification tree analysis for living SP nursing home branch of the original sample c=retained in classification tree analysis for deceased SP branch of the original sample d= retained in classification tree analysis for living SP non-nursing home branch of the replenishment sample e= retained in classification tree analysis for living SP nursing home branch of the replenishment sample f= retained in classification tree analysis for living SP nursing home branch of the replenishment sample f= retained in classification tree analysis for deceased SP branch of the replenishment sample N=3,462 (3,245 respondents and 217 non-respondents)

Variable names used in classification trees shown parenthetically.

Appendix Table 3. Response Rates by Various Indicators: NHATS Round 12 2011 Cohort

 Variable & V	, /alues	Weighted Response Bate	Variable & Values	Weighted Response Bate
OVERALI		94.6%	TRACT-LEVEL INDICATORS (Quartiles)	nuc
		54.070	Household Income ^{3,a} (C AGG HH INC)	
	(H AGECAT)		1: 1 st quartile	92.8%
		95 3%	$2 \cdot 2^{nd}$ quartile	96.3%
2.70-74		95.9%	3: 3 rd quartile	94.4%
3.75-79		92.1%	4: 4 th quartile	94.2%
4.80-84		91.2%	9. Missing	100.0%
5.85-89		92.0%	Median Household Income ^{3,a} (C_MED_HH_INC)	100.070
6: 90+		100.0%	1: 1 st quartile	93 5%
Gender ^{1,a}	(H SEX)	100.070	$2 \cdot 2^{nd}$ quartile	95.0%
1 [.] Male	(11_32)	95 7%	3: 3 rd quartile	95.0%
2: Female		93.8%	4: 4 th guartile	94.7%
Census Region ^{1,a}	(S REGION)	001070	9: Missing	100.0%
1: Northeast	(0	94.1%	Median Household Income 65+ ^{3,a}	20010/0
2: Midwest		95.5%	(C MED HH INC 65)	
3: South		93.6%	1: 1 st guartile	91.2%
4: West		95.8%	2: 2^{nd} quartile	96.6%
Census Division ^{1,a,c}	(DIVISION)	00.070	3: 3 rd quartile	94.5%
1. New England		99 5%	4: 4 th quartile	95.6%
2: Middle Atlantic		91.5%	9: Missing	93.8%
3: Fast North Central		98.3%	% Households with Adult 65+ ^{3,a} (C. PCT. HH. 65)	0010/0
4: West North Central		91.3%	1: 1 st guartile	93.4%
5: South Atlantic		92.8%	$2 \cdot 2^{nd}$ quartile	95.4%
6: Fast South Central		95.8%	3: 3 rd guartile	94.8%
7: West South Central		93.7%	4: 4 th guartile	94.6%
8: Mountain		95.4%	9: Missing	100%
9: Pacific		95.9%	% Households in Poverty ³ (C PCT HH POV)	
Consus Metro/Micro Area D	esignation $(2020)^2$	001070	1: 1 st quartile	95 4%
Census Metro/Micro Area D			$2 \cdot 2^{nd}$ quartile	93.4%
1: Matropolitan area		04 7%	2: 2 rd quartile	94.170 04.2%
2: Micropolitan area		94.778	$4: 4^{\text{th}}$ quartile	94.5% 04 5%
3: Non-metro		94.8%	4.4 qualifie 9. Missing	100.0%
Health Maintenance Organi	ration Bonoficiary ^{1,a}	91.078	9. Wissing % Households Penorting Public Assistance ^{3,a}	100.078
Health Maintenance Organia			(C DCT HH DIBASST)	
0. Ves		95 4%	1: 1 st quartile	95.2%
9: No		94.2%	$2: 2^{nd}$ quartile	93.4%
Age First Enrolled in Medica	re ¹ (MEDIC BEG)	5 1.270	3: 3 rd quartile	95.4%
1. Prior to age 65		9/ 7%	$A: A^{\text{th}}$ quartile	93.6%
2: At or after age 65		94.6%	9: Missing	100.0%
R1 RACE ETHNICITY ⁴	(RI 1DRACEHISP R)	54.670	% Households Reporting Retirement Income ³	100.070
1. White non-Hispanic		94 9%	(C PCT HH RETIREINC)	
2: Black non-Hispanic		92.2%	1: 1 st quartile	94 7%
3: Other non-Hispanic		94.8%	$2 \cdot 2^{nd}$ quartile	93.8%
4. Hisnanic		92.6%	3: 3 rd quartile	93.8%
5: DK/BE		100.0%	$4: 4^{\text{th}}$ quartile	95.9%
R1 HIGHEST FOLICATION ⁴	(FI 1 HIGSTSCHI R)	100.070	9. Missing	100.0%
0: Not applicable	(LEIMOSTSCHE_N)	100.0%	% Households Reporting Social Security ^{3,a}	100.070
1. DK/RF		100.0%	(C DCT HH SOCSED	
2. Below high school		93 5%	1: 1 st quartile	92 9%
3: High school		93.8%	2: 2 nd quartile	93 5%
4: Above High school		95.1%	3: 3 rd quartile	97 N%
		55.170	4: 4 th guartile	95 9%
			9: Missing	100.0%

	Response	Variable & Val	lies	Response
	Nate	TRACT-LEVEL INDICATORS (Qua	urtiles)	Nate
		% Households Reporting SSI ^{3,a}	(C PCT HH SSS)	
(PCTBLK)		1. 1 st quartile	(0_101_111_000)	94 4%
(1010211)	92.7%	2: 2^{nd} guartile		94.4%
	97 5%	3: 3 rd quartile		94 7%
	95.9%	4: 4 th guartile		95.0%
	95.2%	9. Missing		100.0%
	94.4%	% Households Owning Their Ho	me ³	20010/0
	96.3%	((C PCT OWNHOME)	
	92.4%	1: 1 st quartile	o oo,	94.6%
	91.8%	$2^{\circ} 2^{nd}$ quartile		94.1%
	93.3%	3: 3 rd quartile		95.0%
	95.4%	4: 4 th quartile		94 7%
	55.470	9: Missing		100.0%
		% Households 65+ Owning Thei	ir Home ³	100.070
(PCTHISP)			T OWNHOME 65)	
(1 011131)	95 7%	1: 1 st quartile		93 7%
	94 1%	2: 2 nd quartile		96.7%
	96.4%	3: 3 rd quartile		94 7%
	91.4%	A: A th quartile		93.7%
	96.5%	9: Missing		100.0%
	94.2%	% Households 65+ Below Pover	tv ³	100.070
	95.2%		(C PCT POV 65)	
	94.6%	1: 1 st quartile	(0_101_101_00)	95 7%
	01 0%	$2 \cdot 2^{nd}$ quartile		96.0%
	95.6%	2: 2 rd quartile		90.0%
	95.078	1: 4 th quartile		07 2%
		4.4 qualtie		100.0%
		Por Capita Incomo ³		100.076
(PCIPOV)	96.9%	1: 1 st quartile		Q1 1%
	90.9 <i>%</i>	2: 2 nd quartile		94.470 07 10/
	91.1%	2: 2 rd quartile		94.170 06.20/
	92.3%	3: 3 quartile		90.3%
	90.4%	4: 4 th quartile		93.7%
	95.8%	9. Missing		100.0%
	91.3%			
	95.7%			
	93.1%		4 (01100500)	
	97.1%	RII RESIDENTIAL CARE STATUS	(RIIDRESID)	04.00/
	94.6%	1: Community		94.8%
		2: Residential Care Resident not	nursing nome	94.1%
		(SP interview complete)		70 50/
		3: Residential Care Resident not	nursing nome	72.5%
		(FQ only)		07.40/
		4: Nursing home (SP interview c	omplete)	97.4%
		5: Nursing home (FQ only)		93.5%
		7: Residential Care Resident not	nursing home in R1	100.0%
		and R5 (FQ only)		
		8: Nursing home in R1 and R5 (F	Q only)	100.0%
	(PCTBLK) (PCTHISP)	Response Rate (PCTBLK) 92.7% 97.5% 95.9% 95.2% 94.4% 96.3% 92.4% 91.8% 93.3% 95.4% (PCTHISP) (PCTHISP) (PCTHISP) (PCTPOV) 96.9% 91.1% 92.3% 96.4% 91.3% 95.7% 94.6% 91.3% 95.7% 94.6% 91.3% 95.7% 93.1% 97.1% 94.6%	RateVariable & ValRateVariable & ValTRACT-LEVEL INDICATORS (Qua % Households Reporting SSI3-a(PCTBLK)1: 1st quartile92.7%2: 2nd quartile95.9%4: 4th quartile95.9%4: 4th quartile95.2%9: Missing94.4%% Households Owning Their Hout96.3%(nt91.8%2: 2nd quartile93.3%3: 3rd quartile93.3%3: 3rd quartile95.4%4: 4th quartile95.4%4: 4th quartile95.7%1: 1st quartile95.7%1: 1st quartile96.4%3: 3rd quartile96.4%3: 3rd quartile91.4%4: 4th quartile95.7%1: 1st quartile91.4%4: 4th quartile95.7%1: 1st quartile91.4%4: 4th quartile95.7%1: 1st quartile91.9%2: 2nd quartile92.2%9. Missing94.6%1: 1st quartile91.9%2: 2nd quartile95.7%1: 1st quartile91.9%2: 2nd quartile95.7%1: 1st quartile91.1%2: 2nd quartile95.6%3: 3rd quartile95.7%1: 1st quartile91.1%2: 2nd quartile95.6%3: 3rd quartile95.7%1: 1st quartile91.1%2: 2nd quartile92.3%3: 3rd quartile94.6%1: 1st quartile91.3%9: Missing91.3%9: Missing <t< td=""><td>RateVariable & ValuesTRACT-LEVEL INDICATORS (Quartiles) % Households Reporting SSI^{3-a} (C_PCT_HH_SSS)(PCTBLK)1: 1st quartile92.7%3: 3rd quartile95.9%4: 4th quartile95.9%4: 4th quartile95.2%9: Missing94.4%% Households Owning Their Home³96.3%(C_PCT_OWNHOME)92.4%1: 1st quartile93.3%3: 3rd quartile94.4%% Households 55+ Owning Their Home³96.3%(C_PCT_OWNHOME)92.4%1: 1st quartile93.3%3: 3rd quartile94.4%% Households 65+ Owning Their Home³(PCTHISP)(C_PCT_OWNHOME_65)95.7%1: 1st quartile96.4%3: 3rd quartile96.4%3: 3rd quartile96.4%1: 1st quartile96.4%1: 1st quartile96.5%3: 3rd quartile95.2%(C_PCT_POV_65)94.6%1: 1st quartile95.6%3: 3rd quartile95.6%3: 3rd quartile95.7%96.9%96.9%1: 1st quartile91.3%2: 2rd quartile95.7%91.1%95.7%92.1%96.9%1: 1st quartile91.3%2: 2rd quartile92.3%3: 3rd quartile93.4%4: 4th quartile94.6%1: 1st quartile95.7%93.1%95.7%93.1%95.7%93.1%<t< td=""></t<></td></t<>	RateVariable & ValuesTRACT-LEVEL INDICATORS (Quartiles) % Households Reporting SSI ^{3-a} (C_PCT_HH_SSS)(PCTBLK)1: 1 st quartile92.7%3: 3 rd quartile95.9%4: 4 th quartile95.9%4: 4 th quartile95.2%9: Missing94.4%% Households Owning Their Home ³ 96.3%(C_PCT_OWNHOME)92.4%1: 1 st quartile93.3%3: 3 rd quartile94.4%% Households 55+ Owning Their Home³ 96.3%(C_PCT_OWNHOME)92.4%1: 1 st quartile93.3%3: 3 rd quartile94.4%% Households 65+ Owning Their Home³ (PCTHISP)(C_PCT_OWNHOME_65)95.7%1: 1 st quartile96.4%3: 3 rd quartile96.4%3: 3 rd quartile96.4%1: 1 st quartile96.4%1: 1 st quartile96.5%3: 3 rd quartile95.2%(C_PCT_POV_65)94.6%1: 1 st quartile95.6%3: 3 rd quartile95.6%3: 3 rd quartile95.7%96.9%96.9%1: 1 st quartile91.3%2: 2 rd quartile95.7%91.1%95.7%92.1%96.9%1: 1 st quartile91.3%2: 2 rd quartile92.3%3: 3 rd quartile93.4%4: 4 th quartile94.6%1: 1 st quartile95.7%93.1%95.7%93.1%95.7%93.1% <t< td=""></t<>

³Based on tract-level information from the 2017-2021 5-year American Community Survey file linked to the beneficiary's EDB address. ⁴Based on responses to items in the Rounds 1 through 11 interviews.

a=retained in classification tree analysis for living SP non-nursing home branch

b=retained in classification tree analysis for living SP nursing home branch

c=retained in classification tree analysis for deceased SP branch

N=2,064 (1,946 respondents and 118 non-respondents) Variable names used in classification trees shown parenthetically.

Appendix Table 4. Sampled Person Interview Response Rates among Cases with Completed Facility Questionnaires, by Various Indicators: NHATS Round 12 2022 Cohort

		Weighted Response			Weighted Response
Variable & Va	lues	Rate	Variable & Values	5	Rate
		83.2%	COUNTY LEVEL INDICATORS		
			% Black 65+ (deciles) ⁻	(PCTBLK)	69 70/
	(H_AGECAT_RIZ)	01 20/			08.7%
2: 70-74		04.3 <i>%</i> 08.1%	$2 \cdot 3^{rd}$ decile		85.2%
2.75-79		95.1%	2.5 decile		05.2%
1: 80-84		92.6%	$4:5^{\text{th}}$ decile		88.7%
5.85-89		77.1%	5: 6 th decile		73.8%
6. 90+		68.1%	6: 7 th decile		87.1%
R1/R5 Race Ethnicity ⁴ #	(RL5DRACEHISP R)	00.170	7: 8 th decile		88.8%
1: White, non-Hispanic	(86.2%	8: 9 th decile		72.9%
2: Black, non-Hispanic		83.1%	9: 10 th decile		85.0%
3: Other, non-Hispanic		79.4%			
4: Hispanic		94.9%			
5: DK/RF		23.0%	% Hispanic 65+ (deciles) ²	(PCTHISP)	
Enhanced Race Indicator ¹	(H_ENHRACEETH)		0: 1 st decile		67.0%
1: Black, non-Hispanic		81.7%	1: 2 nd decile		92.2%
2: Hispanic		88.9%	2: 3 rd decile		77.8%
3: Other, non-Hispanic		82.9%	3: 4 th decile		85.8%
			4: 5 th decile		82.7%
Gender ¹	(H_SEX)		5: 6 th decile		77.2%
1: Male		84.8%	6: 7 th decile		89.3%
2: Female		82.5%	7: 8 th decile		84.8%
			8: 9 th decile		83.6%
Census Region ¹	(S_REGION)		9: 10 th decile		92.2%
1: Northeast		78.0%			
2: Midwest		81.3%	% Poverty (deciles) ²	(PCTPOV)	70.20/
3: South		81.5%			/8.3%
4: west		91.2%	1: 2 rd decile		92.9%
	(DIVISION)	C 4 00/			77.2%
1: New England		04.0% 96.2%	3: 4 th decile		/8.8%
2: Mildule Atlantic		00.2% 72.1%	4.5 decile $E \in 6^{\text{th}}$ decile		90.7% 70.0%
4: West North Central		72.1% 80.0%	5: 0° decile		75.0% 85.8%
5: South Atlantic		79.6%	7: 8 th decile		76 5%
6: Fast South Central		81 5%	8: 9 th decile		93.2%
7: West South Central		86.2%	9: 10 th decile		89.1%
8: Mountain		88.0%	51 10 40010		00.1/0
9: Pacific		91.7%	OTHER INDICATORS		
Census Metro/Micro Area Des	signation (2020) ¹		Facility Type Indicator ³	(FQ12DLOCSP)	
-	(S_METMICRO)		1: Independent living/other		87.2%
1: Metropolitan area		83.9%	2: Assisted Living		84.0%
2: Micropolitan area		72.9%	3: Special care/memory care/Alzhe	eimers unit	72.5%
3: Non-metro		84.5%	4: Nursing home		79.4%
			8: Not reported		0.0%
Health Maintenance Organiza	tion Beneficiary ¹				
	(HMOTYPE)		R5 RESIDENTIAL CARE STATUS4#	(R5DRESID_R)	
0: Yes		85.8%	1: Community in R5		90.1%
9: No		81.8%	2: Residential care in R5		65.7%
			3: Nursing home in R5		55.2%
Age First Enrolled In Medicare	· (IVIEDIC_BEG)	QE 00/			
1. FILUE LU age 05		03.0% 07.70/			
2. AL UL ALLEL AGE 03		02.170			

		Weighted Response			Weighted Response
Variable & Values		Rate	Variable & Values	,	Rate
			R6 RESIDENTIAL CARE STATUS	(RODRESID_R)	00 60/
	(кылн)	F4 20/	1: Community in R6		90.6%
1: Yes		51.2%	2: Residential care in R6		68.1%
2: NO	(07000)	85.2%	3: Nursing nome in R6		51.2%
R7 NURSING HOME STATUS**	(R/NH)		R7 RESIDENTIAL CARE STATUS**	(R/DRESID_R)	.
1: Yes		64.3%	1: Community in R7		91.4%
2: No		85.6%	2: Residential care in R7		73.8%
R8: NURSING HOME STATUS ⁴ *	(R8NH)		3: Nursing home in R7		64.3%
1: Yes		70.8%	R8 RESIDENTIAL CARE STATUS ⁴ *	(R8DRESID_R)	
2: No		85.5%	1: Community in R8		91.5%
R9: NURSING HOME STATUS ⁴ [#]	(R9NH)		2: Residential care in R8		76.9%
1: Yes		68.0%	3: Nursing home in R8		70.8%
2: No		86.2%	R9 RESIDENTIAL CARE STATUS ^{4 #}	(R9DRESID_R)	
R10: NURSING HOME STATUS ⁴ #	(R10NH)		1: Community in R9		93.8%
1: Yes		75.4%	2: Residential care in R9		78.9%
2: No		85.9%	3: Nursing home in R9		68.0%
R11: NURSING HOME STATUS ⁴ #	(R11NH)		R10 RESIDENTIAL CARE STATUS ^{4 #}	(R10DRESID_R)	
1: Yes		72.1%	1: Community in R10		93.1%
2: No		86.8%	2: Residential care in R10		80.7%
			3: Nursing home in R10		75.4%
R12: NURSING HOME STATUS ^{4 o r}	(R12NH)		R11 RESIDENTIAL CARE STATUS ^{4 #}	(R11DRESID R)	
1: Yes	. ,	77.3%	1: Community in R11	/	92.1%
2: No		83.9%	2: Residential care in R11		84.7%
			3: Nursing home in R11		72.1%
			R12 RESIDENTIAL CARE STATUS ⁴	(R12DRESID_R)	
			2: Residential care in R12		83.9%
			3: Nursing home in R12		77.3%

¹Based on information from the following sources: the September 30, 2010 CMS 20% Health Insurance Skeleton Eligibility Write-Off (HISKEW) file if the case is in the Round 1 sample; the September 30, 2014 CMS 20% Enrollment Database (EDB) extract if the case is in the Round 5 replenishment sample; and the September 30, 2021 CMS 20% EDB extract if the case is in one of the Round 12 replenishment samples.

²Based on county-level information from the September 30, 2021 CMS 5% EDB extract linked to the beneficiary's EDB address. ³Based on the responses to two items on the type of facility from the FQ, FQ6 (fq6facdescri; including answers from FQ6A) and FQ10 (fq6faaretype).

⁴Based on responses to items in the Rounds 1 to 12 interviews or interview processes.

[#]Response rates were computed only for the continuing sample from Rounds 1 and 5.

[^]Response rates were computed only for the Round 12 replenishment sample.

o=retained in classification tree analysis for adjustment of missing SP interview of the continuing sample.

r=retained in classification tree analysis for adjustment of missing SP interview of the Round 12 replenishment samples.

N=424 (349 respondents and 75 nonrespondents); Variable names used in classification trees shown parenthetically.

Appendix Table 5. Sampled Person Interview Response Rates among Cases with Completed Facility Questionnaires, by Various Indicators: NHATS Round 12 2015 Cohort

		Weighted Response			Weighted Response
Variable & Va	ues	Rate	Variable & Values	5	Rate
OVERALL		85.8%			
			% Black 65+ (deciles) ²	(PCTBLK)	05.00/
Age	(H_AGECAT_R5)	400.00/			85.0%
1:65-69		100.0%			89.8%
2: 70-74		87.7%			77.1%
3: 75-79		93.5%	3: 4 th decile		91.1%
4: 80-84		73.1%	4: 5 th decile		89.4%
5: 85- 89		78.1%			84.5%
6: 90+		81.8%			100.0%
R5 Race Ethnicity	(RL5DRACEHISP_R)	06 70/			76.2%
1: White, non-Hispanic		86.7%			88.2%
2: Black, non-Hispanic		86.0%	9: 10 th decile		67.3%
3: Other, non-Hispanic		82.5%			
4: Hispanic		95.0%		(2.071.110.2)	
5: DK/RF		26.1%	% Hispanic 65+ (deciles) ²	(PCTHISP)	
1			0: 1 st decile		89.3%
Gender	(H_SEX)		1: 2 nd decile		94.9%
1: Male		89.5%	2: 3 rd decile		80.6%
2: Female		84.1%	3: 4 th decile		81.5%
	<i>(</i>		4: 5 th decile		79.2%
	(S_REGION)		5: 6 th decile		85.6%
1: Northeast		79.0%	6: 7 th decile		69.1%
2: Midwest		87.0%	7: 8 th decile		99.1%
3: South		86.3%	8: 9 th decile		84.4%
4: West		89.1%	9: 10 th decile		97.2%
Census Division ^{1 o}	(DIVISION)		% Poverty (deciles) ²	(PCTPOV)	
1: New England		70.1%	0: 1 st decile		81.6%
2: Middle Atlantic		83.0%	1: 2 nd decile		94.1%
3: East North Central		86.8%	2: 3 rd decile		85.2%
4: West North Central		87.1%	3: 4 th decile		80.6%
5: South Atlantic		85.2%	4: 5 th decile		97.8%
6: East South Central		93.3%	5: 6 th decile		74.2%
7: West South Central		82.0%	6: 7 th decile		94.7%
8: Mountain		75.3%	7: 8 th decile		78.3%
9: Pacific		90.1%	8: 9 th decile		88.5%
			9: 10 th decile		76.0%
Census Metro/Micro Area Des	ignation (2020) ¹				
	(S_METMICRO)		OTHER INDICATORS		
1: Metropolitan area		86.6%	Facility Type Indicator ³	(FQ12DLOCSP)	
2: Micropolitan area		73.2%	1: Independent living/other		84.6%
3: Non-metro		94.9%	2: Assisted Living		94.6%
			3: Special care/memory care/Alzhe	eimers unit	72.6%
Health Maintenance Organiza	tion Beneficiary ¹		4: Nursing home		82.2%
	(HMOTYPE)		8: Not reported		N/A
0: Yes		85.5%			
9: No		85.9%	R1 RESIDENTIAL CARE STATUS ^{4 #}	(R1DRESID_R)	89 6%
Ago Eirst Enrollad in Madiana			2. Residential Care Desident net at	ursing home	60 00/
1. Prior to ago 65		80.0%		ער איזארא אווא אווא איז איז איז איז איז איז איז איז איז אי	00.9%
2. At or after age 65		03.U% QE 10/	1: Community in P2	(NZUNESIU_K)	00 20/
2. AL UI AILEI AGE DO		03.4%	1. Community III KZ 2: Residential care in P2		50.3% 60.0%
			2. Nestuential Cale III KZ		UJ.J%
			5: INUISING NOME IN KZ		JJ./%

Variable & Values		Weighted Response	Variable 8 Value		Weighted Response
		Rate			Kale
OTHER INDICATORS			R3 RESIDENTIAL CARE STATUS ⁴ #	(R3DRESID R)	
R2 NURSING HOME STATUS ^{4 #}	(R2NH)		1: Community in R3	(/	90.5%
1: Yes	· · ·	53.7%	2: Residential care in R3		68.1%
2: No		86.4%	3: Nursing home in R3		78.4%
R3 NURSING HOME STATUS ^{4 #}	(R3NH)		R4 RESIDENTIAL CARE STATUS ⁴ #	(R4DRESID R)	
1: Yes		78.4%	1: Community in R4		90.5%
2: No		86.1%	2: Residential care in R4		74.4%
R4 NURSING HOME STATUS ^{4 #}	(R4NH)		3: Nursing home in R4		41.9%
1: Yes		41.9%	R5 RESIDENTIAL CARE STATUS⁴	(R5DRESID_R)	
2: No		86.6%	1: Community in R5		90.8%
R5 NURSING HOME STATUS ⁴	(R5NH)		2: Residential care in R5		68.8%
1: Yes		62.8%	3: Nursing home in R5		62.8%
2: No		86.0%	R6 RESIDENTIAL CARE STATUS ⁴	(R6DRESID_R)	
R6 NURSING HOME STATUS ⁴	(R6NH)		1: Community in R6		91.2%
1: Yes		52.0%	2: Residential care in R6		71.2%
2: No		86.3%	3: Nursing home in R6		52.0%
R7 NURSING HOME STATUS ⁴	(R7NH)		R7 RESIDENTIAL CARE STATUS ^{4,0}	(R7DRESID_R)	
1: Yes		66.1%	1: Community in R7		92.1%
2: No		86.8%	2: Residential care in R7		76.3%
R8: NURSING HOME STATUS ⁴	(R8NH)		3: Nursing home in R7		66.1%
1: Yes		72.0%	R8 RESIDENTIAL CARE STATUS ⁴	(R8DRESID_R)	
2: No		86.6%	1: Community in R8		92.1%
R9: NURSING HOME STATUS ⁴	(R9NH)		2: Residential care in R8		79.0%
1: Yes		68.6%	3: Nursing home in R8		72.0%
2: No		87.5%	R9 RESIDENTIAL CARE STATUS ⁴	(R9DRESID_R)	
R10: NURSING HOME STATUS ⁴	(R10NH)		1: Community in R9		94.7%
1: Yes		77.6%	2: Residential care in R9		80.6%
2: No		87.1%	3: Nursing home in R9		68.6%
R11: NURSING HOME STATUS ⁴	(R11NH)		R10 RESIDENTIAL CARE STATUS⁴	(R10DRESID_R)	
1: Yes		75.6%	1: Community in R10		94.1%
2: No		87.8%	2: Residential care in R10		81.9%
			3: Nursing home in R10		77.6%
R12: NURSING HOME STATUS ^{4 o r}	(R12NH)		R11 RESIDENTIAL CARE STATUS⁴	(R11DRESID_R)	
1: Yes		82.1%	1: Community in R11		93.7%
2: No		87.1%	2: Residential care in R11		85.5%
			3: Nursing home in R11		75.6%
			R12 RESIDENTIAL CARE STATUS⁴	(R12DRESID_R)	
			2: Residential care in R12		87.1%
			3: Nursing home in R12		82.1%

¹ Based on information from either the September 30, 2010 CMS 20% Health Insurance Skeleton Eligibility Write-Off (HISKEW) file if the case is in the Round 1 sample, or the September 30, 2014 CMS 20% Enrollment Database (EDB) extract if the case is in the Round 5 replenishment sample.

²Based on county-level information from the September 30, 2021 CMS 5% EDB extract linked to the beneficiary's EDB address.

³Based on the responses to two items on the type of facility from the FQ, FQ6 (fq6facdescri; including answers from FQ6A) and FQ10 (fq6faaretype).

⁴Based on responses to items in the Rounds 1 to 12 interviews or interview processes.

[#]Response rates were computed only for the available Round 1 sample.

[^]Response rates were computed only for the available Round 5 sample.

o=retained in classification tree analysis for adjustment of missing SP interview of the original sample.

r=retained in classification tree analysis for adjustment of missing SP interview of the replenishment sample.

N=296 (248 respondents and 48 nonrespondents); Variable names used in classification trees shown parenthetically.

Appendix Table 6. Sampled Person Interview Response Rates among Cases with Completed Facility Questionnaires, by Various Indicators: NHATS Round 12 2011 Cohort

		Weighted			Weighted
		Response			Response
Variable & Valu	es	Rate	Variable & Values		Rate
OVERALL		86.0%	COUNTY LEVEL INDICATORS		
BENEFICIARY INDICATORS			% Black 65+ (deciles) ²	(PCTBLK)	
Age ¹	(H_AGECAT)		0: 1 st decile		81.0%
1: 65-69		87.6%	1: 2 nd decile		95.3%
2: 70-74		96.1%	2: 3 rd decile		93.6%
3: 75-79		85.6%	3: 4 th decile		79.9%
4: 80-84		78.1%	4: 5 th decile		98.7%
5: 85- 89		71.7%	5: 6 th decile		67.2%
6: 90+		89.7%	6: 7 th decile		100.0%
			7: 8 th decile		84.7%
R1 Race Ethnicity ⁴ (I	RL1DRACEHISP_R)		8: 9 th decile		79.4%
1: White, non-Hispanic		88.6%	9: 10 th decile		79.8%
2: Black, non-Hispanic		76.6%			
3: Other, non-Hispanic		64.6%			
4: Hispanic		86.5%	% Hispanic 65+ (deciles) ²	(PCTHISP)	
5: DK/RF			0: 1 st decile		88.9%
			1: 2 nd decile		91.1%
Gender ¹	(H SEX)		2: 3 rd decile		80.6%
1: Male	· _ /	89.0%	3: 4 th decile		81.9%
2: Female		84.6%	4: 5 th decile		89.8%
			5: 6 th decile		95.5%
Census Region ¹	(S REGION)		6: 7 th decile		55.0%
1: Northeast	(<u> </u>	64.2%	7: 8 th decile		98.6%
2: Midwest		89.6%	8: 9 th decile		84.0%
3: South		89.8%	9: 10 th decile		95.8%
4: West		92.0%			
Census Division ¹	(DIVISION)		% Poverty (deciles) ²	(POVERTY PCT)	
1: New England	(,	64.4%	0: 1 st decile	(64.0%
2: Middle Atlantic		64.2%	1: 2 nd decile		94.0%
3: East North Central		95.4%	2: 3 rd decile		94.8%
4: West North Central		80.8%	3: 4 th decile		94.3%
5: South Atlantic		92.0%	4: 5 th decile		94.7%
6: East South Central		93.2%	5: 6 th decile		83.0%
7: West South Central		80.9%	6: 7 th decile		94.3%
8: Mountain		89.3%	7: 8 th decile		86.1%
9: Pacific		92.4%	8: 9 th decile		96.4%
		01170	9: 10 th decile		71.6%
Census Metro/Micro Area Desig	nation (2020) ²				
	(S METMICRO)		OTHER INDICATORS		
1: Metropolitan area	· _ /	85.3%	Facility Type Indicator ³	(FQ10DLOCSP)	
2: Micropolitan area		93.9%	1: Independent living/other		84.1%
3: Non-metro		85.8%	2: Assisted Living		91.9%
			3: Special care/memory care/Alz	heimer's unit	80.3%
Health Maintenance Organization	on Beneficiarv ¹		4: Nursing home	•	83.0%
	(HMOTYPE)		8: Not reported		
0: Yes	(88.3%			
9: No		85.2%			
			R1 RESIDENTIAL CARE STATUS⁴	(R1DRESID R)	
Age First Enrolled in Medicare ¹	(MEDIC BEG)		1: Community	(()	90.0%
1: Prior to age 65	(oo,	98.2%	2: Residential Care Resident not	nursing home	65.5%
2: At or after age 65		85.1%			
		00.1/0			

Variable & Values		Weighted Response	Variable & Value		Weighted Response
		Nate	Valiable & Value.	5	Nate
OTHER INDICATORS	(OTHER INDICATORS	(
R2 NURSING HOME STATUS*	(R2NH)	50.00/	R2 RESIDENTIAL CARE STATUS ⁴	(R2DRESID_R)	60 60/
1: Yes		53.8%	1: Community in R2		60.6%
2: No		86.3%	2: Residential care in R2		67.4%
	(02000)		3: Nursing nome in R2		53.8%
	(R3NH)	00.00/	R3 RESIDENTIAL CARE STATUS	(R3DRESID_R)	00.00/
1: Yes		80.8%	1: Community in K3		90.8%
2. NO		80.1%	2: Residential care in R3		
PA NURSING HOME STATUS ⁴			5. NUISING HOME IN KS		00.0%
	(14111)	11 6%	1: Community in PA	(R4DRESID_R)	00.0%
1. Tes		44.0% 96 E%	2: Residential care in R4		50.6%
2.10		80.376	2: Nursing home in P4		72.0% 80.8%
R5 NURSING HOME STATUS ⁴	(R5NH)		R5 RESIDENTIAL CARE STATUS ⁴	(REDRESID R)	80.870
1. Ves		65 9%	1. Community in R5		92.2%
2: No		86.4%	2: Residential care in R5		69.4%
2.110		00.470	3. Nursing home in R5		65.9%
R6 NURSING HOME STATUS⁴	(R6NH)		R6 RESIDENTIAL CARE STATUS ⁴	(R6DRESID R)	00.070
1: Yes	(110111)	76.9%	1: Community in R6	(1100112010_11)	93.7%
2: No		86.3%	2: Residential care in R6		69.3%
			3: Nursing home in R6		76.9%
R7 NURSING HOME STATUS ⁴	(R7NH)		R7 RESIDENTIAL CARE STATUS ^{4,*}	(R7DRESID R)	
1: Yes	· · ·	88.1%	1: Community in R7	· _ /	93.8%
2: No		85.9%	2: Residential care in R7		73.7%
			3: Nursing home in R7		88.1%
R8 NURSING HOME STATUS ⁴	(R8NH)		R8 RESIDENTIAL CARE STATUS ⁴	(R8DRESID_R)	
1: Yes		90.1%	1: Community in R8		92.2%
2: No		85.7%	2: Residential care in R8		79.7%
			3: Nursing home in R8		90.1%
R9 NURSING HOME STATUS⁴	(R9NH)		R9 RESIDENTIAL CARE STATUS ⁴	(R9DRESID_R)	
1: Yes		78.4%	1: Community in R9		95.2%
2: No		87.0%	2: Residential care in R9		81.7%
			3: Nursing home in R9		78.4%
R10 NURSING HOME STATUS ⁴	(R10NH)		R10 RESIDENTIAL CARE STATUS ⁴	(R10DRESID_R)	
1: Yes		78.7%	1: Community in R10		95.4%
2: No		87.2%	2: Residential care in R10		83.5%
			3: Nursing home in R10		78.7%
R11 NURSING HOME STATUS ⁴	(R11NH)		R11 RESIDENTIAL CARE STATUS ⁴	(R11DRESID_R)	
1: Yes		78.8%	1: Community in R11		99.0%
2: No		87.4%	2: Residential care in R11		84.5%
	.		3: Nursing home in R11		78.8%
R12 NURSING HOME STATUS ^{4,*}	(R12NH)		R12 RESIDENTIAL CARE STATUS ⁴	(R12DRESID_R)	
1: Yes		82.1%	2: Residential care in R12		87.1%
2: NO		87.1%	3: Nursing home in R12		82.1%

¹Based on Information on the September 30, 2010 CMS 20% Health Insurance Skeleton Eligibility Write-Off (HISKEW) file. ²Based on county-level information from the September 30, 2021 CMS 5% EDB extract linked to the beneficiary's EDB address. ³Based on the responses to two items on the type of facility from the FQ, FQ6 (fq6facdescri; including answers from FQ6A) and FQ10 (fq6faaretype).

⁴Based on responses to items in the Rounds 1 to 12 interviews or interview processes.

*=retained in classification tree analysis for adjustment of missing SP interview.

N=188 (159 respondents and 29 nonrespondents); Variable names used in classification trees shown parenthetically.



Figure 1. Round 12 2022 Cohort Tracker weight nonresponse adjustment cells – non nursing home cases in samples of Rounds 1 and 5

Note: "RR" is the weighted response rate for the particular cell, and "n" is the number of respondents in the cell

Figure 2. Round 12 2022 Cohort Tracker weight nonresponse adjustment cells – nursing home cases in samples of Rounds 1 and 5







Figure 4. Round 12 2022 Cohort Tracker weight nonresponse adjustment cells – non nursing home cases in Round 12 replenishment samples

Note: "RR" is the weighted response rate for the particular cell, and "n" is the number of respondents in the cell

Figure 5. Round 12 2022 Cohort Tracker weight nonresponse adjustment cells – nursing home cases in Round 12 replenishment samples





Figure 6. Round 12 2015 Cohort Tracker weight nonresponse adjustment cells – non nursing home cases in Round 1 sample

Figure 7. Round 12 2015 Cohort Tracker weight nonresponse adjustment cells – nursing home cases in Round 1 sample

Figure 8. Round 12 2015 Cohort Tracker weight nonresponse adjustment cells – deceased cases in Round 1 sample



Figure 9. Round 12 2015 Cohort Tracker weight nonresponse adjustment cells – non nursing home cases in Round 5 replenishment sample

Note: "RR" is the weighted response rate for the particular cell, and "n" is the number of respondents in the cell

Figure 10. Round 12 2015 Cohort Tracker weight nonresponse adjustment cells – nursing home cases in Round 5 replenishment sample

OVERALL
RR = 97.27%
n = 28

Figure 11. Round 12 2015 Cohort Tracker weight nonresponse adjustment cells – deceased cases in Round 5 replenishment sample





Figure 12. Round 12 2011 Cohort Tracker weight nonresponse adjustment cells – non nursing home cases in original sample

Figure 13. Round 12 2011 Cohort Tracker weight nonresponse adjustment cells – nursing home cases in original sample

Figure 14. Round 12 2011 Cohort Tracker weight nonresponse adjustment cells – deceased cases in original sample



Figure 15. Round 12 2022 Cohort Analytic weight nonresponse adjustment cells – cases in samples of Round 1 and Round 5



Note: "RR" is the weighted response rate for the particular cell, and "n" is the number of respondents in the cell

Figure 16. Round 12 2022 Cohort Analytic weight nonresponse adjustment cells – cases in Round 12 replenishment samples



Figure 17. Round 12 2015 Cohort Analytic weight nonresponse adjustment cells – cases in Round 1 sample



Figure 18. Round 12 2015 Cohort Analytic weight nonresponse adjustment cells – cases in Round 5 sample



Figure 19. Round 12 2011 Cohort Analytic weight nonresponse adjustment cells – cases in Round 1 sample

