

# NATIONAL STUDY OF CAREGIVING (NSOC) USER GUIDE: 2011 & 2015

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## I. Overview

The National Study of Caregiving (NSOC), funded by the Office of the Assistant Secretary for Planning and Evaluation (ASPE) in the Department of Health and Human Services, was conducted as a supplement to the National Health and Aging Trends Study (NHATS) in Round 1 (2011) and Round 5 (2015). NSOC permits nationally representative analyses of informal assistance to older persons. Interviews were conducted with family and non-paid unrelated helpers to NHATS participants who were receiving assistance with self-care, mobility, or household activities (the latter, for health or functioning related reasons). The 30-minute telephone interview included questions about activities for which help was provided, duration and intensity of help, effects on helpers of providing assistance, support services used by helpers, and basic demographic information. Questions that NSOC was design to address include:

- What are the frequency, volume, and regularity of help to older adults?
- How are caregiving activities distributed within families?
- What are the effects of caregiving on work, child care, and other valued activities?
- What out-of-pocket costs do caregivers bear as part of their care provision?
- What resources do informal caregivers use in their caregiving role; which support services do they know about, seek, and use?
- Among those providing help, is intensity of caregiving associated with subjective wellbeing, health, and economic status?
- What views on caregiving (both positive and negative) do helpers hold?

In addition, NHATS assigns a unique identifier (opid) to each helper identified starting in Round 1 and all subsequent rounds, which allows for tracking helping roles and changes in these roles across rounds of NHATS.

## II. NSOC I and II Design and Response Rates

NSOC was conducted by telephone with helpers identified by NHATS participants during the Round 1 or Round 5 Sample Person (SP) interview. Rather than identify a single primary caregiver for interview, interviews were attempted with all eligible helpers for whom contact information was obtained. This design yields a caregiver sample that is representative of all eligible caregivers and allows insights into how caregiving responsibilities are distributed. In addition, the design allows analysts to explore how definitions of “primary caregiver” influence substantive findings.

At the end of the NHATS SP interview, participants were asked to provide contact information (phone number and address) for each helper who was eligible for NSOC (see below). Each caregiver was then contacted and invited to participate in NSOC.

In Round 1, the 2,423 NHATS participants who were eligible for NSOC had 4,935 eligible caregivers. Interviews were conducted with 2,007 caregivers.

In Round 5, the 2,417 NHATS participants who were eligible for NSOC had 5,212 eligible caregivers. Interviews were conducted with 2,204 caregivers.

Response rates were calculated in two stages. For NSOC 1, the NHATS SP refused to give caregiver information for 1,573 out of the 4,935 eligible caregivers, yielding a 68.1% unweighted first stage response rate. Among eligible caregivers for whom the SP did not refuse to provide information (N=3,362), 1355 were not interviewed, yielding a 59.7% unweighted second stage response rate. For NSOC II, the NHATS SP refused to

give caregiver information for 1,711 out of the 5,212 eligible caregivers, yielding a 67.2% unweighted first stage response rate. Among eligible caregivers for whom the SP did not refuse to provide information (N=3501), 1,297 were not interviewed, yielding a 63.0% unweighted second stage response rate.

For primary caregivers (defined for this purpose as providing or tied for providing the most hours to the NHATS SP among NSOC eligible caregivers), unweighted response rates were higher: 72.5% first stage, 66.5% second stage in Round 1; 79.2% first stage, 69.1% second stage, in Round 5. See NSOC Weights and their Use for discussion of how sampling weights were adjusted to account for non-response.

### III. NSOC I and II Eligibility

Eligibility for the National Study of Caregiving (NSOC) was determined separately for NHATS participants and for helpers of these individuals.

#### NHATS Sample Person Criteria:

NHATS participants were Medicare enrollees who were ages 65 and older and living in the contiguous U.S. Sample Persons (including those living in residential care settings other than nursing homes), who were receiving help with certain activities were eligible for NSOC. Specifically, a Sample Person was eligible if, in the last month, he or she was receiving help with any of the following activities:

- Mobility—
  - Getting around outside
  - Getting around inside
  - Getting out of bed
- Self-care Activities—
  - Eating
  - Bathing, showering or washing up
  - Getting to or using the toilet
  - Dressing
- Household Activities for health or functioning reasons—
  - Laundry
  - Shopping for personal items
  - Preparing hot meals
  - Paying bills and banking
  - Keeping track of medications

Once a Sample Person was deemed potentially eligible for NSOC, all helpers identified by the participant as helping with any activity were reviewed for NSOC eligibility. If at least one helper was deemed eligible, then the Sample Person was considered eligible for NSOC.

#### NSOC Eligibility Criteria:

Helpers were eligible for NSOC if they:

- Helped an NSOC-eligible Sample Person with *any* activity (listed below); and
- Were related to the Sample Person (relationship codes = 2 through 29 or 91) whether paid or not; or
- Were an unrelated helper who was not paid to help.

Activities that triggered NSOC eligibility for the caregiver include:

- Mobility—
  - Getting around outside
  - Getting around inside
  - Getting out of bed
- Self-care Activities—
  - Eating
  - Bathing, showering or washing up
  - Getting to or using the toilet
  - Dressing
- Household Activities for any reason (health and functioning or other reason)—
  - Laundry
  - Shopping for personal items
  - Preparing hot meals
  - Paying bills and banking
  - Keeping track of medications
- Other activities—
  - Money matters other than bills or banking
  - Medical activities (sitting in with the sample person at physician visits; helping with insurance decisions)
  - Transportation

If the number of NSOC-eligible helpers for a Sample Person exceeded 5, 5 helpers were selected at random and the remaining helpers were considered ineligible for NSOC. In NSOC I, 61 caregivers were not sampled due to this restriction; in NSOC II 108 caregivers were not sampled due to this restriction. See Appendix A for items in the CC Section (Caregiver Eligibility and Contact Information) administered at the end of the Sample Person Interview to determine SP and Helper eligibility for NSOC.

## IV. Content Documentation

Here we provide a brief overview of each section of the NSOC I and II interview.

**Care Activities (CA):** Questions cover ways the caregiver helped the sample person in the last month including household chores, personal care and mobility. Caregivers are asked about the frequency of help in the last month and how help was provided (e.g. by using a computer to do money management and shopping). Questions also address physical demands, such as whether the caregiver lifted, supported, or steadied the sample person. Caregivers also were asked about providing transportation, helping with a range of health-related activities (e.g. care for teeth, special diet, skin care), and helping with physician appointments or insurance. In NSOC II, a question was added that asks if talking to the Sample Person’s doctor helped the caregiver with caring for the Sample Person. Time to get to the sample person’s home is documented for caregivers not living with the NHATS participant. Caregivers who indicated they did not help in the last month (n = 11), were asked to identify the most recent month they helped in the last year. These caregivers are interviewed using “in the last month you helped” wording, in place of “in the last month.”

**Duration of Care (DC):** Questions elicit days and hours spent helping the sample person in the last month. Caregivers who helped with personal care or mobility also were asked hours spent helping with these activities only. All helpers were asked when they began providing care in months and years.

**Aspects of Caregiving (AC):** Questions focus on positive and negative views of the helper’s relationship with the Sample Person and the experience of being a helper. Helpers were asked whether helping is financially,

emotionally, or physically difficult and to rate the level of difficulty (from 1 a little difficulty to 5 very difficult). Questions about family disagreements about the sample person's care and about personal consequences (exhaustion, no time for self) were also included. In NSOC II, a question was added about how well the family shares responsibility for the Sample Person's care.

**Support Environment (SE):** This section includes questions on availability of friends and family to help with care and other resources of support. Caregivers were asked whether they used services such as support groups, training, and financial help, including Medicaid and, if so, how they found out about services. For services not used, they are asked if they ever looked for services and from what sources. Caregivers also were asked about their role in obtaining devices, environmental supports, and paid help for the Sample Person.

**Participation (PP):** These questions mirror the participation items in the NHATS Sample Person interview. Caregivers were asked about taking part in activities (e.g. visiting family and friends, attending religious services, doing volunteer work, working for pay). Follow-up questions for each activity were about the importance of the activity and whether helping SP kept the person from participating in the activity.

**Health and Wellbeing (HE):** In a set of questions that mirror the SP interview, helpers were asked whether they had ever been diagnosed with a list of common chronic conditions and height and weight (from which body mass index can be calculated). Helpers were also asked whether in the last month they had experienced particular impairments and symptoms (e.g. pain, breathing problems, low energy, upper and lower body impairments, sleep quality). If impairments were reported, the severity (degree to which the impairment interfered with daily activities in the last month) was assessed. Subjective wellbeing items included brief depression and anxiety screening instruments (PHQ2 and GAD2), positive and negative affect (feeling cheerful, bored, upset, etc.), self-actualization (life purpose and growth), and self-efficacy. For sensitivity, specificity, and recommended cut-points for the PHQ-2, the GAD-2 and a 4-item combined measure, see Kroenke et al. (2003, 2007, 2009) and Lowe et al. (2009).

**Household Composition and Demographics (HD):** This section includes marital status of the caregiver, numbers of children and number under age 18, household size, education, spouse/partner education and age.

**Employment and Caregiving (EC):** Labor force participation questions were patterned after those in the NHATS Sample Person interview and include hours of work in the last week and work schedule and current occupation. Persons who were absent from work in the last month, were asked reasons for absence, which include vacation, sick leave, time off to help the sample person, sick leave for other family members, and personal time. Persons who reported taking time off to help the sample person were asked hours and days of work missed. All caregivers who were working were asked whether helping affects work and how much (on a scale from 1: helping makes work a little harder to 10: helping makes work a lot harder).

**Health Insurance and Income (HI):** This section elicits economic information, including whether the helper has health insurance coverage, checking/savings accounts, retirement accounts, and other stocks or mutual funds; home ownership; and total income for individuals (or couples). The remaining questions in this section cover payments the caregiver made for care needs of the sample person (e.g. medications, mobility devices, in-home help) and financial gifts to or from the sample person.

## V. Data Files and Derived Variables

The NSOC data release consists of 3 files:

- NSOC file (N = 2007 in Round 1; 2,204 in Round 5)
- NSOC Sample Person Tracker file (N = 8,245 in Round 1; 8,334 in Round 5)
- NSOC Other Person Tracker file (N = 38,097 in Round 1; 52,285 in Round 5)

**NSOC file.** The NSOC file provides one record for each caregiver who participated in NSOC. This file may be linked to NHATS files and other NSOC files using “spid” (Sample Person Identifier) and “opid” (Other Person Identifier).

Derived variables included in the NSOC file are shown in Table 1 of Appendix B. In both rounds, the files include: gender (derived variable based on op1gender from NHATS OP file and NSOC HD 11 & 12); relationship to the sample person (from the NHATS OP file); month of NSOC interview; and days between NHATS SP interview and NSOC interview. In Round 5, the file also includes the following derived variables (using information from both NSOC and NHATS): marital status, number of children, number of people living with the caregiver, the caregiver’s education and their spouse or partner’s education, the caregiver’s month and year of birth and age, their partner’s month and year of birth and age, and an indicator of race/ethnicity. The file also contains weights and variables for variance estimation. See Section VII. NSOC Weights and Their Use.

**NSOC Sample Person (SP) Tracker file** This file includes all NHATS respondents. The variable “fl#dnsoc” distinguishes sample persons who were eligible for NSOC from all other sample persons. This file can be linked to NHATS data files and other NSOC files using “spid”. See Appendix B for variables included in the SP Tracker file.

**NSOC Other Person (OP) Tracker file** This file contains one observation for each person in the NHATS OP file, which includes all household members, children, helpers, and social network members associated with each sample person. This file may be linked to NHATS files and other NSOC files using “spid” (Sample Person Identifier) and “opid” (Other Person Identifier). The file contains a single derived variable that characterizes NSOC eligibility and result status. See Appendix B for details.

## VI. Data Notices and Corrections

A few variables were affected by routing errors in NSOC II (2015). Flag variables have been added to indicate cases affected.

Persons not asked about disagreement over care (AC8) and doing fair share (AC8A): 136 persons (identified by flcac5routing = 1) who should have been asked these items based on relationship to SP (BOX AC8) incorrectly skipped these items.

Persons not asked about helping interrupting sleep (HE15): 9 persons (identified by flche5routing = 1) who were in SP’s household and should have been asked this item incorrectly skipped it.

Persons not asked how usually get to SP’s to visit (CA13) and how long it takes (CA14): 392 persons (identified by flcca5routing = 1) who were not in SP’s household and should have been asked these items incorrectly skipped them.

Persons not asked how many people lived in their household (HD6): 392 persons (identified by flchd5routing = 1) who were not in SP’s household and should have been asked this item incorrectly skipped it. The NHATS SP household size was used to calculate poverty guidelines at BOX HI11 which are then used to compute the percentage of poverty amounts for HH11-HH13.

## VII. NSOC Weights and their Use

When using NSOC, survey weights are necessary to account for differential probabilities of selection and to reduce potential bias from differential nonresponse. The NSOC data file contains an analytic weight adjusted

for nonresponse ( $w1cgfinwgt0$ ;  $w5cgfinwgt0$ ) and variables for variance estimation using Taylor series linearization ( $c1varstrat$  and  $c1varunit$ ;  $c5varstrat$  and  $c5varunit$ ). In NSOC I only, a data notice was sent (11/5/13) instructing users to collapse  $c1varstrat=54$  with  $c1varstrat=55$  because  $c1varstrat=54$  has no cases in cluster 1 (recode as: if  $c1varstrat=54$  then  $c1varstrat=55$ ). Replicate weights ( $w1cgfinwgt1$  to  $w1cgfinwgt56$ ;  $w5cgfinwgt1$  to  $w5cgfinwgt56$ ) are also provided. The replication approach that was used is the modified balanced repeated replication (BRR) method suggested by Fay (Judkins 1990). Fay's method perturbs the weights by  $\pm 100(1-K)$  percent where  $K$  is referred to as "Fay's factor." The perturbation factor for standard BRR is 100 percent, or  $K=0$ . For NHATS and NSOC,  $K = 0.3$  was used.

Analyses in which the caregiver is the unit of analysis should use the NSOC weight. (NHATS weights should be used when the unit of analysis is the care recipient (NHATS Sample person)).

The calculation of the NSOC weights began with the final NHATS analytic weight (see Montaquila, Freedman, Edwards and Kasper, 2012; DeMatteis, Freedman, and Kasper, 2016). For caregivers in networks with more than 5 eligible caregivers, the NHATS analytic weight was adjusted for caregiver subsampling (by multiplying the number of eligible caregivers divided by 5).

Next, a 2-step weighting class adjustment for nonresponse was applied (Kalton and Flores-Cervantes 2003). A 2-step adjustment was used because there were two opportunities for NSOC interview nonresponse with potentially different mechanisms for nonresponse—refusal to provide contact information by the NHATS Sample Person response rate) and other non-response at the caregiver level (for caregivers for whom the NHATS Sample Person did not refuse).

### **NSOC 1 nonresponse adjustments**

Appendix C Table 1 shows variables considered for the first and second adjustments, along with weighted response rates for each level of each variable. At each stage of adjustment, we used these variables as input to a classification tree analysis to determine which of these variables were associated with nonresponse. This approach uses a search algorithm to identify variables associated with response propensities. At each step in the process, chi-square tests were performed to determine the most significant predictor of response, given the set of conditions already specified in the particular "branch." We set a minimum cell size of 50, but allowed two exceptions (cell sizes of 43 and 44) because the final split resulted in final cells with differences in response rates of more than 10 percentage points.

Final non-response cells included 11 indicators (indicated in Appendix C Table 1 with a \* for the first step and ^ for the second step). Combinations of these variables created 18 unique nonresponse cells for the first adjustment and 22 nonresponse cells for the second adjustment (see Appendix C Figures 1 and 2).

Finally, a raking adjustment was imposed to align weighted totals with those computed from the NHATS OP file (using NHATS analytic weights). The raking adjustment consisted of two dimensions: (1) the number of caregivers in the NHATS sample person's network and (2) the relationship of the caregiver to the sampled person.

In the development and implementation of the weighting methodology for NSOC, care was taken to balance the bias reductions against the potential increases in variance. The estimated overall design effect due to variation in the NSOC analytic weights was 1.61. The steps involved in creating the analytic weight (nonresponse adjustment and raking) had a small effect on the estimated overall design effect (the design effect due to variation in the NSOC base weights was 1.35) and did not introduce any influential outlier weights.

### **NSOC II Nonresponse Adjustments**

Appendix D Table 1 shows variables considered for the first and second adjustments, along with weighted



response rates for each level of each variable. At each stage of adjustment, we used these variables as input to a classification tree analysis to determine which of these variables were associated with nonresponse. This approach uses a search algorithm to identify variables associated with response propensities. At each step in the process, chi-square tests were performed to determine the most significant predictor of response, given the set of conditions already specified in the particular “branch.” We set a minimum cell size of 50, but allowed a total of four exceptions (cell sizes of 48 and 49 for the first adjustment and 42 and 49 for the second adjustment) because the final split resulted in final cells with differences in response rates of more than 10 percentage points.

Final non-response cells included a total of eleven indicators (indicated in Appendix D Table 1 with a \* for the first step and ^ for the second step). Combinations of these variables created 20 unique nonresponse cells for the first adjustment and 17 nonresponse cells for the second adjustment (see Appendix D Figures 1 and 2).

Finally, a raking adjustment was imposed to align weighted totals with those computed from the NHATS OP file (using NHATS analytic weights). The raking adjustment consisted of two dimensions: (1) the number of caregivers in the NHATS sample person’s network and (2) the relationship of the caregiver to the sampled person.

In the development and implementation of the weighting methodology for NSOC, care was taken to balance the bias reductions against the potential increases in variance. The estimated overall design effect due to variation in the NSOC analytic weights was 1.94. The steps involved in creating the analytic weight (nonresponse adjustment and raking) had a small effect on the estimated overall design effect (the design effect due to variation in the NSOC base weights was 1.53) and did not introduce any influential outlier weights.

#### **Weights for Multilevel (Random Effects) Models**

In fitting multilevel models to NSOC data, the caregiver is the “level 1” unit and the NHATS SP (care recipient) is the “level 2” unit. In specifying a multilevel analysis, the level 1 and level 2 weights will generally need to be specified. For NSOC II, the unconditional weights for levels 1 and 2 are the caregiver weight  $w5cgfinwgt0$  and the NHATS SP analytic weight  $w5anfinwgt0$ , respectively. If the software being used for this analysis requires specification of a level 1 weight that is conditional on level 2, that may be obtained by dividing  $w5cgfinwgt0$  by  $w5anfinwgt0$ .

### **VIII. Obtaining NSOC Data**

NSOC files are designated as Sensitive for purposes of data release. The Instruments and Crosswalk are publicly available at [www.nhats.org](http://www.nhats.org). To obtain the data files and codebook, go to Sensitive and Restricted Data on the NHATS website and then select Sensitive Data. Download the document titled *Obtaining NHATS Sensitive Data* and follow the instructions.

## IX. References

- DeMatteis J, Freedman VA, & Kasper JD. 2016. *National Health and Aging Trends Study Development of Round 5 Survey Weights. NHATS Technical Paper #14*. Baltimore: Johns Hopkins University School of Public Health. Available at [www.NHATS.org](http://www.NHATS.org).
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## APPENDIX A. NSOC Eligibility for NHATS participants and caregivers (Rounds 1 and 5)

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### Section CC

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BOX CC1A	BOXCC1A	NOT ON FILE
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If MO6 = 1 (GETS HELP TO GO OUTSIDE) or  
 if MO18 = 1 (GETS HELP GETTING AROUND INSIDE) or  
 if MO25 = 1 (GETS HELP GETTING OUT OF BED) or  
 if SC3 = 1 (GETS HELP EATING) or  
 if SC11 = 1 (GETS HELP WITH BATHING) or  
 if SC17 = 1 (GETS HELP USING TOILET) or  
 if SC23 = 1 (GETS HELP GETTING DRESSED) or  
 if HEALTHREASONHELPWITHLAUNDRY flag = 1 (YES) or if  
 HEALTHREASONHELPWITHSHOPPING flag = 1 (YES) or if  
 HEATHLHREASONHELPWITHMEALS flag = 1 (YES) or  
 if HEATHLHREASONHELPWITHBANKING flag = 1 (YES) or  
 if HEALTHREASONHELPWITHHELPTRACKMEDS flag = 1 (YES) or  
 if FACILITY flag = 1 (YES),  
 SP is eligible for NSOC

BOX CC1C	BOXCC1C	NOT ON FILE
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Loop through BOX CC1C for each PERSON ROSTER member with a HELPER flag = 1 (YES).  
  
 If PERSON ROSTER member HELPER flag = 1 (YES) and RELATIONSHIP to SP = 2-29 or 91, set CAREGIVER ELIGCG=1 (YES).  
  
 Else if PERSON ROSTER member HELPER flag = 1 (YES) and HL5 (PAID HELP) = 2 (NO, NOT PAID), set CAREGIVER ELIGCG=1 (YES).  
  
 Otherwise, if PERSON ROSTER member HELPER flag = 1 (YES), set CAREGIVER ELIGCG flag=2(NO).  
  
 Write CAREGIVER ELICG flag value to PERSON ROSTER for each member with a HELPER flag=1 (YES).  
  
 If there are 5 or less PERSON ROSTER members with CAREGIVER ELIGCG flag=1 (YES), set NSOC flag =1 (YES) and write CAREGIVER SMPCG flag=1 (YES) to PERSON ROSTER for each member.  
  
 Else if there are more than 5 PERSON ROSTER members with CAREGIVER ELIGCG flag=1 (YES), set NSOC flag=1 (YES) and go to Box CC1d.  
  
 If no PERSON ROSTER member CAREGIVER ELIGCG flag=1 (YES), set NSOC flag= 2 (NO).

BOX CC1D	BOXCC1D	NOT ON FILE
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When there are more than 5 PERSON ROSTER members with CAREGIVER ELIGCG flag=1 (YES), generate and assign a CAREGIVER RANDOM NUMBER with an interval of 0-1 for each PERSON ROSTER member with CAREGIVER ELIGCG flag=1 (YES).  
  
 Sort the PERSON ROSTER members in ascending order of their random numbers. Assign CAREGIVER SMPCG flag=1 (YES) for the first 5 caregivers. Assign CAREGIVER SMPCG flag = 2(NO) for the remaining caregivers.  
  
 Write CAREGIVER RANDOM NUMBER and CAREGIVER SAMPCG flag to PERSON ROSTER for each member with a CAREGIVER ELIGCG flag=1 (YES).

## APPENDIX B. NSOC Derived Variables

<b>Table 1. NSOC file derived variables</b>		
<b>Rounds 1 and 5</b>		
<b>Variable Name VARIABLE LABEL</b>	<b>CODING SPECIFICATIONS</b>	<b>VALUES and VALUE LABELS</b>
c#dgender C# D HD 11 12 CG GENDER	op#gender from the NHATS OP file was confirmed in the NSOC interview. Caregivers were given the opportunity to correct the gender reported by the SP; in round 1, 7 cases were changed.	1 = male 2 =female
c#relatnshp C# OPRELATNSHP FROM OP FILE	c#relatnshp = op#relatnshp (the relationship to the SP as reported by the SP)	Relationship codes in op#relatnshp codes
c#intmonth C# MONTH OF NSOC INTERVIEW	Month of the NSOC interview	1 = May 2 = June 3 = July 4 = August 5 = September 6 = October 7 = November
c#dintdays C# D DAYS BETWN SP INT CG INT	Days between the NHATS SP interview and the NSOC interview	1 = 30 days or less 2 = 31 to 60 3 = 61 to 90 4 = 91 to 120 5 = 121 days or more

<b>Round 5</b>		
chd5dmartstat C5 D HD1 MARITAL STATUS	chd5dmartstat=hh5dmarstat if c5relatnshp=2 Otherwise, ch5dmarstat=HD1	-8 = DK -7 = RF 1 = Married 2 = Living with a partner 3 = Separated 4 = Divorced 5 = Widowed
chd5dnumchild C5 D HD4 NUMBER OF CHILDREN	chd5dnumchild=cs5dnumchild if c5relatnshp=2 Otherwise, chd5dnumchild = HD4	0 to XX -1 = Inapplicable
chd5dnuminhh C5 D HD6 NUMBR OF PEOPLE LIVE HERE	chd5dnuminhh= hh5dhshldnum if op5prsninh=1 Otherwise, chd5dnuminhh=HD6	0 to XX -1 = Inapplicable
chd5deduc C5 D HD7 HIGHEST DEGREE OR GRADE	chd5deduc= op5leveledu if c5relatnshp=2 Otherwise, chd5deduc=HD7	-8 = DK -7 = RF 1 = No schooling completed 2 = 1st to 8th grade 3 = 9th to 12th grade (no diploma) 4 = High school graduate (High school diploma or equivalent) 5 = Vocational, technical, business, or trade school certificate or diploma (beyond high school level) 6 = Some college but no degree 7 = Associate's degree 8 = Bachelor's degree 9 = Master's, professional, or doctoral degree

<p>chd5deducsprt C5 D HD8 SPOUS PARTR HIGH DEGREE</p>	<p>chd5deducsprt = el5higstschl if r5dcontnew=2 &amp; c5relatnshp=2 Else chd5deducsprt= el1higstschl if r5dcontnew=1 &amp; c5relatnshp=2 Otherwise, chd5deducsprt=HD8</p>	<p>-8 = DK -7 = RF -1 = Inapplicable 1 = No schooling completed 2 = 1st to 8th grade 3 = 9th to 12th grade (no diploma) 4 = High school graduate (High school diploma or equivalent) 5 = Vocational, technical, business, or trade school certificate or diploma (beyond high school level) 6 = Some college but no degree 7 = Associate's degree 8 = Bachelor's degree 9 = Master's, professional, or doctoral degree</p>
<p>chd5dcgbrthmt C5 D HD9 CG BIRTHDATE MONTH</p>	<p>chd5dcgbrthmt= op5birthmth if c5relatnshp=2 Otherwise, chd5dcgbrthmt=HD9</p>	<p>-8 = DK -7 = RF 1= January 2 = February 3 = March 4 = April 5 = May 6 = June 7 = July 8 = August 9 = September 10 = October 11 = November 12 = December</p>
<p>chd5dcgbrthyr C5 D HD9 CG BIRTHDATE YEAR</p>	<p>chd5dcgbrthyr =op5birthyear if c5relatnshp=2 Otherwise, chd5dcgbrthyr = HD9</p>	<p>-8 = DK -7 = RF Year of caregiver's birth</p>
<p>chd5age C5 D HD9 CG AGE</p>	<p>chd5age=op5age if c5relatnshp = 2 Otherwise, chd5age = age calculated from HD9</p>	<p>-8 = DK -7 = RF Age in years</p>

<p>chd5dspbrthmt C5 D HD10 SPOUS PARTR DOB MONTH</p>	<p>chd5dspbrthmt =r5dbirthmth if c5relatnshp=2 Otherwise, chd5dspbrthmt=HD10</p>	<p>-8 = DK -7 = RF 1 = January 2 = February 3 = March 4 = April 5 = May 6 = June 7 = July 8 = August 9 = September 10 = October 11 = November 12 = December</p>
<p>chd5dspbrthyr C5 D HD10 SPOUS PARTR DOB YEAR</p>	<p>chd5dspbrthyr= r5dbirthyr if c5relatnshp=2 Otherwise, chd5dspbrthyr= HD10</p>	<p>-8 = DK -7 = RF Year of caregiver's spouse/partner's birth</p>
<p>chd5dspouage C5 D HD10 SPOUS PARTR AGE</p>	<p>chd5dspouage=r5dintvwrage if c5relatnshp=2 Otherwise, chd5dspouage=age calculated from HD10</p>	<p>-8 = DK -7 = RF Age in years</p>

cr15dcgracehisp C5 D CG RACE AND HISPANIC ETHNICITY	1 if (cr15cgrace1 = 1 and cr15primarace = - 1 and cr15hisplatno = 2 or -7 or -8 or -9) or (cr15primarace = 1 and cr15hisplatno = 2 or -7 or -8 or -9) 2 if (cr15cgrace2 = 1 and cr15primarace = - 1 and cr15hisplatno = 2 or -7 or -8 or -9) or (cr15primarace = 2 and cr15hisplatno = 2 or -7 or -8 or -9) 3 if [(cr15cgrace3 = 1 or cr15cgrace4 = 1 or cr15cgrace5 = 1) and cr15primarace = - 1 and cr15hisplatno = 2 or -7 or - 8 or - 9] or (cr15primarace = 3 or 4 or 5 and cr15hisplatno = 2 or - 7 or -8 or -9) 4 if cr15hisplatno =1 6 if (cr15cgrace1 through cr15cgrace5) and cr15primarace and cr15hisplatno = 2 or -7 or -8 or -9 or -1 Else 5 if cr15primarace= -7 or -8 or -9 or -1 rl5dracehisp  Impute from rl5dracehisp if (no information obtained or cr15dcgracehisp = 6) and c5relatnshp= 2 or 3 or 4 or 9 or 10 or 19 or 20	1 =White, non-Hispanic 2 =Black, non-Hispanic 3 =Other (Am Indian/Asian/Native Hawaiian/Pacific Islander/other specify), non-Hispanic 4 =Hispanic 5 = More than one and DKRF primary 6 = DKRF
cr15draceimpfl C5 D CG RACE AND HISPANIC IMPUTED FLAG	1 if race imputed Else -1	-1 = Inapplicable 1 = Race and ethnicity imputed from SP's race
<b>NSOC SP Tracker File</b>		
fl#dnsoc R# F CC SP IS ELIGIBLE FOR NSOC	1 if SP meets NSOC eligibility criteria -1 otherwise	1 = SP NSOC eligible -1 = Inapplicable
fl#dnsoccnt R# F CC CNT HLPRS ELG FOR NSOC	Number of caregivers eligible for NSOC (up to 5) for each eligible SP	1 to 5 -1 = Inapplicable
fl#dcgphncnt R# F CC CNT HLPRS SP GAVE PHNE	Number of eligible caregivers that eligible SP provided phone contact information for	0 to 5 -1 = inapplicable
fl#dcgadonly R# F CC HLPRS ADDRESS ONLY	Number of eligible caregivers that eligible SP provided address for (but no phone contact)	0 to 5 -1 = inapplicable



fl#dnsocomp R# D CC CNT HLPRS WITH NSOC COMP	Number of eligible caregivers who participated in NSOC for each eligible SP	0 to 5 -1 = inapplicable
<b>NSOC OP Tracker File</b>		
op#dnsoc R# D NSOC STATUS	Detailed description of values: 1 = eligible helper who was interviewed 2 = eligible helper not interviewed for whom SP gave pho3 = eligible helper not interviewed SP refused contact information 4 = eligible helper not interviewed other (could not locate, too ill, other) 5 = eligible helper who was not fielded for NSOC interview (SP broke off interview before contact information could be obtained; CAPI programming error) 6 = helper ineligible because SP had more than 5 caregivers and caregiver was not sampled 7 = helper found ineligible upon contact (SP died, caregiver under age, caregiver died, caregiver said had not helped in last year) -1 = all other persons on the NHATS OP file.ne contact information	1 = eligible and interviewed 2 = eligible and not interviewed phone number provided 3 = eligible and not interviewed SP refused 4 = eligible and not interviewed other 5 = eligible and not fielded for NSOC 6 = 5+ caregivers and not sampled 7 = ineligible -1 = inapplicable

## APPENDIX C. Nonresponse Adjustments for NSOC I Weights

**Table 1. Weighted Responses Rates for Variables used in Nonresponse Adjustment for NSOC I Weights**

	Contact info not refused by SP (Weighted Response Rate)	Interview complete, given contact info not refused (Weighted Response Rate)
<b>OVERALL</b>	67.7	58.2
<b>Hours of Help SP received last month* ^ - (HOURSMONTH)</b>		
0:0	52.5	56.8
1:1-<10	58.0	52.8
2:10-<20	70.2	61.8
3:20-<30	75.6	58.9
4:30-<10/wk	73.8	62.9
5:10-<20/wk	79.8	68.9
6:20-<40/wk	82.0	62.7
7:40/wk-<16/day	82.7	64.1
8:16+/day	79.1	70.7
9:Missing / Inapplicable	61.0	43.6
<b>Relationship to SP*^ - (RELATION)</b>		
1:Spouse/Partner	76.8	66.9
2:Son	66.1	51.4
3:Daughter	70.0	61.4
4:Sibling	78.4	69.1
5:In-law	66.0	52.6
6:Other relative	61.4	46.2
7:Nonrelative	52.0	59.0
<b>Census Division<sup>1</sup>*^ - (DIVISION)</b>		
1:New England	69.0	54.1
2:Middle Atlantic	68.9	50.1
3:East North Central	59.5	67.6
4:West North Central	70.3	62.6
5:South Atlantic	68.1	57.0
6:East South Central	69.4	64.8
7:West South Central	70.6	54.8
8:Mountain	57.7	66.0
9:Pacific	68.6	58.5
<b>SP Race/Ethnicity*^ - (RL1DRACEHISP)</b>		
1:White, non-Hispanic	65.7	63.9
2:Black, non-Hispanic	71.8	60.4
3:Other (Am Indian/Asian/Native Hawaiian / Pacific Islander/other specify), non-Hispanic	64.0	42.9
4:Hispanic	76.1	32.0
5:More than one	55.6	42.5
6:DK/RF	90.1	1.3
<b>SP Age at interview*^ - (R1D2INTVRAGE)</b>		
1:65-69	68.6	62.6
2:70-74	72.1	52.5
3:75-79	63.6	53.8
4:80-84	67.9	58.4
5:8-89	67.7	60.4
6:90 +	67.6	63.6

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	Contact info not refused by SP (Weighted Response Rate)	Interview complete, given contact info not refused (Weighted Response Rate)
<b>Number of NSOC eligible helpers*^ – (FL1NSOCCNT)</b>		
1:1 Eligible helper	73.3	69.9
2:2 Eligible helpers	68.7	56.0
3:3 Eligible helpers	65.9	55.9
4:4 Eligible helpers	62.2	60.3
5: 5 or more Eligible helpers	65.4	44.5
<b>SP Education*^ – (EL1HIGSTSCHL)</b>		
0:DK / RF	78.8	23.9
1:No schooling completed	74.1	36.0
2:1st - 8th grade	73.9	46.6
3: 9th - 12th grade	69.5	55.0
4:High school graduate	63.8	61.5
5:Vocational, technical, business, or trade school certificate or diploma	68.9	64.4
6: Some college but no degree	65.5	68.4
7:Associate's degree	62.8	74.9
8: Bachelor's degree	66.6	63.3
9: Master's, professional, or doctoral degree	63.3	68.8
<b>SP gender^ – (R1GENDER)</b>		
1:Male	72.0	58.5
2:Female	65.9	58.1
<b>Reason for Proxy is Dementia – (IS1REASNPRX1)</b>		
0-inapplicable	66.5	58.4
1=Yes	73.1	67.7
2=No	72.8	45.6
<b>NSOC Brochure accepted by SP^ – (CC26)</b>		
0:Missing	18.3	44.7
1:Yes	89.3	60.5
2:No	80.9	41.1
<b>Helper Gender^ – (OP1GENDER)</b>		
0:Missing	100.0	0.0
1:Male	66.5	54.0
2:Female	68.5	61.0
<b>Helper lives with SP^ – (OP1PRSNINHH)</b>		
0:Inapplicable	60.2	54.4
1:Yes	78.2	62.3
2:No	75.5	72.3
<b>SP Residence – ( R1DRESID)</b>		
1:Community	68.7	57.3
2:Residential care resident, not nursing home (SP interview complete)	62.2	64.1
<b>Census Metro/Micro Area Designation (2008)<sup>1</sup> – (S_METMICRO_N)</b>		
1:Metropolitan area	67.3	57.3
2:Micro-politan area	69.4	61.9
3:Non-metro	68.4	60.3

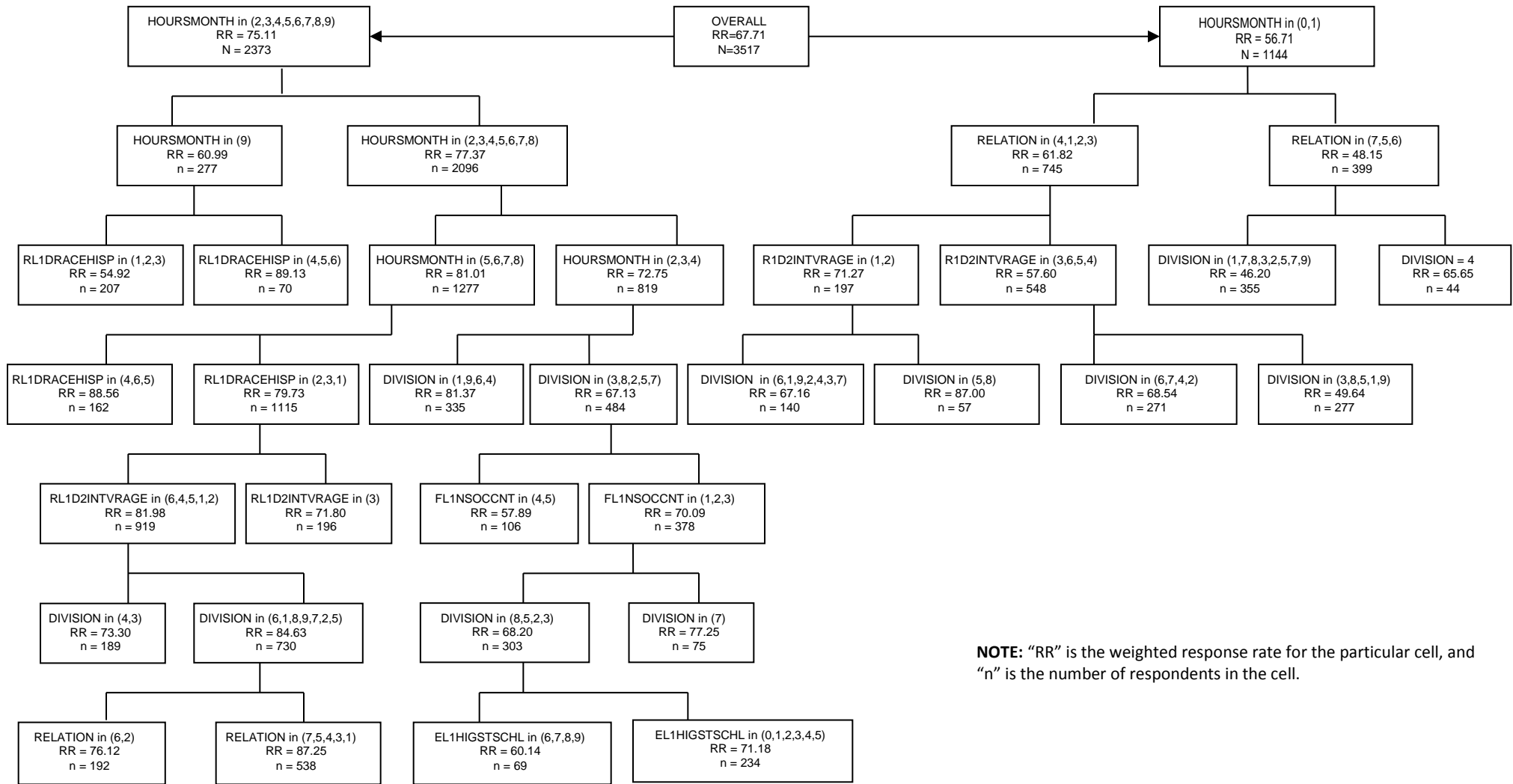
<sup>1</sup>Based on Information on the September 30, 2010 CMS 20% Health Insurance Skeleton Eligibility Write-Off (HISKEW) file.

\*=retained in classification tree analysis for nonresponse adjustment for SP refusal to provide contact information

^=retained in classification tree analysis for nonresponse adjustment for caregiver interview, given no SP refusal

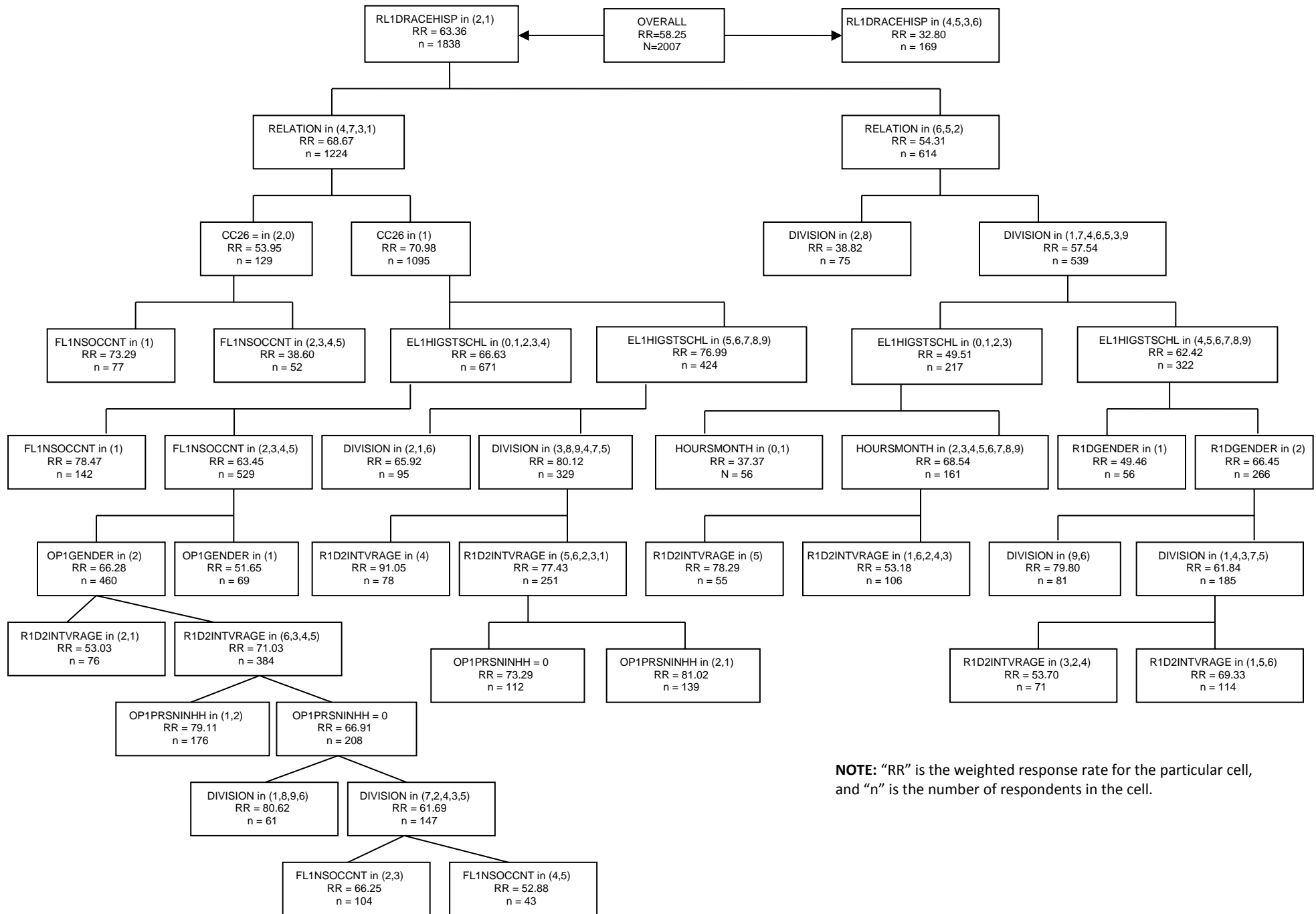
Variable names used in classification trees shown parenthetically

**Figure 1: Stage 1 NSOC weight nonresponse adjustment cells – SP Refusal**



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

**Figure 2: Stage 2 NSOC weight nonresponse adjustment cells**



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

## APPENDIX D. Nonresponse Adjustments for NSOC II Weights

Table 1. Weighted Responses Rates for Variables used in Nonresponse Adjustment for NSOC II Weights

	Contact info not refused by SP (Weighted Response Rate)	Interview complete, given contact info not refused (Weighted Response Rate)
OVERALL	66.2	60.4
<b>Hours of Help SP received last month* ^ - (HOURSMONTH)</b>		
0: Not codeable (<1)	62.9	61.3
1:1-<10	60.4	55.9
2:10-<20	69.4	56.4
3:20-<30	75.2	64.3
4: 30-<40	76.0	70.5
5: 40-<60	71.5	62.5
6: 60-<120	81.1	64.0
7: 120-<180	87.1	69.7
8: 180-744 (24/7)	87.0	70.8
9:Missing / Inapplicable	47.2	54.9
<b>Relationship to SP*^ - (RELATION)</b>		
1:Spouse/Partner	74.2	70.9
2:Son	62.9	54.6
3:Daughter	70.3	61.5
4:Sibling	63.8	48.6
5:In-law	66.7	55.8
6:Other relative	62.8	50.5
7:Nonrelative	49.2	62.0
<b>Census Division<sup>1*</sup>^ - (DIVISION)</b>		
1:New England	62.8	56.1
2:Middle Atlantic	63.7	52.6
3:East North Central	65.4	67.8
4:West North Central	73.8	62.6
5:South Atlantic	64.5	62.9
6:East South Central	74.8	60.2
7:West South Central	65.4	59.9
8:Mountain	69.3	60.6
9:Pacific	64.9	58.8
<b>SP Race/Ethnicity*^ - (RL5DRACEHISP)</b>		
1:White, non-Hispanic	63.9	65.8
2:Black, non-Hispanic	73.3	59.2
3:Other (Am Indian/Asian/Native Hawaiian /Pacific Islander/other specify), non-Hispanic	73.5	38.8
4:Hispanic	70.5	36.7
5:More than one	96.2	85.2
6:DK/RF	50.8	50.9
<b>R5 SP Age at interview*^ - (R5D2INTVRAGE)</b>		
1:65-69	66.0	58.1
2:70-74	71.0	57.1
3:75-79	63.7	59.7
4:80-84	64.0	58.4
5:8-89	67.1	63.7
6:90 +	65.0	66.3

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	Contact info not refused by SP (Weighted Response Rate)	Interview complete, given contact info not refused (Weighted Response Rate)
<b>Number of NSOC selected eligible helpers* – ( SAMPLECG_CNT)</b>		
1:1 Selected eligible helper	75.6	67.8
2:2 Selected eligible helpers	64.5	60.1
3:3 Selected eligible helpers	61.0	58.2
4:4 Selected eligible helpers	71.6	63.0
5: 5 Selected eligible helpers	62.7	48.5
<b>SP Education* – ( EL5DHIGSTSCHL )</b>		
0:DK / RF	74.9	74.9
1:No schooling completed	76.6	28.1
2:1st - 8th grade	69.6	53.1
3: 9th - 12th grade	70.4	59.9
4:High school graduate	65.4	59.3
5:Vocational, technical, business, or trade school certificate or diploma	65.1	68.1
6: Some college but no degree	66.8	62.7
7:Associate’s degree	66.8	47.8
8: Bachelor’s degree	61.6	65.1
9: Master’s, professional, or doctoral degree	57.4	75.4
<b>SP gender – (R5DGENDER)</b>		
1:Male	70.1	62.4
2:Female	64.3	59.3
<b>Reason for Proxy is Dementia<sup>2</sup> – (IS1REASNPRX)</b>		
0-inapplicable	65.0	NA
1=Yes	72.1	NA
2=No	73.1	NA
<b>NSOC Brochure accepted by SP<sup>3</sup> – (CC26)</b>		
0:Missing	NA	73.5
1:Yes	NA	60.1
2:No	NA	56.8
<b>Helper Gender<sup>3^</sup> – (OP5DGENDER)</b>		
0:Missing	NA	54.8
1:Male	NA	57.6
2:Female	NA	62.1
<b>Helper lives with SP<sup>3^</sup> – (OP5PRSNINHH)</b>		
0:Inapplicable	NA	56.4
1:Yes	NA	65.4
2:No	NA	69.7
<b>SP Residence – ( R5DRESID)</b>		
1:Community	67.7	59.6
2:Residential care resident, not nursing home (SP interview complete)	58.1	65.1
4: Nursing home (SP interview complete)	62.1	60.5
<b>Census Metro/Micro Area Designation (2013)<sup>1</sup> *– (S_METMICRO)</b>		
1:Metropolitan area	65.9	59.0
2: Micropolitan area	72.0	66.1
3:Non-metro	54.7	68.0

<sup>1</sup>Based on county-level information from the September 30, 2014 CMS 5% EDB extract linked to the beneficiary’s EDB address.

<sup>2</sup>The variable was only used in nonresponse modeling for nonresponse adjustment for SP refusal to provide contact information

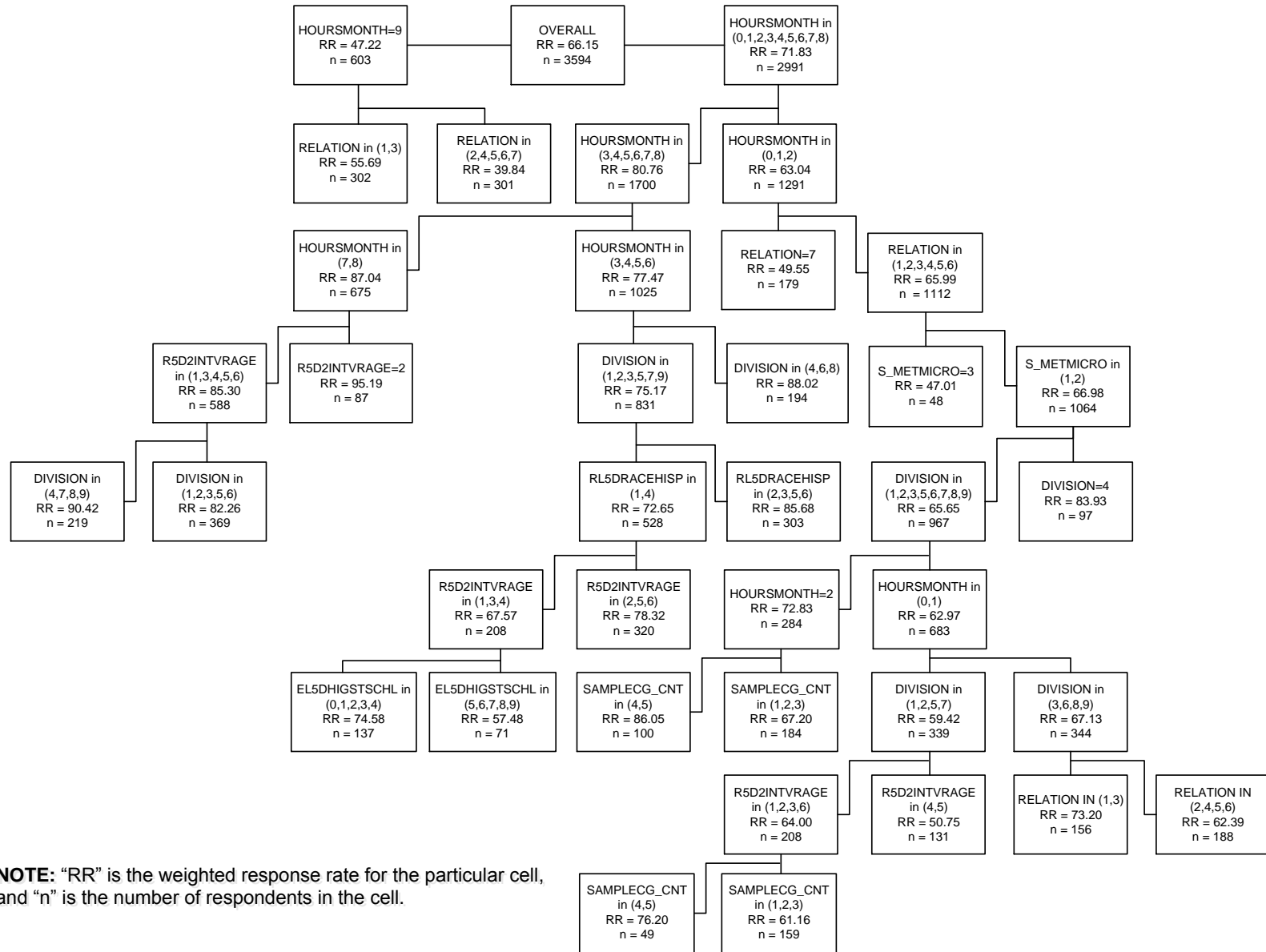
<sup>3</sup>The variables were only used in nonresponse modeling for nonresponse adjustment for caregiver interview, given no SP refusal

\*=retained in classification tree analysis for nonresponse adjustment for SP refusal to provide contact information

^=retained in classification tree analysis for nonresponse adjustment for caregiver interview, given no SP refusal

Variable names used in classification trees shown parenthetically.

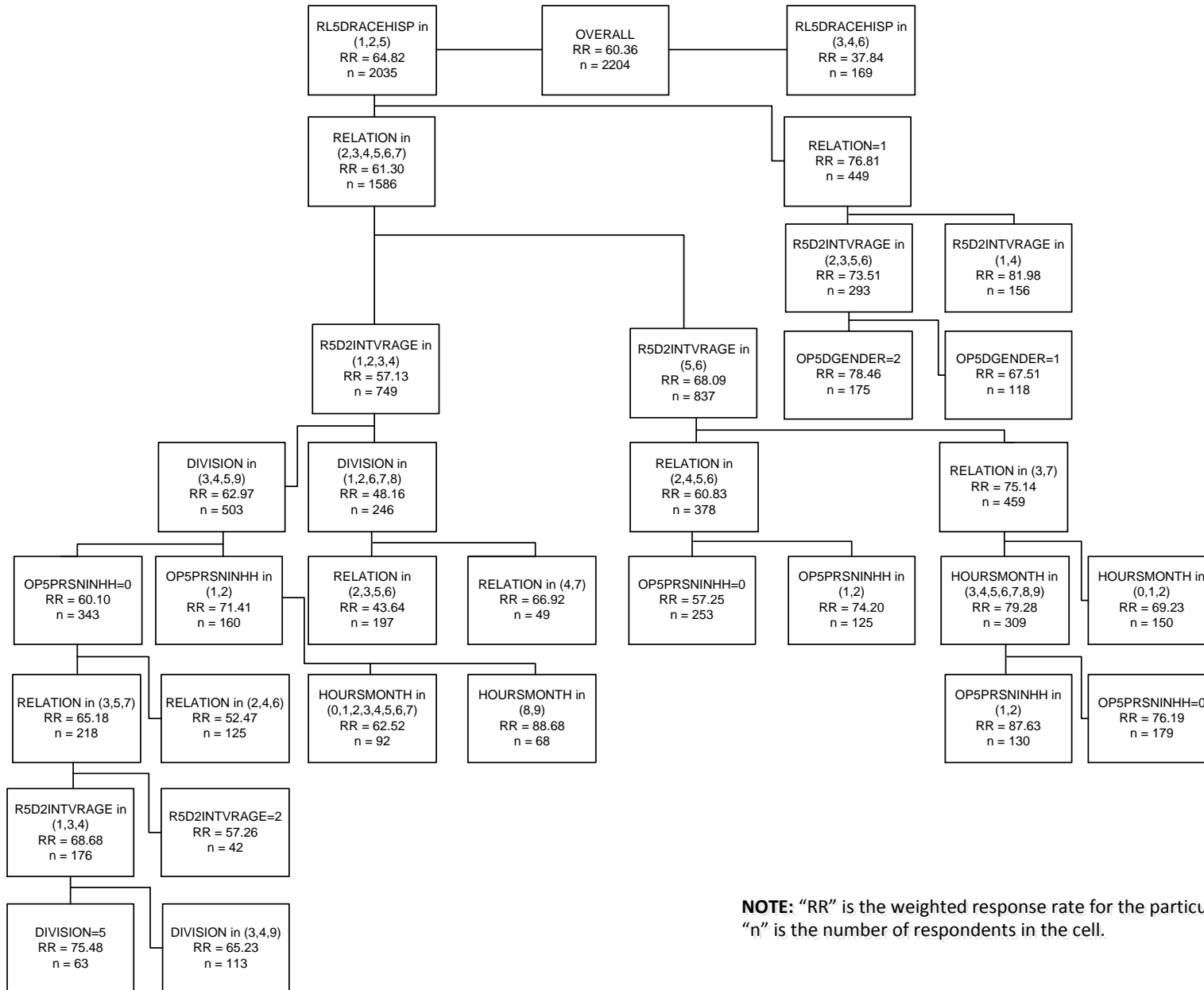
Figure 1: Stage 1 NSOC weight nonresponse adjustment cells - SP Refusal



**NOTE:** “RR” is the weighted response rate for the particular cell, and “n” is the number of respondents in the cell.



Figure 2: Stage 2 NSOC weight nonresponse adjustment cells



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